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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 10: MEANS OF EGRESS
SECTION BC 1001: ADMINISTRATION

NYC Administrative Code § 28-BC 1001

1001.1 General.

Buildings or portions thereof shall be provided with a means of egress system as required by this chapter. The provisions of this chapter shall control the design, construction and arrangement of means of egress components required to provide an approved means of egress from structures and portions thereof.

1001.2 Minimum requirements. It shall be unlawful to alter a building or structure in a manner that will reduce the number of exits or the capacity of the means of egress to less than required by this code.

1001.3 Maintenance. Means of egress shall be maintained in accordance with the New York City Fire Code.

1001.3.1 Workplace exits. Except as specifically provided for in this chapter, no employer or agent of such employer shall lock the doors of or otherwise prohibit exit from any workplace, when by so doing the health or safety of any employee, independent contractor or other individual working in such workplace may become endangered by fire or other hazardous condition. Refer to Article 307 of Title 28 of the Administrative Code.

1001.4 Inadequate exits for existing structures. Every existing structure which is not provided with means of egress as required by this chapter and, in which the means of egress are, in the opinion of the commissioner inadequate for the safety of the occupants, shall be provided with means of egress or fire protection as directed by the commissioner.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 10: MEANS OF EGRESS
SECTION BC 1002: DEFINITIONS

NYC Administrative Code § 28-BC 1002

1002.1 Definitions.

The following words and terms shall, for the purpose of this chapter and as used elsewhere in this code, have the meaning shown herein.

ACCESSIBLE MEANS OF EGRESS. A continuous and unobstructed way of egress travel from any accessible point in a building or facility to a public way. Such way of egress travel may include an assisted rescue path.

AISLE ACCESSWAY. That portion of an exit access that leads to an aisle.

ALTERNATING TREAD DEVICE. A device that has a series of steps between 50 and 70 degrees (0.87 and 1.22 rad) from horizontal, usually attached to a center support rail in an alternating manner so that the user does not have both feet on the same level at the same time.

AREA OF REFUGE. A floor area to which egress is made through a horizontal exit.

AREA OF RESCUE ASSISTANCE. An area where persons unable to use stairways can remain temporarily to await instructions or assistance during emergency evacuation.

ASSISTED RESCUE PATH. A portion of the accessible means of egress which begins at the area of rescue assistance and terminates at the public way.

BLEACHERS. Tiered seating facilities.

COLLECTING SAFE AREA. A safe area that receives occupants from the assembly space it serves, as well as from other safe areas.

COMMON PATH OF EGRESS TRAVEL. That portion of exit access which the occupants are required to traverse

before two separate and distinct paths of egress travel to two exits are available. Paths that merge are common paths of travel. Common paths of egress travel shall be included within the permitted travel distance.

CORRIDOR. An enclosed exit access component that defines and provides a path of egress travel to an exit. Corridors shall be either interior or public.

CORRIDOR, INTERIOR. A corridor that serves only one tenant. In Group E occupancies, corridors serving only one institution shall be deemed as serving a single tenant.

CORRIDOR, PUBLIC. A corridor that serves more than one tenant.

CROSS AISLE. An aisle in a place of assembly usually parallel to rows of seats, connecting other aisles or connecting an aisle and an exit.

DEAD END. A portion of a corridor in which the travel to an exit is in one direction only.

DOOR, BALANCED. A door equipped with double-pivoted hardware so designed as to cause a semicounterbalanced swing action when opening.

EGRESS COURT. A court or yard which provides access to a public way for one or more exits.

EMERGENCY ESCAPE AND RESCUE OPENING. An operable window, door or other similar device that provides for a means of escape and access for rescue in the event of an emergency.

EXIT. That portion of a means of egress system, which is separated from other interior spaces of a building or structure by fire-resistance-rated construction and opening protective as required to provide a protected path of egress travel between the exit access and the exit discharge. Exits include vertical exits, exterior exit doors at ground level, exit enclosures, exit passageways, exterior exit stairs, exterior exit ramps and horizontal exits, but do not include access stairs, aisles, exit access doors opening to corridors or corridors.

EXIT ACCESS. That portion of a means of egress system that leads from any occupied portion of a building or structure to an exit.

EXIT DISCHARGE. That portion of a means of egress system between the termination of an exit and a public way.

EXIT DISCHARGE, LEVEL OF. The horizontal plane located at the point at which an exit terminates and an exit discharge begins.

EXIT ENCLOSURE. An exit component that is separated from other interior spaces of a building or structure by fire-resistance-rated construction and opening protective, and provides for a protected path of egress travel in a vertical or horizontal direction to the exit discharge or the public way.

EXIT, HORIZONTAL. An exit that provides a path of egress travel from one building to an area in another building on approximately the same level, or a path of egress travel through or around a wall or partition to an area on approximately the same level in the same building, or a bridge or tunnel between two buildings, which affords safety from fire and smoke from the area of incidence and areas communicating therewith.

EXIT PASSAGEWAY. An exit component that is separated from all other interior spaces of a building or structure by fire-resistance-rated construction and opening protective, and provides for a protected path of egress travel in a horizontal direction to the exit discharge or the public way.

FIRE EXIT HARDWARE. Panic hardware that is listed for use on fire door assemblies.

FLOOR AREA, GROSS. The floor area within the inside perimeter of the exterior walls of the building under consideration, exclusive of courts, without deduction for corridors, stairways, closets, the thickness of interior walls, columns or other features. The floor area of a building, or portion thereof, not provided with surrounding exterior walls shall be the usable area under the horizontal projection of the roof or floor above. The gross floor area shall not include interior courts.

FLOOR AREA, NET. The actual occupied area not including the thickness of walls, partitions, columns, furred-in spaces, fixed cabinets, equipment, and unoccupied accessory areas such as corridors, stairways, toilet rooms, mechanical rooms and closets.

FOLDING AND TELESCOPIC SEATING. Tiered seating facilities having an overall shape and size that are capable of being reduced for purposes of moving or storing.

GRANDSTAND. Tiered seating facilities.

GUARD. A building component or a system of building components located at or near the open sides of elevated walking surfaces that minimizes the possibility of a fall from the walking surface to a lower level.

HANDRAIL. A horizontal or sloping rail intended for grasping by the hand for guidance or support.

MEANS OF EGRESS. A continuous and unobstructed path of vertical and horizontal egress travel from any occupied portion of a building or structure to a public way. A means of egress consists of three separate and distinct parts: the exit access, the exit and the exit discharge.

NOSING. The leading edge of treads of stairs and of landings at the top of stairway flights.

OCCUPANT LOAD. The number of persons for which the means of egress of a building or portion thereof is designed.

OPEN EXTERIOR SPACE. A street or other public space; or a yard, court, or plaza open on one or more sides and unroofed or open on all sides, which provides egress to a street or public space.

PANIC HARDWARE. A door-latching assembly incorporating a device that releases the latch upon the application of a force in the direction of egress travel.

PUBLIC WAY. A street, alley or other parcel of land open to the outside air leading to a street, that has been deeded, dedicated or otherwise permanently appropriated to the public for public use and which has a clear width and height of not less than 10 feet (3048 mm).

RAMP. A walking surface that has a running slope steeper than one unit vertical in 20 units horizontal (5-percent slope).

SAFE AREA. An interior or exterior space that serves as a means of egress by providing a transitional area from, and that also serves as a normal means of entry to, an assembly space.

SCISSOR STAIR. Two interlocking stairways providing two separate paths of egress located within one stairwell enclosure.

SEATING SECTION. An area of seating bounded on all sides by aisles, cross aisles, walls, or partitions.

SMOKE-PROTECTED ASSEMBLY SEATING. Seating served by means of egress that is not subject to smoke accumulation within or under a structure.

STAIR. A change in elevation, consisting of two or more risers.

STAIRWAY. One or more flights of stairs, either exterior or interior, with the necessary landings and platforms connecting them, to form a continuous and uninterrupted passage from one level to another.

STAIRWAY, EXTERIOR. A stairway that is open on at least one side, except for required structural columns, beams, handrails and guards. The adjoining open areas shall be either yards, courts or public ways. The other sides of the exterior stairway need not be open.

STAIRWAY, INTERIOR. A stairway not meeting the definition of an exterior stairway.

STAIRWAY, SPIRAL. A stairway having a closed circular form in its plan view with uniform section-shaped treads attached to and radiating from a minimum-diameter-supporting column.

WINDER. A stair tread with nonparallel edges.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 10: MEANS OF EGRESS
SECTION BC 1003: GENERAL MEANS OF EGRESS

NYC Administrative Code § 28-BC 1003

1003.1 Applicability.

The general requirements specified in Sections 1003 through 1012 shall apply to all three elements of the means of egress system, in addition to those specific requirements for the exit access, the exit and the exit discharge detailed elsewhere in this chapter.

1003.2 Ceiling height. The means of egress shall have a ceiling height of not less than 7 feet, 6 inches (2286 mm).

Exceptions:

1. Ceilings that are permitted to be less than 7 feet, 6 inches (2286 mm) in accordance with Section 1208.2.
2. Ceilings of dwelling units and sleeping units within residential occupancies in accordance with Section 1208.2.
3. Allowable projections in accordance with Section 1003.3.
4. Stair headroom in accordance with Section 1009.2.
5. Door height in accordance with Section 1008.1.1.3.

1003.3 Protruding objects. Protruding objects shall comply with the requirements of Sections 1003.3.1 through 1003.3.4.

1003.3.1 Headroom. Protruding objects are permitted to extend below the minimum ceiling height required by Section 1003.2 provided a minimum headroom of 84 inches (2134 mm) shall be provided for any walking surface, including walks, corridors, aisles and passageways. Not more than 50 percent of the ceiling area of a means of egress shall be reduced in height by protruding objects.

Exception: Door closers and stops shall not reduce headroom to less than 78 inches (1981 mm).

A barrier shall be provided where the vertical clearance is less than 80 inches (2032 mm) high. The leading edge of such a barrier shall be located 27 inches (686 mm) maximum above the floor.

1003.3.2Free-standing objects. A free-standing object mounted on a post or pylon shall not overhang that post or pylon more than 12 inches (305 mm) where the lowest point of the leading edge is more than 27 inches (686 mm) and less than 80 inches (2032 mm) above the walking surface. Where a sign or other obstruction is mounted between posts or pylons and the clear distance between the posts or pylons is greater than 12 inches (305 mm), the lowest edge of such sign or obstruction shall be 27 inches (685 mm) maximum or 80 inches (2030 mm) minimum above the finish floor or ground. Free-standing objects shall not reduce the required width of the means of egress.

Exception: This requirement shall not apply to sloping portions of handrails serving stairs and ramps.

1003.3.3Horizontal projections. Structural elements, fixtures or furnishings shall not project horizontally from either side more than 4 inches (102 mm) over any walking surface between the heights of 27 inches (686 mm) and 80 inches (2032 mm) above the walking surface.

Exception: Handrails serving stairs and ramps are permitted to protrude 4.5 inches (114 mm) from the wall.

1003.3.4Clear width. Protruding objects shall not reduce the minimum clear width of accessible routes as required by Section 1104.

1003.4Floor surface. Walking surfaces of the means of egress shall have a slip-resistant surface and be securely attached.

1003.5Elevation change. Where changes in elevation of less than 12 inches (305 mm) exist in the means of egress, sloped surfaces shall be used. Where the slope is greater than one unit vertical in 20 units horizontal (5-percent slope), ramps complying with Section 1010 shall be used. Where the difference in elevation is 6 inches (152 mm) or less and the ramp is not equipped with handrails, the floor finish materials shall contrast with adjacent floor finish materials.

Exceptions. At locations that are not required to be accessible by Chapter 11:

1. A single step with a maximum riser height of 7 inches (178 mm) is permitted for buildings with occupancies in:

1.1. Groups F, H, R-2 and R-3, and

1.2. Groups S and U at exterior doors.

2. A step with a single riser or a stair with two risers and a tread is permitted provided that the risers and treads comply with Section 1009.3, the minimum depth of the tread is 13 inches (330 mm) and at least one handrail complying with Section 1009.11 is provided within 30 inches (762 mm) of the centerline of the normal path of egress travel on the stair.

3. An aisle serving seating that has a difference in elevation less than 12 inches (305 mm) is permitted provided that the risers and treads comply with Section 1024.11 and the aisle is provided with a handrail complying with Section 1024.13.

Any change in elevation in a corridor serving nonambulatory persons in a Group I-2 occupancy shall be by means of a ramp or sloped walkway.

1003.6Means of egress continuity. The path of egress travel along a means of egress shall not be interrupted by any building element other than a means of egress component as specified in this chapter. Obstructions shall not be placed

in the required width of a means of egress except projections permitted by this chapter. The required capacity of a means of egress system shall not be diminished along the path of egress travel.

1003.7Elevators, escalators and moving walks.Elevators, escalators and moving walks shall not be used as a component of a required means of egress from any other part of the building.

Exception: Elevators used as a component of an accessible means of egress in accordance with Section 1007.4.



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SECTION BC 1004: OCCUPANT LOAD

NYC Administrative Code § 28-BC 1004

1004.1 Design occupant load.

In determining means of egress requirements, the number of occupants for whom means of egress facilities shall be provided shall be established by the largest number computed in accordance with Sections 1004.1.1 through 1004.1.3.

1004.1.1 Actual number. The actual number of occupants for whom each occupied space, floor or building is designed.

1004.1.2 Number by Table 1004.1.2. The number of occupants computed at the rate of one occupant per unit of area as prescribed in Table 1004.1.2.

1004.1.3 Number by combination. Where occupants from accessory spaces egress through a primary area, the calculated occupant load for the primary space shall include the total occupant load of the primary space plus the number of occupants egressing through it from the accessory space.

1004.1.4 Modifications. Where the actual number of occupants of any space will be significantly lower than listed in Table 1004.1.2, the commissioner may establish a lower basis for the determination of the number of occupants.

1004.1.5 Unlisted occupancies. Where data regarding the square feet area per person for an occupancy is not listed in Table 1004.1.2, the occupant load shall be established by a registered design professional, subject to the approval of the commissioner. Table 1004.1.2 Maximum Floor Area Allowances Per Occupant Use of Space Floor Area in Sq. Ft. Per Occupant
Agricultural building 300 gross
Aircraft hangars 500 gross
Assembly

Gaming floors (keno, slots, etc.) 11 gross
Assembly with fixed seats See Section 1004.7
Assembly without fixed seats

Concentrated (chairs only-not fixed)

Dance floor

Dance floor (ballroom)

Standing space / Waiting area

Unconcentrated (tables and chairs)

7 net 5 net 10 net 5 net 15 net Bowling centers, allow 5 persons for each lane including 15 feet of runway, and for additional areas
7 net Business areas 100 gross Courtrooms-other than fixed seating areas 40 net Day Care

age under 6 months

age 6 months - 2 years

age 2 years - 6 years

age above 6 years

50 net 40 net 30 net 50 net Use of Space Floor Area in Sq. Ft. Per Occupant Dormitories 50 gross Educational

Classroom area

Shops and other vocational room areas 20 net 50 net Exercise rooms 50 gross Gymnasiums 15 net H-5 Fabrication and manufacturing areas 200 gross Industrial areas 100 gross Institutional areas

Inpatient treatment areas

Outpatient areas

Sleeping areas 240 gross 100 gross 120 gross Kitchens, commercial 200 gross Library

Reading rooms

Stack area 50 net 100 gross Locker rooms 50 gross Mercantile

Areas on other floors

Basement and grade floor areas

Storage, stock, shipping areas

60 gross 30 gross 300 gross Parking garages 200 gross Passenger terminal

Passenger terminal or platform

Baggage claim

Baggage handling

Concourse

Waiting areas (Seated)

Waiting area (Standing)

1.5 X C* 20 gross 300 gross 100 gross 15 gross 5 net Residential 200 gross within dwelling units Skating rinks, swimming pools

Rink and pool

Decks

50 gross 15 gross Stages and platforms 15 net for performing area and 50 net remaining area Accessory storage areas, mechanical

equipment room 300 gross Warehouses 500 gross

1004.2 Increased occupant load. The occupant load permitted in any building or portion thereof is permitted to be increased from that number established for the occupancies in Table 1004.1.2 provided that all other requirements of the code are also met based on such modified number and the occupant load shall not exceed one occupant per 5 square feet (0.47 m²) of occupiable floor space. Where required by the commissioner, an approved aisle, seating or fixed equipment diagram substantiating any increase in occupant load shall be submitted. Where required by the commissioner, such diagram shall be posted.

1004.3 Posting of occupant load. Every room or space that is an assembly occupancy shall have the occupant load of the room or space posted in a conspicuous place, near the main exit or exit access doorway from the room or space. Posted signs shall be of an approved legible permanent design and shall be maintained by the owner or authorized agent. Such sign shall also comply with Section 1024.1.2.

1004.4 Exiting from multiple levels. Where exits serve more than one floor, only the occupant load of each floor considered individually shall be used in computing the required capacity of the exits at that floor, provided that the exit capacity shall not decrease in the direction of egress travel.

1004.5 Egress convergence. Where means of egress from floors above and below converge at an intermediate level, the capacity of the means of egress from the point of convergence shall not be less than the sum of the two floors.

1004.6 Mezzanine levels. The occupant load of a mezzanine level with egress onto a room or area below shall be added to that room or area's occupant load, and the capacity of the exits shall be designed for the total occupant load thus established.

1004.7 Fixed seating. For areas having fixed seats and aisles, the occupant load shall be determined by the number of fixed seats installed therein. For areas having fixed seating without dividing arms, the occupant load shall not be less than the number of seats based on one person for each 18 inches (457 mm) of seating length. The occupant load of seating booths shall be based on one person for each 24 inches (610 mm) of booth seat length measured at the backrest of the seating booth.

1004.8 Outdoor areas. Yards, patios, courts and similar outdoor areas accessible to and usable by the building occupants shall be provided with means of egress as required by this chapter. The occupant load of such outdoor areas shall be determined by the design professional subject to the approval of the commissioner. Where outdoor areas are to be used by persons in addition to the occupants of the building, and the path of egress travel from the outdoor areas passes through the building, means of egress requirements for the building shall be based on the sum of the occupant loads of the building plus the outdoor areas.

Exceptions:

1. Outdoor areas used exclusively for service of the building need only have one means of egress.
2. Both outdoor areas associated with Group R-3 and individual dwelling units of Group R-2.

1004.9 Multiple occupancies. Where a building contains two or more occupancies, the means of egress requirements shall apply to each portion of the building based on the occupancy of that space. Where two or more occupancies utilize portions of the same means of egress system, those egress components shall meet the more stringent requirements of all occupancies that are served.



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SECTION BC 1005: EGRESS WIDTH

NYC Administrative Code § 28-BC 1005

1005.1 Minimum required egress width.

The means of egress width shall not be less than that required by this section. The total width of means of egress in inches (mm) shall not be less than the total occupant load served by the means of egress multiplied by the factors in Table 1005.1 and not less than specified elsewhere in this code. Multiple means of egress shall be sized such that the loss of any one means of egress shall not reduce the available capacity to less than 50 percent of the required capacity. The maximum capacity required from any story of a building shall be maintained to the termination of the means of egress.

Exception: Means of egress complying with Section 1024. Table 1005.1 Egress Width Per Occupant Served
Occupancy Stairways (inches per occupant) Other components (inches per occupant) Occupancies other than those listed below
0.3 0.2 Hazardous: H-1, H-2, H-3 and H-40.7 0.4 For SI: 1 inch = 25.4 mm

1005.2 Door encroachment. Doors opening into the path of egress travel shall not reduce the required width to less than one-half during the course of the swing. When fully open, the door shall not project more than 7 inches (178 mm) into the required width.

Exception: The restrictions on a door swing shall not apply to doors within individual dwelling units and sleeping units of Group R-2 and dwelling units of Group R-3.



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SECTION BC 1006: MEANS OF EGRESS ILLUMINATION

NYC Administrative Code § 28-BC 1006

1006.1 Illumination Required.

Exits, exit discharges and public corridors shall be illuminated at all times. Exit access components shall be illuminated at all times during occupancy.

Exceptions:

1. Occupancies in Group U.
2. Aisle accessways in Group A.
3. Dwelling units and sleeping units in Groups I-1, R-1, R-2 and R-3.
4. Sleeping units of Group I occupancies.

1006.2 Illumination level. The means of egress illumination level shall not be less than 2 foot-candles (22 lux) at the floor level in exits, at exit discharges, and in public corridors, and shall not be less than 1 foot-candle (11 lux) at the floor level in exit access components other than public corridors.

Exceptions:

1. For auditoriums, theaters, concert or opera halls and similar assembly occupancies, the illumination at the floor level is permitted to be reduced during performances to not less than 0.5 foot-candle (5.38 lux) for aisles and cross aisles, and 0.2 foot-candle (2.15 lux) for other portions of the space, provided that the required illumination is automatically restored upon activation of a premise's fire alarm system where such system is provided. Step lights shall be provided in accordance with Section 1024.11.4.

2. Safe areas in assembly occupancies shall be illuminated in accordance with Section 1024.17.3.2.

3. Open exterior spaces used to receive occupants as Class 1 or Class 2 exits in assembly occupancies shall be illuminated in accordance with Section 1024.17.4.

1006.3 Illumination emergency power. The power supply for means of egress illumination shall normally be provided by the premise's electrical supply.

In the event of power supply failure, an emergency electrical system shall automatically illuminate the following areas:

1. Exit access corridors, passageways and aisles in rooms and spaces which require two or more means of egress.
2. Exit access corridors, exit passageways and exit stairways located in buildings required to have two or more exits.
3. Exterior egress components at other than the level of exit discharge until exit discharge is accomplished for buildings required to have two or more exits.
4. Interior exit discharge elements, as permitted in Section 1023.1, in buildings required to have two or more exits.
5. The portion of the exterior exit discharge immediately adjacent to exit discharge doorways in buildings required to have two or more exits.

1006.3.1 Emergency power source. The emergency power system shall provide power for a duration of not less than 90 minutes and shall consist of storage batteries, unit equipment or an on-site generator. The installation of the emergency power system shall be in accordance with Section 2702.

1006.3.2 Performance of system. Emergency lighting facilities shall be arranged to provide initial illumination that is at least an average of 2 foot-candle (22 lux) and a minimum at any point of 0.2 foot-candle (2.15 lux) measured along the path of egress at floor level. Illumination levels shall be permitted to decline to 0.6 foot-candle (6.46 lux) average and a minimum at any point of 0.06 foot-candle (0.646 lux) at the end of the emergency lighting time duration. A maximum-to-minimum illumination uniformity ratio of 40 to 1 shall not be exceeded.

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SECTION BC 1007: ACCESSIBLE MEANS OF EGRESS

NYC Administrative Code § 28-BC 1007

1007.1 Accessible means of egress required.

Accessible means of egress shall comply with this section. Accessible spaces shall be provided with not less than one accessible means of egress. Where more than one means of egress is required by Section 1014.1 or 1018.1 from any accessible space, at least two accessible means of egress shall be provided to each accessible portion of the space.

Exceptions:

1. Accessible means of egress are not required in alterations to existing buildings where the level of alterations does not trigger full compliance of accessibility pursuant to Section 28-101.4 of this code.
2. One accessible means of egress is required from an accessible mezzanine level in accordance with Section 1007.3 or 1007.4.
3. In assembly spaces with sloped floors, one accessible means of egress is required from a space where the common path of travel of the accessible route for access to the wheelchair spaces meets the requirements in Section 1024.8.

1007.2 Continuity and components. Each required accessible means of egress shall be continuous to a public way and shall consist of one or more of the following components:

1. Interior accessible routes complying with Section 1104.
2. Area of rescue assistance complying with Section 1007.6.
3. Stairways within vertical exit enclosures complying with Sections 1007.3 and 1019.1.
4. Exterior exit stairways complying with Sections 1007.3 and 1022.

5. Elevators complying with Section 1007.4.
6. Platform lifts complying with Section 1007.5.
7. Horizontal exits complying with Section 1021.
8. Ramps complying with Section 1010.
9. Exit discharges complying with Section 1023.
10. Exterior accessible routes complying with Section 1104.
11. Exterior areas of assisted rescue complying with Section 1007.8.

1007.2.1High-rise buildings.In high-rise buildings subject to Section 403, at least one required accessible means of egress shall be an elevator complying with Section 1007.4.

Exceptions:

1. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required on floors provided with a horizontal exit located at or above the level of exit discharge.
2. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required on floors provided with a ramp conforming to the provisions of Section 1010.
3. In buildings of occupancy Group R-2 not subject to the requirements of emergency power in Section 403 of this code.

1007.2.2Exit discharge.Where an exit discharge is not accessible, an exterior area for assisted rescue shall be provided in accordance with Section 1007.8. An exterior area for assisted rescue shall not be required where an exit discharge is on an assisted rescue path from a stairway or an elevator.

1007.2.3Exterior exit stairway.Where an exit stairway is open to the exterior, the accessible means of egress shall include either an area of rescue assistance in accordance with Section 1007.6 or an exterior area for assisted rescue in accordance with Section 1007.8.

1007.3Exit stairways.To be considered part of an accessible means of egress, an exit stairway shall have a clear width of 48 inches (1219 mm) minimum between handrails and shall either incorporate an area of rescue assistance within an enlarged floor-level landing or shall be accessed from either an area of rescue assistance complying with Section 1007.6 or a horizontal exit.

Unenclosed exit stairways as permitted by Section 1019.1 are permitted to be considered part of an accessible means of egress.

Exceptions. The following exceptions apply to the requirements of clear width and area of rescue assistance, and do not supersede the other requirements of the accessible means of egress:

1. The area of rescue assistance is not required at unenclosed stairways that are permitted by Section 1019.1 in buildings or facilities that are equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.

2. The clear width of 48 inches (1219 mm) between handrails and the area of rescue assistance is not required at exit stairways in buildings or facilities equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

3. The clear width of 48 inches (1219 mm) between handrails is not required for enclosed exit stairways accessed from a horizontal exit.

4. Areas of rescue assistance are not required at exit stairways serving open parking garages

1007.4Elevators.To be considered part of an accessible means of egress, an elevator shall comply with the emergency operation and signaling device requirements of Section 2.27 of ASME A17.1 and Section 1109.6. Emergency power shall be provided in accordance with Sections 2702 and 3003. The elevator shall be accessed from either an area of rescue assistance complying with Section 1007.6 or a horizontal exit complying with Section 1021.

Exceptions:

1. Elevators are not required to be accessed from an area of rescue assistance or horizontal exit in open parking garages.

2. Elevators are not required to be accessed from an area of rescue assistance or horizontal exit in buildings and facilities equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

1007.5Platform lifts.Platform (wheelchair) lifts shall not serve as part of an accessible means of egress, except where allowed as part of a required accessible route in Section 1109.7. Platform lifts shall be installed in accordance with ASME A18.1. Emergency power shall be provided in accordance with Section 2702 for platform lifts permitted to serve as part of an accessible means of egress.

1007.6Areas of rescue assistance.Every required area of rescue assistance shall be accessible from the space it serves by one or more accessible means of egress components as listed in Section 1007.2. The maximum travel distance from any accessible space to an area of rescue assistance shall not exceed the travel distance permitted for the occupancy in accordance with Section 1015.1. Every required area of rescue assistance shall have direct access to an enclosed stairway complying with Sections 1007.3 and 1019.1 or an elevator complying with Section 1007.4. Where an elevator lobby is used as an area of rescue assistance, the shaft and lobby shall comply with Section 1019.1.8 for smokeproof enclosures except where the elevators are in an area of rescue assistance, such lobby shall be part of a horizontal exit or protected by smoke barrier.

1007.6.1Size.Each area of rescue assistance shall be sized to accommodate one wheelchair space of 30 inches by 48 inches (762 mm by 1219 mm) for each 200 occupants or portion thereof, based on the occupant load of the area of rescue assistance and areas served by the area of rescue assistance. Such wheelchair spaces shall not reduce the required means of egress width. Access to any of the required wheelchair spaces in an area of rescue assistance shall not be obstructed by more than one adjoining wheelchair space.

1007.6.2Separation.Each area of rescue assistance shall be separated from the remainder of the story by a smoke barrier complying with Section 709. Each area of rescue assistance shall be designed to minimize the intrusion of smoke.

Exceptions. Areas of rescue assistance need not be protected with smoke barrier where:

1. Areas of rescue assistance is located within a stairway enclosure.

2. Sprinkler protection is provided in the areas of rescue assistance and all the areas it serves in accordance with

Section 903.3.1.1 or 903.3.1.2.

1007.6.3Two-way communication.Areas of rescue assistance shall be provided with a two-way communication system between the areas of rescue assistance and a central control point. If the central control point is not constantly attended, the area of rescue assistance shall also have controlled access to a public telephone system. Location of the central control point shall be approved by the Fire Department. The two-way communication system shall include both audible and visible signals.

1007.6.4Instructions.In areas of rescue assistance that have a two-way emergency communications system, instructions on the use of the area under emergency conditions shall be posted adjoining the communications system. The instructions shall include all of the following:

1. Directions to find other means of egress.
2. Persons able to use the exit stairway do so as soon as possible, unless they are assisting others.
3. Information on planned availability of assistance in the use of stairs or supervised operation of elevators and how to summon such assistance.
4. Directions for use of the emergency communications system.

1007.6.5Identification.Each door providing access to an area of rescue assistance from an adjacent floor area shall be identified by a sign complying with ICC A117.1, stating: AREA OF RESCUE ASSISTANCE, and including the International Symbol of Accessibility. The area of rescue assistance sign shall be illuminated in accordance with Section 1011.2. Additionally, tactile signage complying with ICC A117.1 shall be located at each door to an area of rescue assistance.

1007.7Signage.Signage shall be installed indicating the location of an accessible means of egress at those exits and elevators serving required accessible spaces that are not accessible means of egress.

1007.8Exterior area for assisted rescue.The exterior area for assisted rescue must be open to the outside air and meet the requirements of Section 1007.6.1. Separation walls shall comply with the requirements of Section 704 for exterior walls. All walls or openings within 10 feet (3048 mm) horizontally of the perimeter of the exterior area for assisted rescue shall be constructed as required for a minimum 1-hour fire-resistance rating with 3/4-hour opening protectives. Such construction shall extend 10 feet (3048 mm) vertically above the floor level of the exterior area for assisted rescue or to the roof line, whichever is lower.

1007.8.1Openness.The exterior area for assisted rescue shall be at least 50 percent open, and the open area above the guards shall be so distributed as to minimize the accumulation of smoke or toxic gases.

1007.8.2Exterior exit stairway.Exterior exit stairways that are part of the accessible means of egress for the exterior area for assisted rescue shall provide a clear width of 48 inches (1219 mm) between handrails.

1007.8.3Identification.Exterior areas for assisted rescue shall have identification as required for area of rescue assistance that complies with Section 1007.6.5.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 10: MEANS OF EGRESS
SECTION BC 1008: DOORS, GATES AND TURNSTILES

NYC Administrative Code § 28-BC 1008

1008.1 Doors.

Means of egress doors shall meet the requirements of this section. Doors serving a means of egress system shall meet the requirements of this section and Section 1017.2. Doors provided for egress purposes in numbers greater than required by this code shall meet the requirements of this section.

Means of egress doors shall be readily distinguishable from the adjacent construction and finishes such that the doors are easily recognizable as doors. Mirrors or similar reflecting materials shall not be used on means of egress doors. Means of egress doors shall not be concealed by curtains, drapes, decorations or similar materials.

1008.1.1Size of doors.The minimum width and height of each door opening shall be in accordance with this section.

1008.1.1.1Door width.The minimum width of each door opening shall be sufficient for the occupant load thereof and shall provide a clear width of not less than 32 inches (813 mm). Clear openings of doorways with swinging doors shall be measured between the face of the door and the stop, with the door open 90 degrees (1.57 rad). Where this section requires a minimum clear width of 32 inches (813 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a clear opening width of 32 inches (813 mm). The maximum width of a swinging door leaf shall be 48 inches (1219 mm) nominal. Means of egress doors in an occupancy in Group I-2 used for the movement of beds shall provide a clear width not less than 41 1/2 inches (1054 mm).

Exceptions:

1. The minimum and maximum width shall not apply to door openings that are not part of the required means of egress in occupancies in Groups R-2 and R-3.
2. Door openings to resident sleeping units in occupancies in Group I-3 shall have a clear width of not less than 28

inches (711 mm).

3. Door openings to storage closets less than 10 square feet (0.93 m²) in area shall not be limited by the minimum width.

4. Width of door leafs in revolving doors that comply with Section 1008.1.3.1 shall not be limited.

5. Interior egress doors within a dwelling unit or sleeping unit which is not required to be adaptable or accessible.6. In Group R-3 occupancies, door openings required to be accessible within Type B dwelling units subject to Section 1107.6.3 shall have a minimum clear width of 31 3/4 inches (806 mm).

1008.1.1.2 Projections into clear width. There shall not be projections into the required clear width lower than 34 inches (864 mm) above the floor or ground. Projections into the clear opening width between 34 inches (864 mm) and 80 inches (2032 mm) above the floor or ground shall not exceed 4 inches (102 mm).

1008.1.1.3 Height. The height of doors shall not be less than 80 inches (2032 mm).

Exceptions:

1. Door openings within a dwelling unit or sleeping unit shall not be less than 78 inches (1981 mm) in height.
2. Exterior door openings in dwelling units and sleeping units, other than the required exit door, shall not be less than 76 inches (1930 mm) in height.

1008.1.2 Door swing. Egress doors shall be installed in accordance with this section.

1008.1.2.1 Mounting. Egress doors shall be side-hinged swinging.

Exceptions:

1. Private garages, office areas, factory and storage areas with an occupant load of 10 or less.
2. Group I-3 occupancies used as a place of detention.
3. Doors within or serving a single dwelling unit in Groups R-2 and R-3.
4. In other than Group H occupancies, revolving doors complying with Section 1008.1.3.1.
5. In other than Group H occupancies, horizontal sliding doors complying with Section 1008.1.3.3 are permitted in a means of egress.
6. Power-operated doors in accordance with Section 1008.1.3.2.

1008.1.2.2 Direction of swing. Doors shall swing in the direction of egress travel where serving:

1. Group F or Group H occupancies.
2. Rooms or spaces with an occupant load of 50 or more persons.
3. Rooms or spaces requiring more than one exit door.
4. Automatic teller machines in accordance with Administrative Code section 10-160.

Exception: Doors need not swing in the direction of egress travel for exterior street floor exit doors from lobbies

serving only Group R-2 or R-3 occupancies.

1008.1.2.3Opening force.The opening force for interior side-swinging doors without closers shall not exceed a 5-pound (22 N) force. For other side-swinging, sliding and folding doors, the door latch shall release when subjected to a 15-pound (67 N) force. The door shall be set in motion when subjected to a 30-pound (133 N) force. The door shall swing to a full-open position when subjected to a 15-pound (67 N) force. Forces shall be applied to the latch side.

1008.1.3Special doors.Special doors and security grilles shall comply with the requirements of Sections 1008.1.3.1 through 1008.1.3.5.

1008.1.3.1Revolving doors.Revolving doors shall comply with the following:

1. Each revolving door shall be capable of collapsing into a book fold position with parallel egress paths providing an aggregate width of 36 inches (914 mm).

2. A revolving door shall not be located within 10 feet (3048 mm) of the foot of or top of stairs or escalators. A dispersal area shall be provided between the stairs or escalators and the revolving doors.

3. The revolutions per minute (rpm) for a revolving door shall not exceed those shown in Table 1008.1.3.1.

4. Each revolving door shall have a side-hinged swinging door which complies with Section 1008.1 in the same wall and within 10 feet (3048 mm) of the revolving door. Table 1008.1.3.1 Revolving Door Speeds Inside Diameter (feet-inches) Power-Driven-Type Speed Control (rpm) Manual-Type Speed Control (rpm) 6-6 11 12 7-0 10 11 7-6 9 11 8-0 9 10 8-6 8 9 9-0 8 9 9-6 7 8 10-0 7 8 For SI: 1 inch = 25.4 mm. 1 foot = 304.8 mm.

1008.1.3.1.1Egress component.A revolving door used as a component of a means of egress shall comply with Section 1008.1.3.1 and the following three conditions:

1. Revolving doors shall not be given credit for more than 50 percent of the required egress capacity.

2. Each revolving door shall be credited with no more than a 50-person capacity.

3. Each revolving door shall be capable of being collapsed when a force of not more than 130 pounds (578 N) is applied within 3 inches (76 mm) of the outer edge of a wing.

1008.1.3.1.2Other than egress component.A revolving door used as other than a component of a means of egress shall comply with Section 1008.1.3.1. The collapsing force of a revolving door not used as a component of a means of egress shall not be more than 180 pounds (801 N).

Exception: A collapsing force in excess of 180 pounds (801 N) is permitted if the collapsing force is reduced to not more than 130 pounds (578 N) when at least one of the following conditions is satisfied:

1. There is a power failure or power is removed to the device holding the door wings in position.

2. There is an actuation of the automatic sprinkler system where such system is provided.

3. There is an actuation of a smoke detection system which is installed in accordance with Section 907 to provide coverage in areas within the building which are within 75 feet (22 860 mm) of the revolving doors.

4. There is an actuation of a manual control switch, in an approved location and clearly defined, which reduces the holding force to below the 130-pound (578 N) force level.

1008.1.3.2Power-operated doors.Where means of egress doors are operated by power, such as doors with a

photoelectric-actuated mechanism to open the door upon the approach of a person, or doors with power-assisted manual operation, the design shall be such that in the event of power failure, the door is capable of being opened manually to permit means of egress travel or closed where necessary to safeguard means of egress. The forces required to open these doors manually shall not exceed those specified in Section 1008.1.2, except that the force to set the door in motion shall not exceed 50 pounds (220 N). The door shall be capable of swinging from any position to the full width of the opening in which such door is installed when a force is applied to the door on the side from which egress is made. Full-power-operated doors shall comply with BHMA A156.10. Power-assisted and low-energy doors shall comply with BHMA A156.19.

Exceptions:

1. Power operated doors are not required to be manually operable in occupancies in Group I-3 when egress complies with Section 408.

2. Section 1008.1.3.2 does not apply to horizontal sliding doors complying with Section 1008.1.3.3.

3. For a biparting door in the emergency breakout mode, a door leaf located within a multiple-leaf opening shall be exempt from the minimum 32-inch (813 mm) single-leaf requirement of Section 1008.1.1, provided a minimum 32-inch (813 mm) clear opening is provided when the two biparting leaves meeting in the center are broken out.

1008.1.3.3 Horizontal sliding doors. In other than Group H occupancies, horizontal sliding doors permitted to be a component of a means of egress in accordance with Exception 5 to Section 1008.1.2.1 shall comply with all of the following criteria:

1. The doors shall be power operated and shall be capable of being operated manually in the event of power failure.
2. The doors shall be openable by a simple method from both sides without special knowledge or effort.
3. The force required to operate the door shall not exceed 30 pounds (133 N) to set the door in motion and 15 pounds (67 N) to close the door or open it to the minimum required width.
4. The door shall be openable with a force not to exceed 15 pounds (67 N) when a force of 250 pounds (1100 N) is applied perpendicular to the door adjacent to the operating device.
5. The door assembly shall comply with the applicable fire protection rating and, where rated, shall be self-closing or automatic-closing by smoke detection, shall be installed in accordance with NFPA 80 and shall comply with Section 715.
6. The door assembly shall have an integrated emergency power supply.
7. The door assembly power supply shall be electrically supervised.
8. The door shall open to the minimum required width within 10 seconds after activation of the operating device.

1008.1.3.4 Access-controlled entrance doors. The exterior building entrance doors serving occupancies in Group A, B, E, M, R-1 or R-2 and entrance doors to tenant spaces in occupancies in Groups A, B, E, M, R-1 and R-2 are permitted to be equipped with an approved entrance and egress access control system which shall be installed in accordance with all of the following criteria:

1. A sensor shall be provided on the egress side arranged to detect an occupant approaching the doors. The doors shall be arranged to unlock by a signal from or loss of power to the sensor.
2. Loss of power to that part of the access control system which locks the doors shall automatically unlock the

doors.

3. The doors shall be arranged to unlock from a manual unlocking device located 40 inches to 48 inches (1016 mm to 1219 mm) vertically above the floor and within 5 feet (1524 mm) of the secured doors. Ready access shall be provided to the manual unlocking device and the device shall be clearly identified by a sign that reads "PUSH TO EXIT." When operated, the manual unlocking device shall result in direct interruption of power to the lock-independent of the access control system electronics-and the doors shall remain unlocked for a minimum of 30 seconds.

4. Activation of the building fire alarm system, if provided, shall automatically unlock the doors, and the doors shall remain unlocked until the fire alarm system has been reset.

5. Activation of the building automatic sprinkler or fire detection system, if provided, shall automatically unlock the doors. The doors shall remain unlocked until the fire alarm system has been reset.

6. Entrance doors in buildings with an occupancy in Group A, B, E or M shall not be secured from the egress side during periods that the building is open to the general public.

1008.1.3.5 Security grilles. In Groups B, M and S, horizontal sliding or vertical security grilles are permitted at the main entrance where the opening of such grilles are essential to the operation of the establishments. Such grilles shall be openable from the inside without the use of a key or special knowledge or effort during periods that the space is occupied. The grilles shall remain secured in the full-open position during the period of occupancy by the general public.

1008.1.4 Floor elevation. There shall be a floor or landing on each side of a door. Such floor or landing shall be at the same elevation on each side of the door. Landings shall be level except for exterior landings, which are permitted to have a slope not to exceed 0.25 unit vertical in 12 units horizontal (2-percent slope).

Exceptions:

1. Doors serving individual dwelling units in Groups R-2 and R-3 where the following apply:

1.1. A door is permitted to open at the top step of an interior flight of stairs within the dwelling unit, provided the door does not swing over the top step.

1.2. Screen doors and storm doors are permitted to swing over stairs or landings.

2. Landings serving exterior doors as provided for in Section 1003.5, Exception 1, and Section 1017.2, which are not on an accessible route may be constructed a single 7-inch (178 mm) step below the elevation at the door threshold.

3. In Group R-3 occupancies, the landing at an exterior doorway shall not be more than 73/4 inches (197 mm) below the top of the threshold, provided the door, other than an exterior storm or screen door, does not swing over the landing.

4. Variations in elevation due to differences in finish materials, but not more than 0.5 inch (12.7 mm).

5. Exterior spaces of Type B units where permitted pursuant to Section 1107.4, Exceptions 1 and 2.

1008.1.5 Landings at doors. Landings shall have a width not less than the width of the stairway or the door, whichever is the greater. Doors in the fully open position shall not reduce a required dimension by more than 7 inches (178 mm). When a landing serves an occupant load of 50 or more, doors in any position shall not reduce the landing to less than 75 percent of its required width. Landings shall have a length measured in the direction of travel of not less than 44 inches (1118 mm).

Exception: Landing length in the direction of travel in Group R-3 and Group U and within individual units of Group R-2 need not exceed 36 inches (914 mm).

1008.1.6Thresholds. Thresholds at doorways shall not exceed 0.75 inch (19.1 mm) in height for sliding doors serving dwelling units or 0.5 inch (12.7 mm) for other doors. Raised thresholds and floor level changes greater than 0.25 inch (6.4 mm) at doorways shall be beveled with a slope not greater than one unit vertical in two units horizontal (50-percent slope).

1008.1.7Door arrangement. Space between two doors in series shall be 48 inches (1219 mm) minimum plus the width of a door swinging into the space. Doors in series shall swing either in the same direction or away from the space between doors.

Exceptions:

1. The minimum distance between horizontal sliding power-operated doors in a series shall be 48 inches (1219 mm).
2. Storm and screen doors serving individual dwelling units in Groups R-2 and R-3 need not be spaced 48 inches (1219 mm) from the other door.
3. Doors within individual dwelling units in Group R-3.
4. Doors within individual dwelling units in Group R-2 that are not required to comply with Section 1107.
5. Exterior doors in vestibules in R-2 occupancies shall not be required to swing either in the same direction or away from the space between doors provided that the 48-inch (1219 mm) minimum space between door swings is maintained.

1008.1.8Door operations. Except as specifically permitted by this section egress doors shall be readily openable from the egress side without the use of a key or special knowledge or effort.

1008.1.8.1Hardware. Door handles, pulls, latches, locks and other operating devices on doors required to be accessible by Chapter 11 shall not require tight grasping, tight pinching or twisting of the wrist to operate.

1008.1.8.2Hardware height. Door handles, pulls, latches, locks and other operating devices shall be installed 34 inches (864 mm) minimum and 48 inches (1219 mm) maximum above the finished floor. Locks used only for security purposes and not used for normal operation are permitted at any height.

1008.1.8.3Locks and latches. Locks and latches shall be permitted to prevent operation of doors where any of the following exists:

1. Places of detention or restraint.
2. Places where extra safeguards are required such as banks, museums, and jewelry stores subject to the approval of the commissioner and provided the locks are equipped with electrical release devices for remote control in case of emergencies. However, museums shall be subject to further special review by the commissioner and Fire Commissioner.
3. Main entrances in occupancy Groups B, M, and S as permitted by Section 1008.1.3.5.
4. Doors from individual dwelling or sleeping units of Group R occupancies having an occupant load of 10 or less are permitted to be equipped with a night latch, dead bolt or security chain, provided such devices are openable from the inside without the use of a key or tool.

5. Stairways leading from the top floor to a roof may be provided with locked wire mesh gates openable by key in occupancy Group E. The use of a hook and eye closing device on the inside of all doors to roofs shall be permitted.

1008.1.8.4 Bolt locks. Manually operated flush bolts or surface bolts are not permitted.

Exceptions:

1. On doors not required for egress in individual dwelling units or sleeping units.
2. Where a pair of doors serves a storage or equipment room, manually operated edge- or surface-mounted bolts are permitted on the inactive leaf.

1008.1.8.5 Unlatching. The unlatching of any leaf shall not require more than one operation.

Exception: More than one operation is permitted for unlatching doors in the following locations:

1. Places of detention or restraint.
2. Where manually operated bolt locks are permitted by Section 1008.1.8.4.
3. Doors from individual dwelling units and guestrooms of Group R occupancies as permitted by Section 1008.1.8.3, Exception 4.

1008.1.8.6 Delayed egress locks. Subject to special review and approval by the commissioner, approved, listed, delayed egress locks may be permitted on doors serving spaces where extra safeguards are required in buildings that are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or an approved automatic smoke or heat detection system installed in accordance with Section 907, provided that the doors unlock in accordance with Items 1 through 6 below. A building occupant shall not be required to pass through more than one door equipped with a delayed egress lock before entering an exit.

1. The doors unlock upon actuation of the automatic sprinkler system or automatic fire detection system.
2. The doors unlock upon loss of power controlling the lock or lock mechanism.
3. The door locks shall have the capability of being unlocked by a signal from the fire command center.
4. The initiation of an irreversible process which will release the latch in not more than 15 seconds when a force of not more than 15 pounds (67 N) is applied for 1 second to the release device. Initiation of the irreversible process shall activate an audible signal in the vicinity of the door. Once the door lock has been released by the application of force to the releasing device, relocking shall be by manual means only.

Exception: Where approved, a delay of not more than 30 seconds is permitted.

5. A sign shall be provided on the door located above and within 12 inches (305 mm) of the release device reading: PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 SECONDS.

6. Emergency lighting shall be provided at the door.

Exceptions:

1. Delayed egress locks shall not be permitted in buildings or spaces in Group A, E, F and H occupancies. However, in museums, delayed egress locks may be installed on exit doors subject to special review by the commissioner and Fire Commissioner.

2. Places of detention or restraints in Group I-3 are permitted to install delayed egress locks without the special review by the commissioner, provided that the installation complies with all of the other requirements of this section.

1008.1.8.7 Stairway doors. Interior stairway means of egress doors shall be openable from both sides without the use of a key or special knowledge or effort.

Exceptions:

1. Stairway discharge doors shall be openable from the egress side and shall only be locked from the opposite side.

2. This section shall not apply to doors arranged in accordance with Section 403.12.

3. In stairways serving not more than four stories, doors are permitted to be locked from the stair side, provided they are openable from the egress side.

1008.1.9 Panic and fire exit hardware. Each door in a means of egress from an occupancy of Group A or E having an occupant load of 75 or more and any occupancy of Group H-1, H-2, H-3 or H-5 shall be provided with panic hardware or fire exit hardware. Where panic and fire exit hardware is installed, it shall comply with the following:

1. The actuating portion of the releasing device shall extend at least one-half of the door leaf width.

2. The maximum unlatching force shall not exceed 15 pounds (67 N).

3. If balanced doors are used and panic hardware is required, the panic hardware shall be the push-pad type and the pad shall not extend more than one-half the width of the door measured from the latch side.

1008.2 Gates. Gates serving the means of egress system shall comply with the requirements of this section. Gates used as a component in a means of egress shall conform to the applicable requirements for doors.

Exception: Horizontal sliding or swinging gates exceeding the 4-foot (1219 mm) maximum leaf width limitation are permitted in fences and walls surrounding a stadium.

1008.2.1 Stadiums. Panic hardware is not required on gates surrounding stadiums where such gates are under constant immediate supervision while the public is present, and further provided that safe dispersal areas based on 3 square feet (0.28 m²) per occupant are located between the fence and enclosed space. Such required safe dispersal areas shall not be located less than 50 feet (15 240 mm) from the enclosed space. See Section 1023.6 for means of egress from safe dispersal areas.

1008.3 Turnstiles. Turnstiles or similar devices that restrict travel to one direction shall not be placed so as to obstruct any required means of egress. Where portable turnstiles are installed for ticketing purposes, such turnstiles shall be moved from the egress path for proper exiting. Turnstiles that turn freely in the direction of exit travel may be used in any occupancy where revolving doors are permitted. Each turnstile or similar device shall be credited with no more than a 50-person capacity where all of the following provisions are met:

1. Each device shall turn free in the direction of egress travel when primary power is lost, and upon the manual release by an employee in the area.

2. Such devices are not given credit for more than 50 percent of the required egress capacity.

3. Each device is not more than 39 inches (991 mm) high.

4. Each device has at least 16.5 inches (419 mm) clear width at and below a height of 39 inches (991 mm) and at least 22 inches (559 mm) clear width at heights above 39 inches (991 mm).

5. Where located as part of an accessible route, turnstiles shall have at least 36 inches (914 mm) clear at and below a height of 34 inches (864 mm), at least 32 inches (813 mm) clear width between 34 inches (864 mm) and 80 inches (2032mm) and shall consist of a mechanism other than a revolving device.

Exception: Where serving an occupant load greater than 300, turnstiles shall not be credited for any of the required egress capacity.

1008.3.1 High turnstile. Turnstiles more than 39 inches (991 mm) high shall meet the requirements for revolving doors.

1008.3.2 Additional door. Where serving an occupant load greater than 300, each turnstile that is not portable shall have a side-hinged swinging door which conforms to Section 1008.1 within 50 feet (15 240 mm).

1008.4 Security requirements for doors and windows. The provisions of Section 1008.4.1 through 1008.4.4 shall apply to Group R-2 occupancies.

1008.4.1 Entrance doors. Building entrance doors and other exterior exit doors shall be equipped with heavy duty lock sets with auxiliary latch bolts to prevent the latch from being manipulated by means other than a key. Latch sets shall have stop-work in the inside cylinder controlled by a master key only. Outside cylinders of main entrance door locks shall be operated by the tenants' key, which shall not be keyed to also open the tenants' apartment door. A light or lights shall be provided at or near the outside of the front entranceway of the building providing not less than 5 foot candles (53.82 lux) intensity measured at the floor level for the full width of the entranceway.

1008.4.2 Doors to dwelling units. Doors to dwelling units shall be equipped with a heavy duty latch set and a heavy duty dead bolt operable by a key from the outside and a thumb-turn from the inside. Those doors shall also be equipped with a chain guard so as to permit partial opening of the door. Dwelling unit entrance doors shall also be equipped with a viewing device located so as to enable a person on the inside of the entrance door to view a person immediately outside.

1008.4.3 Windows. All openable windows shall be equipped with sash locks designed to be openable from the inside only. Grilles lockable from the inside only may be placed on the inside or outside of windows that are accessible from grade but that do not serve to provide access to exits.

1008.4.4 Intercommunication system. Buildings containing eight or more dwelling units shall be provided with an intercommunication system located at the door giving access to the main entrance lobby, consisting of a device or devices for voice communication between the occupant of each dwelling unit and a person outside the door to the main entrance lobby, and permitting such dwelling unit occupant to release the locking mechanism of said door from the dwelling unit. In buildings provided with a full-time lobby attendant, the intercommunication system may be between each dwelling unit and the attendant's station.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 10: MEANS OF EGRESS
SECTION BC 1009: STAIRWAYS AND HANDRAILS

NYC Administrative Code § 28-BC 1009

1009.1 Stairway width.

The width of stairways shall be determined as specified in Section 1005.1, but such width shall not be less than 44 inches (1118 mm). See Section 1007.3 for accessible means of egress stairways.

Exceptions:

1. A width of not less than 36 inches (914 mm) shall be permitted in:

1.1. A stairway that serves an occupant load of 50 or less cumulative for all stories; or

1.2. A stairway that provides egress to the exit discharge solely for the use of Group R-2 occupancies, provided the building it serves is 125 feet (38 100 mm) or less in height, and provided such a stairway serves not more than 30 occupants per floor.

2. Spiral stairways as provided for in Section 1009.9.

3. Aisle stairs complying with Section 1024.

4. Where a stairway lift is installed on stairways serving occupancies in Group R-3, or within dwelling units in occupancies in Group R-2 a clear passage width not less than 20 inches (508 mm) shall be provided. If the seat and platform can be folded when not in use, the distance shall be measured from the folded position.

1009.2 Headroom. Stairways shall have a minimum headroom clearance of 84 inches (2134 mm) measured vertically from a line connecting the edge of the nosings. Such headroom shall be continuous above the stairway to the point where the line intersects the landing below, one tread depth beyond the bottom riser. The minimum clearance shall be maintained the full width of the stairway and landing. Projections into the required width shall not be limited above the minimum headroom height.

Exceptions:

1. In Group R-2 and R-3 occupancies stairways shall have a minimum headroom clearance of 80 inches (2032 mm).

2. Spiral stairways complying with Section 1009.9 are permitted a 78-inch (1981 mm) headroom clearance.

1009.3 Stair treads and risers. Stair riser heights shall be 7 inches (178 mm) maximum and 4 inches (102 mm) minimum. Stair tread depths shall be 11 inches (279 mm) minimum. The riser height shall be measured vertically between the leading edges of adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 0.375 inch (9.5 mm). The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at right angle to the tread's leading edge. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 0.375 inch (9.5 mm). Winder treads shall have a minimum tread depth of 11 inches (279 mm) measured at a right angle to the tread's leading edge at a point 12 inches (305 mm) from the side where the treads are narrower and a minimum tread depth of 10 inches (254 mm). The greatest winder tread depth at the 12-inch (305 mm) walk line within any flight of stairs shall not exceed the smallest by more than 0.375 inch (9.5 mm).

Exceptions:

1. Circular stairways in accordance with Section 1009.7.

2. Winders in accordance with Section 1009.8.

3. Spiral stairways in accordance with Section 1009.9.

4. Aisle stairs in assembly seating areas where the stair pitch or slope is set, for sightline reasons, by the slope of the adjacent seating area in accordance with Section 1024.11.2.

5. In Group R-2 occupancies:

5.1. Sum of treads and risers. The sum of two risers plus one tread exclusive of nosing shall be not less than 24 inches (610 mm) nor more than 25.5 inches (648 mm).

5.2. Dimensions of treads and risers. The maximum riser height shall be 7.75 inches (197 mm) and the minimum tread depth shall be 9.5 inches (241 mm) plus nosing. Treads may be undercut a distance equal to the nosing. A nosing not less than 0.75 inch (19 mm) but not more than 1.25 inches (32 mm) shall be provided on stairways with solid risers where the tread depth is less than 11 inches (279 mm).

5.3. Tolerances. The greatest riser height, tread depth, and nosing projection, within any flight of stairs shall not exceed the smallest by more than 0.375 (9.5 mm).

6. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies not subject to accessibility provisions in Section 1107.2.5, Exception Item 2; and in Group U occupancies that are accessory to Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies:

6.1. Sum of treads and risers. The sum of two risers plus one tread exclusive of nosing shall be not less than 24 inches (610 mm) nor more than 25.5 inches (648 mm).

6.2. Dimensions of treads and risers. The maximum riser height shall be 8.25 inches (210 mm) and the minimum tread depth shall be 9 inches (229 mm) plus nosing. Treads may be undercut a distance equal to the nosing. A 1.25-inch (32 mm) nosing shall be provided on stairways with solid risers where the tread depth is less than 11 inches (279 mm).

6.3. Tolerances. The greatest riser height, tread depth, and nosing projection, within any flight of stairs shall not exceed the smallest by more than 0.375 (9.5 mm).

7. In Group R-3 occupancies; and within dwelling units in Group R-2 occupancies; winders shall have a minimum tread depth of 10 inches (254 mm) measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge, when measured at a point 12 inches (305 mm) from the side where the treads are narrower. Winder treads shall have a minimum tread depth of 6 inches (152 mm) at any point. Within any flight of stairs, the greatest winder tread depth at the 12-inch (305 mm) walk line shall not exceed the smallest by more than 0.375 inch (9.5 mm).

1009.3.1 Dimensional uniformity. Stair treads and risers shall be of uniform size and shape. The tolerance between the largest and smallest riser or between the largest and smallest tread shall not exceed 0.375 inch (9.5 mm) in any flight of stairs.

Exceptions:

1. Nonuniform riser dimensions of aisle stairs complying with Section 1024.11.2.
2. Consistently shaped winders, complying with Section 1009.8, differing from rectangular treads in the same stairway flight.
3. Where the bottom or top riser adjoins a sloping public way, walkway or driveway having an established grade and serving as a landing, the bottom or top riser is permitted to be reduced along the slope to less than 4 inches (102 mm) in height with the variation in height of the bottom or top riser not to exceed one unit vertical in 12 units horizontal (8-percent slope) of stairway width. The nosings or leading edges of treads at such nonuniform height risers shall have a distinctive marking stripe, different from any other nosing marking provided on the stair flight. The distinctive marking stripe shall be visible in descent of the stair and shall have a slip-resistant surface. Marking stripes shall have a width of at least 1 inch (25 mm) but not more than 2 inches (51 mm).

1009.3.2 Profile. The radius of curvature at the leading edge of the tread shall be not greater than 0.5 inch (12.7 mm). Beveling of nosings shall not exceed 0.5 inch (12.7 mm). Risers shall be solid and vertical or sloped from the underside of the leading edge of the tread above at an angle not more than 30 degrees (0.52 rad) from the vertical. The leading edge (nosings) of treads shall project not more than 1.25 inches (32 mm) beyond the tread below and all projections of the leading edges shall be of uniform size, including the leading edge of the floor at the top of a flight. Perforated risers with openings not exceeding 0.25 inch (6.4 mm) shall be considered solid risers.

Exceptions:

1. Solid risers are not required for stairways that are not serving as means of egress or that are not required to comply with Section 1007.3, provided that the opening between treads does not permit the passage of a sphere with a diameter of 4 inches (102 mm).
2. Solid risers are not required for occupancies in Group I-3.
3. In Group R-3 occupancies, the following shall apply:
 - 3.1. The radius of curvature at the leading edge of the tread shall be no greater than 0.5625 inch (14.3 mm).
 - 3.2. Solid risers are not required provided that the opening between treads does not permit the passage of a sphere with a diameter of 4 inches (102 mm). However, the opening between treads is not limited on stairways with a total rise of 30 inches (762 mm) or less.

1009.4 Stairway landings. There shall be a floor or landing at the top and bottom of each stairway. The width of

landings shall not be less than the width of stairways they serve. Every landing shall have a minimum dimension measured in the direction of travel equal to the width of the stairway. Such dimension need not exceed 48 inches (1219 mm) where the stairway has a straight run.

Exceptions:

1. Aisle stairs complying with Section 1024.

2. Doors opening onto a landing shall not reduce the landing to less than 75 percent of the required width. When fully open, the door shall not project more than 7 inches (178 mm) into a landing.

1009.5 Stairway construction. All stairways shall be built of materials consistent with the type permitted for the type of construction of the building, except that wood handrails shall be permitted for all types of construction.

1009.5.1 Stairway walking surface. The walking surface of treads and landings of a stairway shall not be sloped steeper than one unit vertical in 48 units horizontal (2-percent slope) in any direction. Stairway treads and landings shall have a solid surface. Finish floor surfaces shall be securely attached.

Exception: In Group F, H and S occupancies, other than areas of parking structures accessible to the public, openings in treads and landings shall not be prohibited provided a sphere with a diameter of 11/8 inches (29 mm) cannot pass through the opening.

1009.5.2 Outdoor conditions. Outdoor stairways and outdoor approaches to stairways shall be designed so that water will not accumulate on walking surfaces. In other than occupancies in Group R-3, and occupancies in Group U that are accessory to an occupancy in Group R-3, treads, platforms and landings that are part of exterior stairways in climates subject to snow or ice shall be protected to prevent the accumulation of same.

1009.6 Vertical rise. A flight of stairs shall not have a vertical rise greater than 12 feet (3658 mm) between floor levels or landings, except that the vertical rise shall not be greater than 8 feet (2438 mm) in Group A and I occupancies.

Exception: Aisle stairs comply with Section 1024.

1009.7 Circular stairways. Circular stairways shall have a minimum tread depth and a maximum riser height in accordance with Section 1009.3 and the smaller radius shall not be less than twice the width of the stairway. The minimum tread depth measured 12 inches (305 mm) from the narrower end of the tread shall not be less than 11 inches (279 mm). The minimum tread depth at the narrow end shall not be less than 10 inches (254 mm).

Exception: For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2.

1009.8 Winders. Winders are not permitted in means of egress stairways except in R-3 occupancies or within dwelling units in Group R-2 occupancies.

1009.9 Spiral stairways. Spiral stairways are permitted to be used as a component in the means of egress only within dwelling units or from a space not more than 250 square feet (23 m²) in area and serving not more than five occupants, or from galleries, catwalks and gridirons in accordance with Section 1014.6. A spiral stairway shall have a 7.5-inch (191 mm) minimum clear tread depth at a point 12 inches (305 mm) from the narrow edge. The risers shall be sufficient to provide a headroom of 78 inches (1981 mm) minimum, but riser height shall not be more than 9.5 inches (241 mm). The minimum stairway width shall be 26 inches (660 mm).

1009.10 Alternating tread devices. Alternating tread devices are limited to an element of a means of egress in buildings of Groups F, H and S from a mezzanine not more than 250 square feet (23 m²) in area and which serves not more than five occupants; in buildings of Group I-3 from a guard tower, observation station or control room not more than 250 square feet (23 m²) in area and for access to unoccupied roofs.

1009.10.1 Handrails of alternating tread devices. Handrails shall be provided on both sides of alternating tread devices and shall conform to Section 1009.11.

1009.10.2 Treads of alternating tread devices. Alternating tread devices shall have a minimum projected tread of 5 inches (127 mm), a minimum tread depth of 8.5 inches (216 mm), a minimum tread width of 7 inches (178 mm) and a maximum riser height of 9.5 inches (241 mm). The initial tread of the device shall begin at the same elevation as the platform, landing or floor surface.

Exception: Alternating tread devices used as an element of a means of egress in buildings from a mezzanine area not more than 250 square feet (23 m²) in an area which serves not more than five occupants shall have a minimum projected tread of 8.5 inches (216 mm) with a minimum tread depth of 10.5 inches (267 mm). The rise to the next alternating tread surface should not be more than 8 inches (203 mm).

1009.11 Handrails. Stairways shall have handrails on each side. Handrails shall be adequate in strength and attachment in accordance with Section 1607.7. Handrails for ramps, where required by Section 1010.8, shall comply with this section.

Exceptions:

1. Aisle stairs complying with Section 1024 provided with a center handrail need not have additional handrails.
2. Stairways within dwelling units, spiral stairways and aisle stairs serving seating only on one side are permitted to have a handrail on one side only.
3. Decks, patios and walkways that have a single change in elevation where the landing depth on each side of the change of elevation is greater than what is required for a landing do not require handrails.
4. In Group R-3 occupancies, a change in elevation consisting of a single riser at an entrance or egress door does not require handrails.
5. Changes in room elevations of only one riser within dwelling units and sleeping units in Group R-2 and R-3 occupancies do not require handrails.
6. One handrail shall be allowed in enclosed exit stairs less than 44 inches (1118 mm) wide that do not serve as an accessible means of egress.

1009.11.1 Height. Handrail height, measured above stair tread nosings, or finish surface of ramp slope, shall be uniform, not less than 34 inches (864 mm) and not more than 38 inches (965 mm).

1009.11.2 Intermediate handrails. Intermediate handrails are required so that all portions of the stairway width required for egress capacity are within 30 inches (762 mm) of a handrail. On monumental stairs, handrails shall be located along the most direct path of egress travel.

1009.11.3 Handrail graspability. Handrails with a circular cross section shall have an outside diameter of at least 1.25 inches (32 mm) and not greater than 2 inches (51 mm) or shall provide equivalent graspability. If the handrail is not circular, it shall have a perimeter dimension of at least 4 inches (102 mm) and not greater than 6.25 inches (160 mm) with a maximum cross-section dimension of 2.25 inches (57 mm). Edges shall have a minimum radius of 0.01 inch (0.25 mm).

1009.11.4 Continuity. Handrail-gripping surfaces shall be continuous, without interruption by newel posts or other obstructions.

Exceptions:

1. Handrails within dwelling units are permitted to be interrupted by a newel post at a stair landing.
2. Within a dwelling unit, the use of a volute, turnout or starting easing is allowed on the lowest tread.

3. Handrail brackets or balusters attached to the bottom surface of the handrail that do not project horizontally beyond the sides of the handrail within 1.5 inches (38 mm) of the bottom of the handrail shall not be considered to be obstructions and provided further that for each 0.5 inch (13 mm) of additional handrail perimeter dimension above 4 inches (102 mm), the vertical clearance dimension of 1.5 inches (38 mm) shall be permitted to be reduced by 0.125 inch (3 mm).

1009.11.5 Handrail extensions. Handrails shall return to a wall, guard or the walking surface or shall be continuous to the handrail of an adjacent stair flight. Where handrails are not continuous between flights, the handrails shall extend horizontally at least 12 inches (305 mm) beyond the top riser and continue to slope for the depth of one tread beyond the bottom riser.

Exceptions:

1. Handrails within a dwelling unit that is not required to be an Accessible unit, or Type B unit in Group R-2 occupancies, may extend only from the top riser to the bottom riser.
2. Aisle handrails in Group A occupancies in accordance with Section 1024.13.

1009.11.6 Clearance. Clear space between a handrail and a wall or other surface shall be a minimum of 1.5 inches (38 mm). A handrail and a wall or other surface adjacent to the handrail shall be free of any sharp or abrasive elements.

1009.11.7 Stairway projections. Projections into the required width at each handrail shall not exceed 4.5 inches (114 mm).

1009.12 Stairway to roof and roof access. In buildings four or more stories or more than 40 feet (12 192 mm) in height above grade, one stairway shall extend to the roof surface through a stairway bulkhead complying with Section 1509.2, unless the roof has a slope steeper than 20 degrees. Access to setback roof areas may be through a door or window opening to the roof. Stairs terminating at the level of a setback shall provide access to the setback roof areas, except where the setback is less than 4 feet (1219 mm) in width and 10 feet (3048 mm) in length, measured from the inside of the parapet wall.

1009.12.1 Occupancy Groups I-1, R-1 and R-2. In buildings in occupancy Groups I-1, R-1 and R-2 two stories or more in height, with roofs having a slope of 15 degrees or less, all interior stairs, except those terminating at the level of a setback roof, shall extend to the roof surface.

Exceptions:

1. In buildings in occupancy Groups R-1 and R-2 two stories in height and in occupancy Group R-2 three stories in height with not more than one dwelling unit per story, access to the roof shall be permitted to be a non-combustible roof hatch or trap door not less than 21 inches (533 mm) in width and 28 inches (711 mm) in length. Such hatches shall be located within the stair enclosure and be provided with a stationary, noncombustible access ladder or alternating tread device.
2. In buildings in occupancy group R-2 complying with Item 4 of Section 1018.2, roof access shall be governed by Item 4.6 of such section.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
CHAPTER 1: ADMINISTRATION
SECTION BC 101: GENERAL

NYC Administrative Code § 28-BC 101

101.1 Title.

This code shall be known and may be cited as the "New York City Building Code," "NYCBC" or "BC". All section numbers in this code shall be deemed to be preceded by the designation "BC".

101.2 Scope. The provisions of this code shall apply to the construction, alteration, movement, addition, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.

101.3 Intent. Refer to Chapter 1 of Title 28 of the Administrative Code.

101.4 Referenced codes. The other codes listed in Sections 101.4.1 through 101.4.7 and referenced elsewhere in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference.

101.4.1 Electrical. The provisions of the New York City Electrical Code shall apply to the installation of electrical systems, including alterations, repairs, replacement, equipment, appliances, fixtures, fittings and appurtenances thereto.

101.4.2 Gas. The provisions of the New York City Fuel Gas Code shall apply to the installation of gas piping, gas appliances and related accessories as covered in this code. These requirements apply to gas piping systems extending to the inlet connections of appliances and the installation and operation of residential and commercial gas appliances and related accessories.

101.4.3 Mechanical. The provisions of the New York City Mechanical Code shall apply to the installation, alterations, repairs and replacement of mechanical systems, including equipment, appliances, fixtures, fittings and/or appurtenances, including ventilating, heating, cooling, air-conditioning and refrigeration systems, incinerators and other energy-related systems.

101.4.4 Plumbing. The provisions of the New York City Plumbing Code shall apply to the installation, alteration,

repair and replacement of plumbing systems, including equipment, appliances, fixtures, fittings and appurtenances, and where connected to a water or sewage system and all aspects of a medical gas system.

101.4.5 Fire prevention. The provisions of the New York City Fire Code shall apply to:

1. The manufacturing, storage, handling, use, sale and transportation of hazardous materials, except for the installation of storage tanks and auxiliary storage tanks for oil-burning equipment;

2. The design, installation, operation and maintenance of devices, equipment and systems designed to prevent, mitigate, control and extinguish fire, explosions or other life safety hazards;

3. Emergency preparedness and planning, including the orderly evacuation of occupants of a building, structure or premises in the event of fire, explosion, biological, chemical or hazardous material incident or release, natural disaster or other emergency, or the threat thereof;

4. The prevention, mitigation and control of hazards to firefighters and emergency responders during emergency operations; and

5. The operation and maintenance of any manual, automatic or other fire alarm or fire extinguishing device, equipment or system.

101.4.6 Energy. The provisions of the Energy Conservation Construction Code of New York State shall apply to all matters governing the design and construction of buildings for energy efficiency.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

101.4.5 amended L.L. 26/2008 § 6, eff. July 1, 2008.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 10: MEANS OF EGRESS
SECTION BC 1010: RAMPS

NYC Administrative Code § 28-BC 1010

1010.1 Scope.

The provisions of this section shall apply to ramps used as a component of a means of egress.

Exceptions:

1. Other than ramps that are part of the accessible routes providing access in accordance with Sections 1108.2.2 through 1108.2.4.1, ramped aisles within assembly rooms or spaces shall conform with the provisions in Section 1024.11.
2. Curb ramps shall comply with ICC A117.1.
3. Vehicle ramps in parking garages for pedestrian exit access shall not be required to comply with Sections 1010.3 through 1010.9 when they are not an accessible route serving accessible parking spaces, other required accessible elements or part of an accessible means of egress.

1010.2 Slope. Ramps used as part of a means of egress or part of an accessible route shall have a running slope not steeper than one unit vertical in 12 units horizontal (8-percent slope). The slope of other pedestrian ramps shall not be steeper than one unit vertical in eight units horizontal (12.5-percent slope).

Exceptions:

1. Aisle ramp slope in occupancies of Group A shall comply with Section 1024.11.
2. In garages three stories or less in height and serving not more than one level below grade, ramps with a maximum slope of one unit vertical in seven units horizontal (14-percent slope) may serve as part of a non accessible means of egress.

1010.3Cross slope.The slope measured perpendicular to the direction of travel of a ramp shall not be steeper than one unit vertical in 48 units horizontal (2-percent slope).

1010.4Vertical rise.The rise for any ramp run shall be 30 inches (762 mm) maximum.

1010.5Minimum dimensions.The minimum dimensions of means of egress ramps shall comply with Sections 1010.5.1 through 1010.5.3.

1010.5.1Width.The minimum width of a means of egress ramp shall not be less than that required for corridors by Section 1016.2. The clear width of a ramp and the clear width between handrails, if provided, shall be 36 inches (914 mm) minimum.

1010.5.2Headroom.The minimum headroom in all parts of the means of egress ramp shall not be less than 84 inches (2134 mm).

1010.5.3Restrictions.Means of egress ramps shall not reduce the width in the direction of egress travel. Projections into the required ramp and landing width are prohibited. Doors opening onto landing shall not reduce the clear width to less than 42 inches (1067 mm). No door shall swing over the sloping portion of a ramp.

1010.6Landings.Ramps shall have landings at the bottom and top of each ramp, points of turning, entrance, exits and at doors. Landings shall comply with Sections 1010.6.1 through 1010.6.5.

1010.6.1Slope.Landings shall have a slope not steeper than one unit vertical in 48 units horizontal (2-percent slope) in any direction. Changes in level are not permitted.

1010.6.2Width.The landing shall be at least as wide as the widest ramp run adjoining the landing.

1010.6.3Length.The landing length shall be 60 inches (1525 mm) minimum.

Exception: Landings in individual dwelling units, that are not Accessible units, or that are not Type B units in Group R-2 occupancies, are permitted to be 36 inches (914mm) minimum.

1010.6.4Change in direction.Where changes in direction of travel occur at landings provided between ramp runs, the landing shall be 60 inches by 60 inches (1524 mm by 1524 mm) minimum.

Exception: Landings in individual dwelling units, that are not Accessible units, or that are not Type B units in Group R-2 occupancies, are permitted to be 36 inches by 36 inches (914 mm by 914 mm) minimum.

1010.6.5Doorways.Where doorways are located adjacent to a ramp landing, maneuvering clearances required by ICC A117.1 are permitted to overlap the required landing area.

1010.7Ramp construction.All ramps shall be built of materials consistent with the types permitted for the type of construction of the building; except that wood handrails shall be permitted for all types of construction. Ramps used as an exit shall conform to the applicable requirements of Sections 1019.1 and 1019.1.1 through 1019.1.3 for vertical exit enclosures.

1010.7.1Ramp surface.The surface of ramps shall be of slip-resistant materials that are securely attached.

1010.7.2Outdoor conditions.Outdoor ramps and outdoor approaches to ramps shall be designed so that water will not accumulate on walking surfaces. In other than occupancies in Group R-3, and occupancies in Group U that are accessory to an occupancy in Group R-3, surfaces and landings which are part of exterior ramps in climates subject to snow or ice shall be designed to minimize the accumulation of same.

1010.8 Handrails. Ramps with a rise greater than 6 inches (152 mm) shall have handrails on both sides complying with Section 009.11.

1010.9 Edge protection. Edge protection complying with Section 1010.9.1 shall be provided on each side of ramp runs and at each side of ramp landings not adjoining another ramp run or stairway.

Exceptions:

1. Edge protection is not required on ramps not required to have handrails, provided they have flared sides that comply with the ICC A117.1 curb ramp provisions.
2. Edge protection is not required on the sides of ramp landings having a vertical dropoff of not more than 0.5 inch (13 mm) within 10 inches (254 mm) horizontally of the required landing area.
3. Edge protection is not required where the floor or ground surface of the ramp run or landing extends 12 inches (305 mm) minimum beyond the inside face of handrail complying with Section 1012.

1010.9.1 Curb, rail, wall or barrier. Edge protection shall be provided as follows:

1. Solid barriers. Solid barriers shall extend at least 4 inches (102 mm) from the floor or ground surface.
2. Other types of barriers. Other types of barriers shall prevent the passage of a 4-inch-diameter (102 mm) sphere, where any portion of the sphere is within 4 inches (102 mm) of the floor or ground surface.

1010.10 Guards. Guards shall be provided where required by Section 1012 and shall be constructed in accordance with Section 1012. Such guards may be used to satisfy the requirement of edge protection of Section 1010.9.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 10: MEANS OF EGRESS
SECTION BC 1011: EXIT SIGNS

NYC Administrative Code § 28-BC 1011

1011.1 Where required.

Exits and exit access doors shall be marked by an approved exit sign readily visible from any direction of egress travel. Access to exits shall be marked by readily visible exit signs in cases where the exit or the path of egress travel is not immediately visible to the occupants. Exit sign placement shall be such that no point in an exit access corridor is more than 100 feet (30 480 mm) or the listed viewing distance for the sign, whichever is less, from the nearest visible exit sign.

Exceptions:

1. Exit signs are not required in rooms or areas which require only one exit or exit access.
2. Exit signs are not required in occupancies in Group U and individual sleeping units or dwelling units in Group I-1 or R. However, in a congregate living unit where the occupancy of such unit exceeds four people, exit signs shall be provided.
3. Exit signs are not required in sleeping areas in occupancies in Group I-3.
4. In occupancies in Groups A-4 and A-5, exit signs are not required on the seating side of vomitories or openings into seating areas where exit signs provided in the concourse are readily apparent from the vomitories. Such vomitories shall be provided with emergency egress lighting to identify each vomitory or opening within the seating area.

1011.1.1 Signs within exits. In high-rise buildings subject to Section 403, exit signs shall be placed within exits at horizontal extensions to indicate the transition from vertical to horizontal direction and at turns along the horizontal path.

1011.2 Illumination. Exit signs shall be internally or externally illuminated.

Exception: Tactile signs required by Section 1011.3 need not be provided with illumination.

1011.3 Tactile exit signs. A tactile sign stating EXIT and complying with ICC A117.1 shall be provided adjacent to each door to an egress stairway, an exit passageway and the exit discharge.

1011.4 Internally illuminated exit signs. Internally illuminated exit signs shall be listed and labeled and shall be installed in accordance with the manufacturer's instructions and Section 2702. Exit signs shall be illuminated at all times.

1011.4.1 Color. The letters of exit signs shall be red.

1011.4.2 Graphics. The height of letters shall be not less than 6 inches (152 mm), except that in Group A and Group R-1 occupancies letters shall be not less than 8 inches (203 mm) high. Graphics shall have letter widths, strokes and spacing in proportion to their height.

1011.5 Externally illuminated exit signs. Externally illuminated exit signs shall comply with Sections 1011.5.1 through 1011.5.3.

1011.5.1 Graphics. Every exit sign and directional exit sign shall have plainly legible letters not less than 6 inches (152 mm) high with the principal strokes of the letters not less than 0.75 inch (19.1 mm) wide. The word "EXIT" shall have letters having a width not less than 2 inches (51 mm) wide except the letter "I," and the minimum spacing between letters shall not be less than 0.375 inch (9.5 mm). In Group A and Group R-1 occupancies letters shall be not less than 8 inches (203 mm) high. Signs larger than the minimum established in this section shall have letter widths, strokes and spacing in proportion to their height.

The word "EXIT" shall be in high contrast with the background and shall be clearly discernible when the exit sign illumination means is or is not energized. The letters of exit signs shall be red. If an arrow is provided as part of the exit sign, the construction shall be such that the arrow direction cannot be readily changed.

1011.5.2 Exit sign illumination. The face of an exit sign illuminated from an external source shall have an intensity of not less than 25 foot-candles (269.1 lux).

1011.5.3 Power source. Exit signs shall be illuminated at all times. To ensure continued illumination for a duration of not less than 90 minutes in case of primary power loss, the sign illumination means shall be connected to an emergency power system provided from storage batteries, unit equipment or an on-site generator. The installation of the emergency power system shall be in accordance with Section 2702.



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SECTION BC 1012: GUARDS

NYC Administrative Code § 28-BC 1012

1012.1 Where required.

Guards shall be located along open-sided walking surfaces, mezzanines, industrial equipment platforms, stairways, ramps and landings which are located more than 30 inches (762 mm) above the floor or grade below. Guards shall be adequate in strength and attachment in accordance with Section 1607.7. Guards shall also be located along glazed sides of stairways, ramps and landings that are located more than 30 inches (762 mm) above the floor or grade below where the glazing provided does not meet the strength and attachment requirements in Section 1607.7.

Exception: Guards are not required for the following locations:

1. On the loading side of loading docks or piers.
2. On the audience side of stages and raised platforms, including steps leading up to the stage and raised platforms.
3. On raised stage and platform floor areas such as runways, ramps and side stages used for entertainment or presentations.
4. At vertical openings in the performance area of stages and platforms.
5. At elevated walking surfaces appurtenant to stages and platforms for access to and utilization of special lighting or equipment.
6. Along vehicle service pits not accessible to the public.
7. In assembly seating where guards in accordance with Section 1024.14 are permitted and provided.

1012.2 Height. Guards shall form a protective barrier not less than 42 inches (1067 mm) high, measured vertically above the leading edge of the tread, adjacent walking surface or adjacent seatboard.

Exceptions:

1. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, guards whose top rail also serves as a handrail shall have a height not less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from the leading edge of the stair tread nosing.

2. The height in assembly seating areas shall be in accordance with Section 1024.14.

1012.3 Opening limitations. Open guards shall have balusters or ornamental patterns such that a 4-inch-diameter (102 mm) sphere cannot pass through any opening up to a height of 34 inches (864 mm). From a height of 34 inches (864 mm) to 42 inches (1067 mm) above the adjacent walking surfaces, a sphere 8 inches (203 mm) in diameter shall not pass.

Exceptions:

1. The triangular openings formed by the riser, tread and bottom rail at the open side of a stairway shall be of a maximum size such that a sphere of 6 inches (152 mm) in diameter cannot pass through the opening.

2. At elevated walking surfaces for access to and use of electrical, mechanical or plumbing systems or equipment, guards shall have balusters or be of solid materials such that a sphere with a diameter of 21 inches (533 mm) cannot pass through any opening.

3. In areas which are not open to the public within occupancies in Group I-3, F, H or S, balusters, horizontal intermediate rails or other construction shall not permit a sphere with a diameter of 21 inches (533 mm) to pass through any opening.

4. In assembly seating areas, guards at the end of aisles where they terminate at a fascia of boxes, balconies and galleries shall have balusters or ornamental patterns such that a 4-inch-diameter (102 mm) sphere cannot pass through any opening up to a height of 26 inches (660 mm). From a height of 26 inches (660 mm) to 42 inches (1067 mm) above the adjacent walking surfaces, a sphere 8 inches (203 mm) in diameter shall not pass.

1012.4 Screen porches. Porches and decks which are enclosed with insect screening shall be provided with guards where the walking surface is located more than 30 inches (762 mm) above the floor or grade below.

1012.5 Mechanical equipment. Guards shall be provided where appliances, equipment, fans or other components that require service are located within 10 feet (3048 mm) of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches (762 mm) above the floor, roof or grade below. The guard shall be constructed so as to prevent the passage of a 21-inch-diameter (533 mm) sphere.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 10: MEANS OF EGRESS
SECTION BC 1013: EXIT ACCESS

NYC Administrative Code § 28-BC 1013

1013.1 General.

The exit access arrangement shall comply with Sections 1013 through 1016 and the applicable provisions of Sections 1003 through 1012.

1013.2 Egress through intervening spaces. Egress from a room or space shall not pass through adjoining or intervening rooms or areas, except where such adjoining rooms or areas are accessory to the area served; are not a high-hazard occupancy and provide a discernible path of egress travel to an exit. Egress shall not pass through kitchens, storage rooms, closets or spaces used for similar purposes. An exit access shall not pass through a room that can be locked to prevent egress. Means of egress from dwelling units or sleeping areas shall not lead through other sleeping areas, toilet rooms or bathrooms.

Exceptions:

1. Means of egress are not prohibited through a kitchen area serving adjoining rooms constituting part of the same dwelling unit or sleeping unit.

2. Means of egress are not prohibited through adjoining or intervening rooms or spaces in a Group H occupancy when the adjoining or intervening rooms or spaces are the same or a lesser hazard occupancy group.

1013.2.1 Multiple tenants. Where more than one tenant occupies any one floor of a building or structure, each tenant space, dwelling unit and sleeping unit shall be provided with access to the required exits without passing through adjacent tenant spaces, dwelling units and sleeping units.

1013.2.2 Group I-2. Patient sleeping rooms or suites in Group I-2 occupancies shall have an exit access door leading directly to an exit access corridor.

Exceptions:

1. Rooms with exit doors opening directly to the outside at ground level.
2. Patient sleeping rooms are permitted to have one intervening room if the intervening room is not used as an exit access for more than eight patient beds.
3. Special nursing suites are permitted to have one intervening room where the arrangement allows for direct and constant visual supervision by nursing personnel.
4. For rooms other than patient sleeping rooms, suites of rooms are permitted to have one intervening room if the travel distance within the suite to the exit access door is not greater than 100 feet (30 480 mm) and are permitted to have two intervening rooms where the travel distance within the suite to the exit access door is not greater than 50 feet (15 240 mm).

Suites of sleeping rooms shall not exceed 5,000 square feet (465 m²). Suites of rooms, other than patient sleeping rooms, shall not exceed 10,000 square feet (929 m²). Any patient sleeping room, or any suite that includes patient sleeping rooms, of more than 1,000 square feet (93 m²) shall have at least two exit access doors remotely located from each other. Any room or suite of rooms, other than patient sleeping rooms, of more than 2,500 square feet (232 m²) shall have at least two access doors remotely located from each other. The travel distance between any point in a Group I-2 occupancy and an exit access door in the room shall not exceed 50 feet (15 240 mm). The travel distance between any point in a suite of sleeping rooms and an exit access door of that suite shall not exceed 100 feet (30 480 mm).

1013.3 Common path of egress travel. In occupancies other than Groups H-1, H-2 and H-3, the common path of egress travel shall not exceed 75 feet (22 860 mm). In occupancies in Groups H-1, H-2, and H-3, the common path of egress travel shall not exceed 25 feet (7 620 mm).

Exceptions:

1. The length of a common path of egress travel in an occupancy in Groups B, F and S shall not be more than 100 feet (30 480 mm), provided that the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.
2. Where a tenant space in an occupancy in Groups B, S and U has an occupant load of not more than 30, the length of a common path of egress travel shall not be more than 100 feet (30 480 mm).
3. The length of a common path of egress travel in occupancies in Group I-3 shall not be more than 100 feet (30 480 mm).

1013.4 Aisles. Aisles serving as a portion of the exit access in the means of egress system shall comply with the requirements of this section. Aisles shall be provided from all occupied portions of the exit access which contain seats, tables, furnishings, displays and similar fixtures or equipment. Aisles serving assembly areas, other than seating at tables, shall comply with Section 1024. Aisles serving reviewing stands, grandstands and bleachers shall also comply with Section 1024.

The required width of aisles shall be unobstructed.

Exception: Doors, when fully opened, and handrails shall not reduce the required width by more than 7 inches (178 mm). Doors in any position shall not reduce the required width by more than one-half. Other nonstructural projections such as trim and similar decorative features are permitted to project into the required width 1.5 inches (38 mm) from each side.

1013.4.1 Groups B and M. In Group B and M occupancies, the minimum clear aisle width shall be determined by Section 1005.1 for the occupant load served, but shall not be less than 36 inches (914 mm).

Exception: Nonpublic aisles serving less than 50 people, and not required to be accessible by Chapter 11 need not exceed 28 inches (711 mm) in width.

1013.4.2 Seating at tables. Where seating is located at a table or counter and is adjacent to an aisle or aisle accessway, the measurement of the minimum aisle width shall start at a line 19 inches (483 mm) away from the table side or edge for the purpose of providing space for the seat without obstructing the aisle or aisle accessway. In the case of other side boundaries for aisle or aisle accessways, the clear width shall be measured to walls, edges of seating and tread edges, except that handrail projections are permitted.

Exception: Where tables or counters are served by fixed seats, the width of the aisle accessway shall be measured from the back of the seat.

1013.4.2.1 Aisle accessway for tables and seating. Aisle accessways serving arrangements of seating at tables or counters shall have sufficient clear width to conform to the capacity requirements of Section 1005.1.

1013.4.2.2 Table and seating accessway width. Aisle accessways shall provide a minimum of 12 inches (305 mm) of width plus 0.5 inch (12.7 mm) of width for each additional 1 foot (305 mm), or fraction thereof, beyond 12 feet (3658 mm) of aisle accessway length measured from the center of the seat farthest from an aisle.

Exception: Portions of an aisle accessway having a length not exceeding 6 feet (1829 mm) and used by a total of not more than four persons.

1013.4.2.3 Table and seating aisle accessway length. The length of travel along the aisle accessway shall not exceed 30 feet (9144 mm) from any seat to the point where a person has a choice of two or more paths of egress travel to separate exits.

1013.5 Egress balconies. Balconies used for egress purposes shall conform to the same requirements as corridors for width, headroom, dead ends and projections. Exterior balconies shall be designed to minimize accumulation of snow or ice that impedes the means of egress.

Exception: Exterior balconies and concourses in outdoor stadiums shall be exempt from the design requirement to protect against the accumulation of snow or ice.

1013.5.1 Wall separation. Exterior egress balconies shall be separated from the interior of the building by walls and opening protectives as required for corridors.

Exception: Separation is not required where the exterior egress balcony is served by at least two stairs and where any dead-end portion of the balcony is separated.

1013.5.2 Openness. The long side of an egress balcony shall be at least 50 percent open, and the open area above the guards shall be so distributed as to minimize the accumulation of smoke or toxic gases.

1013.6 Exit access in R-2 occupancies. In buildings in occupancy Group R-2 exceeding three stories or more in height or occupied by more than two dwelling units on any story, a door from a dwelling unit shall open into an intervening public hall. Such public hall shall be constructed as a public corridor in accordance with Section 1016. Where two or more exits are required, such public hall shall provide access to at least two exits.

Exception: An intervening public hall shall not be required in buildings complying with Item 4 of Section 1018.2.



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Chapter 10: MEANS OF EGRESS
SECTION BC 1014: EXIT AND EXIT ACCESS DOORWAYS

NYC Administrative Code § 28-BC 1014

1014.1 Exit or exit access doorways required.

Two exits or exit access doorways from any space shall be provided where one of the following conditions exists:

1. The occupant load of the space exceeds the values in Table 1014.1.
2. The common path of egress travel exceeds the limitations of Section 1013.3.
3. Where required by Sections 1014.3, 1014.4 and 1014.5.

Exception: Group I-2 occupancies shall comply with Section 1013.2.2.

1014.1.1 Three or more exits. Access to three or more exits shall be provided from a floor area where required by Section 1018.1. Table 1014.1 Spaces with one Means of Egress Occupancy Maximum Occupant Load A, B, E, M, U 74 F 50 H-1, H-2, H-3 3 H-4, H-5, I-1, I-3, I-4 10 I-2 See Section 1013.2.2 R 20 S 30

1014.2 Exit or exit access doorway arrangement. Required exits shall be located in a manner that makes their availability obvious. Exits shall be unobstructed at all times. Exit and exit access doorways shall be arranged in accordance with Sections 1014.2.1 and 1014.2.2.

1014.2.1 Two exits or exit access doorways. Where two exits or exit access doorways are required from any portion of the exit access, the exit doors or exit access doorways shall be placed a distance apart equal to not less than one-half of the length of the maximum overall diagonal dimension of the building or area to be served measured in a straight line between exit doors or exit access doorways. Stairs sharing any common wall, floors, ceilings, scissor stair assemblies, or other enclosures shall be counted as one exit stairway.

Exceptions:

1. Corridor measurements. Where exit enclosures are provided as a portion of the required exit and are interconnected by a 1-hour fire-resistance-rated corridor conforming to the requirements of Section 1016, the required exit separation shall be measured along the shortest direct line of travel within the corridor.

2. Remote location in sprinklered buildings. Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, the separation distance of the exit doors or exit access doorways shall not be less than one-third of the length of the maximum overall diagonal dimension of the area served.

3. R-2 occupancies. In R-2 occupancies, where stairs are enclosed in walls having at least a 2-hour fire-resistance rating and constructed of masonry or masonry equivalent in accordance with department rules:

3.1. The exit doors to such stairs shall be placed a distance apart equal to no less than 15 feet (4572 mm); and

3.2. Such stairs shall be permitted to share common walls, floors, ceilings or scissor stairs assemblies or other enclosures provided that the construction separating the stairs is also of at least a 2-hour fire-resistance rating and constructed of masonry or masonry equivalent in accordance with department rules.

4. B occupancies. In Group B occupancies of construction Type I or II not exceeding 60 feet (18 288 mm) in height, not exceeding 2,000 square feet (186 m²) on any story and not exceeding a travel distance of 50 feet (15 240 mm) on any story, where stairs are enclosed in walls having at least a 2-hour fire-resistance rating and constructed of masonry or masonry equivalent in accordance with department rules:

4.1. The exit doors to such stairs shall be placed a distance apart equal to no less than 15 feet (4572 mm); and

4.2. Such stairs shall be permitted to share common walls, floors, ceilings or scissor stairs assemblies.

1014.2.2 Three or more exits or exit access doorways. Where access to three or more exits is required, at least two exit doors or exit access doorways shall be placed a distance apart equal to not less than one-half of the length of the maximum overall diagonal dimension of the area served measured in a straight line between such exit doors or exit access doorways. Additional exits or exit access doorways shall be arranged a reasonable distance apart so that if one becomes blocked, the others will be available.

Exception: Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, the separation distance of at least two of the exit doors or exit access doorways shall not be less than one-third of the length of the maximum overall diagonal dimension of the area served.

1014.3 Boiler, furnace and incinerator rooms. Two exit access doorways are required in boiler, furnace and incinerator rooms where the area is over 500 square feet (46 m²) and any fuel-fired equipment exceeds 400,000 British thermal units (Btu) (422 000 KJ) input capacity. Where two exit access doorways are required, one is permitted to be a fixed ladder or an alternating tread device. Exit access doorways shall be separated by a horizontal distance equal to one-half the maximum horizontal dimension of the room.

1014.4 Refrigeration machinery rooms. Machinery rooms larger than 1,000 square feet (93 m²) shall have not less than two exits or exit access doors. Where two exit access doorways are required, one such doorway is permitted to be served by a fixed ladder or an alternating tread device. Exit access doorways shall be separated by a horizontal distance equal to one-half the maximum horizontal dimension of room. All portions of machinery rooms shall be within 150 feet (45 720 mm) of an exit or exit access doorway. An increase in travel distance is permitted in accordance with Section 1015.1. Doors shall swing in the direction of egress travel, regardless of the occupant load served. Doors shall be tight fitting and self-closing.

1014.5 Refrigerated rooms or spaces. Rooms or spaces having a floor area of 1,000 square feet (93 m²) or more, containing a refrigerant evaporator and maintained at a temperature below 68(degrees)F (20(degrees)C), shall have

access to not less than two exits or exit access doors. Travel distance shall be determined as specified in Section 1015.1, but all portions of a refrigerated room or space shall be within 150 feet (45 720 mm) of an exit or exit access door where such rooms are not protected by an approved automatic sprinkler system. Egress is allowed through adjoining refrigerated rooms or spaces.

Exception: Where using refrigerants in quantities limited to the amounts based on the volume set forth in the New York City Mechanical Code.

1014.6 Stage means of egress. Where two means of egress are required based on the stage size or occupant load, one means of egress shall be provided on each side of the stage.

1014.6.1 Gallery, gridiron and catwalk means of egress. The means of egress from lighting and access catwalks, galleries and gridirons shall meet the requirements for occupancies in Group F-2.

Exceptions:

1. A minimum width of 22 inches (559 mm) is permitted for lighting and access catwalks.
2. Stairways required by this subsection need not be enclosed.
3. Stairways with a minimum width of 22 inches (559 mm), ladders, alternating tread devices or spiral stairs are permitted in the means of egress.
4. A second means of egress is not required from these areas where a means of escape to a floor or to a roof is provided.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1014.3 amended L.L. 8/2008 § 110, eff. July 1, 2008.



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SECTION BC 1015: EXIT ACCESS TRAVEL DISTANCE

NYC Administrative Code § 28-BC 1015

1015.1 Travel distance limitations.

Exits shall be so located on each story such that the maximum length of exit access travel, measured from the most remote point within a story to the entrance to an exit along the natural and unobstructed path of egress travel, shall not exceed the distances given in Table 1015.1.

Where the path of exit access includes unenclosed stairways or ramps within the exit access or includes unenclosed exit ramps or stairways as permitted in Section 1019.1, the distance of travel on such means of egress components shall also be included in the travel distance measurement. The measurement along stairways shall be made on a plane parallel and tangent to the stair tread nosings in the center of the stairway.

Exceptions:

1. Travel distance in open parking garages is permitted to be measured to the closest riser of open stairs.
 2. In outdoor facilities with open exit access components and open exterior stairs or ramps, travel distance is permitted to be measured to the closest riser of a stair or the closest slope of the ramp.
 3. Where an exit stair is permitted to be unenclosed in accordance with Exception 8 or 9 of Section 1019.1, the travel distance shall be measured from the most remote point within a building to an exit discharge.
- Table 1015.1 Exit Access Travel Distance
- | Occupancy | Without Sprinkler System (feet) | With Sprinkler System (feet) |
|----------------------|---------------------------------|------------------------------|
| A See Section 1024.7 | E, F-1, I-1, M, R, S-1 150 | 200b |
| B | 200 | 300c |
| F-2, S-2, U | 200 | 250b |
| H-1 | Not permitted | 75c |
| H-2 | Not permitted | 100c |
| H-3 | Not permitted | 150c |
| H-4 | Not permitted | 175c |
| H-5 | Not permitted | 200c |
| I-2, I-3, I-4 | 150 | 200c |
- For SI: 1 foot = 304.8 mm. See the following sections for modifications to exit access travel distance requirements:
- a. Section 402: For the distance limitation in malls.
 - a. Section 404: For the distance limitation through an atrium space.
 - a. Section 1018.2: For buildings with one exit.
 - a. Chapter 31: For the limitation in temporary structures.
 - b. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. See Section 903 for occupancies

where sprinkler systems according to Section 903.3.1.2 are permitted.c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

1015.2Reserved.

1015.3Exterior egress balcony increase.Travel distances specified in Section 1015.1 shall be increased up to an additional 100 feet (30 480 mm) provided the last portion of the exit access leading to the exit occurs on an exterior egress balcony constructed in accordance with Section 1013.5. The length of such balcony shall not be less than the amount of the increase taken.



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SECTION BC 1016: CORRIDORS

NYC Administrative Code § 28-BC 1016

1016.1 Construction.

Corridors shall be constructed in accordance with this section. Interior corridor walls required to be fire-resistance rated shall comply with Section 708 for fire partitions. Public corridor walls shall comply with Section 706 for fire barriers.

1016.1.1 Interior corridors. Interior corridors shall be fire-resistance rated in accordance with Table 1016.1.1.

Exceptions:

1. A fire-resistance rating is not required for corridors in an occupancy in Group E where each room that is used for instruction has at least one door directly to the exterior and rooms for assembly purposes have at least one-half of the required means of egress doors opening directly to the exterior. Exterior doors specified in this exception are required to be at ground level.

2. A fire-resistance rating is not required for corridors contained within a dwelling or sleeping unit in an occupancy in Group R.

3. A fire-resistance rating is not required for corridors in open parking garages.

4. A fire-resistance rating is not required for corridors in an occupancy in Group B which is a space requiring only a single means of egress complying with Section 1014.1. Table 1016.1.1 Interior Corridor Fire-Resistance Rating

Occupancy	Occupant Load Served by Interior Corridor	Required Fire Resistance Rating (hours)	Without sprinkler system	With sprinkler system
H-1, H-2, H-3	All	Not permitted	1	H-4, H-5
Greater than 30	Not permitted	1	A, B, E, F, M, S, U	
Greater than 30	10	R	Greater than 30	1d
0	I-2a, I-4	All	Not permitted	0
I-1, I-3	All	Not permitted	1b	a

a. For requirements for occupancies in Group I-2, see Section 407.3.b. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Section 408.7.c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed. d. Interior corridors within dwelling or sleeping units in

Group R occupancies pursuant to Section 1016.1.1 Exception 2 shall not require fire-resistance rating.

1016.1.2 Public corridors. Public corridors shall be fire-resistance rated in accordance with Table 1016.1.2. Table 1016.1.2 Public Corridor Fire-Resistance Rating Occupancy Required Fire Resistance Rating (hours) H-1, H-2, H-32 H-4, H-51 A, E, F, M, S, U1 B1a R (Noncombustible) 1 R (Combustible) 2b I-1, I-2, I-3, I-41 a. Public corridors need not be fire-rated in high-rise buildings in occupancy Group B equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, where such building is provided with smokeproof enclosures in stairways in accordance with Section 403.13.b. Public corridors in buildings not exceeding two stories in height, or that are three stories in height and occupied by not more than one family on each story, may be constructed with one hour fire-resistance rating.

1016.2 Corridor width. The minimum corridor width shall be as determined in Section 1005.1, but not less than 44 inches (1118 mm).

Exceptions:

1. Twenty-four inches (610 mm)-For access to and utilization of electrical, mechanical or plumbing systems or equipment.
2. Thirty-six inches (914 mm)-With a required occupant capacity of 50 or less, except as otherwise required by Chapter 11.
3. Thirty-six inches (914 mm)-Within a dwelling unit in occupancy Groups I-1 and R-1, except as otherwise required by Section 1107.
4. Thirty inches (762 mm) -Within a dwelling unit in occupancy Groups R-2 and R-3, except as otherwise required by Section 1107.
5. Sixty-six inches (1676 mm)-In Group E serving classrooms.
6. Seventy-two inches (1829 mm)-In corridors serving surgical Group I, health care centers for ambulatory patients receiving outpatient medical care, which causes the patient to be not capable of self-preservation.
7. Ninety-six inches (2438 mm)-In Group I-2 in areas where required for bed movement.

1016.3 Dead ends. Where more than one exit or exit access doorway is required, the exit access shall be arranged such that there are no dead ends in corridors more than 20 feet (6096 mm) in length.

Exceptions:

1. In occupancies in Group I-3 of Occupancy Condition 2, 3 or 4 (see Section 308.4), the dead end in a corridor shall not exceed 50 feet (15 240 mm).
2. In occupancies in Groups B and F where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the length of dead-end corridors shall not exceed 50 feet (15 240 mm).
3. Dead-end length not exceeding 2.5 times the least width of the dead-end corridor.
4. In occupancies in Group R-2, the dead end in a corridor shall not exceed 40 feet (12 192 mm). However, where the corridors are completely enclosed in construction having a 2-hour fire-resistance rating with all doors opening into the corridor being self-closing and having a fire-resistance rating of 1 1/2 hours, the length of dead-end corridor shall not exceed 80 feet (24 384 mm).

1016.4 Air movement in corridors. Use of corridors as part of direct supply, return, or exhaust air system shall be subject to the limitations of the New York City Mechanical Code.

1016.4.1 Corridor ceiling. Use of the space between the corridor ceiling and the floor or roof structure above as a return air plenum shall be in accordance with the New York City Mechanical Code.

1016.5 Corridor continuity. Fire-resistance-rated corridors shall be continuous from the point of entry to an exit, and shall not be interrupted by intervening rooms.

Exception: Foyers, lobbies or reception rooms constructed as required for corridors shall not be construed as intervening rooms.



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SECTION BC 1017: EXITS

NYC Administrative Code § 28-BC 1017

1017.1 General.

Exits shall comply with Sections 1017 through 1022 and the applicable requirements of Sections 1003 through 1012. An exit shall not be used for any purpose that interferes with its function as a means of egress. Once a given level of exit protection is achieved, such level of protection shall not be reduced until arrival at the exit discharge.

1017.2 Exterior exit doors. Buildings or structures used for human occupancy shall have at least one exterior door that meets the requirements of Section 1008.1.1.

1017.2.1 Detailed requirements. Exterior exit doors shall comply with the applicable requirements of Section 1008.1.

1017.2.2 Arrangement. Exterior exit doors shall lead directly to the exit discharge or the public way.



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 SECTION BC 1018: NUMBER OF EXITS AND CONTINUITY

NYC Administrative Code § 28-BC 1018

1018.1 Minimum number of exits.

All rooms and spaces within each story shall be provided with and have access to the minimum number of approved independent exits as required by Table 1018.1 based on the occupant load of such story, except as modified in Section 1018.2. For the purposes of this chapter, occupied roofs shall be provided with exits as required for stories. The required number of exits from any story, basement or individual space shall be maintained until arrival at grade or the public way.

Exception: Unless otherwise required by other provisions of this chapter, the number of exits from ground floors discharging at grade directly to the exterior shall be determined in accordance with Table 1014.1. Table 1018.1
 Minimum Number of Exits for Occupant Load

Occupant Load	Minimum Number of Exits
1-500	2
501-1,000	3
More than 1,000	4

1018.1.1 Open parking garages. Parking garages shall not have less than two exits from each parking tier. An unenclosed vehicle ramp constructed in accordance with Section 1010.2 may serve as one of the required exits when provided with pedestrian facilities along the ramp.

Exception: Where vehicles are mechanically parked, only one exit is required but such exit shall not be a vehicle ramp.

1018.1.2 Open or enclosed parking garages. In open or enclosed parking garages three stories or less in height and serving not more than one level below grade, ramps with a maximum slope of one unit vertical in seven units horizontal may serve as secondary exits.

1018.2 Buildings with one exit. Only one exit shall be required in buildings as described below:

1. Buildings described in Table 1018.2, provided that the building has not more than one level below the first story

above grade plane.

2. Buildings of Group R-3 occupancy.

3. Single-level buildings with the occupied space at the level of exit discharge provided that the story or space complies with Section 1014.1 as a space with one means of egress.

4. Buildings of Group R-2 occupancy where all of the following conditions are met:

4.1. The building does not exceed four stories;

4.2. The building contains not more than three dwelling units per story;

4.3. The building is of construction Type I or II;

4.4. The building does not exceed 2,500 square feet (232 m²) per story;

4.5. Each dwelling unit has at least one window facing the street, or facing a lawful yard with open, unobstructed, and direct access to the street;

4.6. The stairway extends to the roof surface through a stairway bulkhead complying with Section 1509.2 provided the roof has a slope not steeper than 20 degrees. In lieu of the stairway bulkhead, the stair may be constructed against the street wall with one window facing the street at every landing and access to the roof is provided via a scuttle with a stationary, noncombustible access ladder;

4.7. The stairway is enclosed in two-hour fire-rated walls with all exit doors leading into the stairway having at least 1 1/2 hour fire-rating; and

4.8 The building shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.2.

5. Buildings of Group R-2 occupancy of construction Type I or II not exceeding six stories and not exceeding 2,000 square feet (186 m²) per story. Table 1018.2 Buildings With One Exit Occupancy Maximum Height Building Above Grade Plane Maximum Occupants (or Dwelling Units) Per Floor and Travel Distance A, Bc, E, F, M U 1 Story 50 occupants and 75 feet travel distance H-2, H-3 1 Story 3 occupants and 25 feet travel distance H-4, H-5, I, R 1 Story 10 occupants and 75 feet travel distance Sa 1 Story 30 occupants and 100 feet travel distance B, F, M, Sa 2 Stories 30 occupants and 75 feet travel distance R-2d, e 2 Storiesb 4 dwelling units and 50 feet travel distance For SI:

1 foot = 304.8 mm.a For the required number of exits for open parking structures, see Section 1018.1.1b Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1025 shall have a maximum height of three stories above grade.c Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 with an occupancy in Group B shall have a maximum travel distance of 100 feet.d Buildings classified as Group R-2 subject to Section 1018.2, item 4.e Buildings classified as Group R-2 subject to Section 1018.2, item 5.

1018.3Exit continuity.Exits shall be continuous from the point of entry into the exit to the exit discharge.

1018.4Exit door arrangement.Exit door arrangement shall meet the requirements of Sections 1014.2 through 1014.2.2.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 10: MEANS OF EGRESS
SECTION BC 1019: VERTICAL EXIT ENCLOSURES

NYC Administrative Code § 28-BC 1019

1019.1 Enclosures required.

Interior exit stairways and interior exit ramps shall be enclosed with fire barriers. Exit enclosures shall have a fire-resistance rating of not less than 2 hours where connecting four stories or more and not less than 1 hour where connecting less than four stories. The number of stories connected by the shaft enclosure shall include any basements but not any mezzanines. An exit enclosure shall not be used for any purpose other than means of egress. Enclosures shall be constructed as fire barriers in accordance with Section 706.

Exceptions:

1. In other than Group H and I occupancies, a stairway serving an occupant load of less than 10 and not more than one story above the level of exit discharge is not required to be enclosed.
2. Exits in buildings of Group A-5 where all portions of the means of egress are essentially open to the outside need not be enclosed.
3. Stairways serving and contained within a single residential dwelling unit or sleeping unit in occupancies in Group R-1, R-2 or R-3 are not required to be enclosed.
4. Stairways that are not a required means of egress element are not required to be enclosed where such stairways comply with Section 707.2.
5. Stairways in open parking structures which serve only the parking structure are not required to be enclosed.
6. Stairways in occupancies in Group I-3 shall be permitted to have glazing installed in doors and interior walls as provided for in Section 408.3.6.
7. Means of egress stairways as required by Section 410.5.4 are not required to be enclosed.

8. In other than occupancy Groups H and I, a maximum of 50 percent of egress stairways serving one adjacent floor are not required to be enclosed, provided at least two means of egress are provided from both floors served by the unenclosed stairways. Any two such interconnected floors shall not be open to other floors.

9. In other than occupancy Groups H and I, interior egress stairways serving only the first and second stories of a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 are not required to be enclosed, provided at least two means of egress are provided from both floors served by the unenclosed stairways. Such interconnected stories shall not be open to other stories.

10. In Group R-1 and R-2 occupancies, where exit enclosures are required to have a fire-resistance rating of 2 hours, such enclosures shall be constructed of masonry or masonry equivalent. Wall assemblies constituting masonry equivalent shall be constructed in accordance with department rules.

1019.1.1 Openings. Exit enclosure opening protectives shall be in accordance with the requirements of Section 715.

Except as permitted in Section 402.4.6, openings in exit enclosures other than unexposed exterior openings shall be limited to those necessary for exit access to the enclosure from normally occupied spaces and for egress from the enclosure.

Where interior exit enclosures are extended to the exterior of a building by an exit passageway, the door assembly from the exit enclosure to the exit passageway shall be protected by a fire door conforming to the requirements in Section 715.3. Fire door assemblies in exit enclosures shall comply with Section 715.3.4.

1019.1.2 Penetrations. Penetrations into and openings through an exit enclosure are prohibited except for required exit doors, equipment and ductwork necessary for independent pressurization, sprinkler piping, standpipes, electrical raceway for Fire Department communication and electrical raceway serving the exit enclosure and terminating at a steel box not exceeding 16 square inches (0.010 m²). Such penetrations shall be protected in accordance with Section 712. There shall be no penetrations or communication openings, whether protected or not, between adjacent exit enclosures.

1019.1.3 Ventilation. Equipment and ductwork for exit enclosure ventilation necessary for independent pressurization shall comply with one of the following items:

1. Such equipment and ductwork shall be located exterior to the building and shall be directly connected to the exit enclosure by ductwork enclosed in construction as required for shafts.

2. Where such equipment and ductwork is located within the exit enclosure, the intake air shall be taken directly from the outdoors and the exhaust air shall be discharged directly to the outdoors, or such air shall be conveyed through ducts enclosed in construction as required for shafts.

3. Where located within the building, such equipment and ductwork shall be separated from the remainder of the building, including other mechanical equipment, with construction as required for shafts. In each case, openings into the fire-resistance-rated construction shall be limited to those needed for maintenance and operation and shall be protected by self-closing fire-resistance-rated devices in accordance with Chapter 7 for enclosure wall opening protectives. Exit enclosure ventilation systems shall be independent of other building ventilation systems.

1019.1.4 Vertical enclosure exterior walls. Exterior walls of a vertical exit enclosure shall comply with the requirements of Section 704 for exterior walls. Where nonrated walls or unprotected openings enclose the exterior of the stairway and the walls or openings are exposed to other parts of the building at an angle of less than 180 degrees (3.14 rad), the building exterior walls within 10 feet (3048 mm) horizontally of a nonrated wall or unprotected opening shall be constructed as required for a minimum 1-hour fire-resistance rating with 3-hour opening protectives. This construction shall extend vertically from the ground to a point 10 feet (3048 mm) above the topmost landing of the stairway or to the roof line, whichever is lower.

1019.1.5Enclosures under stairways.The walls and soffits within enclosed usable spaces under enclosed and unenclosed stairways shall be protected by 1-hour fire-resistance-rated construction, or the fire-resistance rating of the stairway enclosure, whichever is greater. Access to the enclosed usable space shall not be directly from within the stair enclosure.

Exception: Spaces under stairways serving and contained within a single residential dwelling unit in Group R-2 or R-3.

There shall be no enclosed usable space under exterior exit stairways unless the space is completely enclosed in 1-hour fire-resistance-rated construction. The open space under exterior stairways shall not be used for any purpose.

1019.1.6Discharge identification.A stairway in an exit enclosure shall not continue below the level of exit discharge unless an approved barrier is provided at the level of exit discharge to prevent persons from unintentionally continuing into levels below. Directional exit signs shall be provided as specified in Section 1011. An approved barrier shall consist of one-hour rated construction separating the portion of the vertical exit above grade from the portion below grade, with a three-quarter hour rated self-closing door, opening in the direction of exit travel from the floors below grade.

Exception: Such barrier separating the above grade portion of the vertical exit from the portion below grade shall not be required in Group E and R-3 occupancies.

1019.1.7Stairway floor number and identification signs.A sign shall be provided at each floor landing in interior vertical exit enclosures connecting more than three stories designating the floor level, the terminus of the top and bottom of the stair enclosure and the identification of the stair. The signage shall also state the story of, and the direction to the exit discharge and the availability of roof access from the stairway for the Fire Department. Each stair shall be identified by an alphabetic letter. Stairway identification signs shall be provided on both sides of each stair door. The signs shall be located 5 feet (1524 mm) above the floor landing in a position which is readily visible when the doors are in the open and closed positions.

1019.1.8Smokeproof enclosures.In buildings required to comply with Section 403.13 or 405.8.2, each of the exits of a building that serves stories where the floor surface is located more than 75 feet (22 860 mm) above the lowest level of Fire Department vehicle access or more than 30 feet (9144 mm) below the level of exit discharge serving such floor levels shall be a smokeproof enclosure or pressurized stairway in accordance with Section 909.20.

1019.1.8.1Enclosure exit.A smokeproof enclosure or pressurized stairway shall exit into a public way or into an exit passageway, yard or open space having direct access to a public way. The exit passageway shall be without other openings and shall be separated from the remainder of the building by 2-hour fire-resistance-rated construction.

Exceptions:

1. Openings in the exit passageway serving a smokeproof enclosure are permitted where the exit passageway is protected and pressurized in the same manner as the smokeproof enclosure, and openings are protected as required for access from other floors.

2. Openings in the exit passageway serving a pressurized stairway are permitted where the exit passageway is protected and pressurized in the same manner as the pressurized stairway.

3. A smokeproof enclosure or pressurized stairway shall be permitted to egress through areas on the level of discharge or vestibules as permitted by Section 1023.

1019.1.8.2Enclosure access.Access to the stairway within a smokeproof enclosure shall be by way of a vestibule or an open exterior balcony.

Exceptions: Access is not required by way of a vestibule or exterior balcony for stairways using the pressurization alternative complying with Section 909.20.5.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
CHAPTER 1: ADMINISTRATION
SECTION BC 102: APPLICABILITY

NYC Administrative Code § 28-BC 102

102.1 General.

Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable.

102.2 Reserved.

102.3 Application of references. References to chapter or section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

102.4 Referenced standards. The standards referenced in this code and in the rules of the department shall be considered part of the requirements of this code to the prescribed extent of each such reference. Where differences occur between provisions of this code and referenced standards, the provisions of this code shall apply. Refer to Article 103 of Chapter 1 of Title 28 of the Administrative Code for additional provisions relating to referenced standards.

102.5 Partial invalidity. In the event that any part or provision of this code is held to be illegal or void, this shall not have the effect of making void or illegal any of the other parts or provisions.

102.6 Existing structures. The legal occupancy of any existing structure shall be permitted to continue without change, except as is otherwise specifically provided or as is deemed necessary by the commissioner for the general safety and welfare of the occupants and the public. Refer to Chapter 1 of Title 28 of the Administrative Code for additional provisions relating to existing structures.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 10: MEANS OF EGRESS
SECTION BC 1020: EXIT PASSAGEWAYS

NYC Administrative Code § 28-BC 1020

1020.1 Exit passageway.

Exit passageways serving as an exit component in a means of egress system shall comply with the requirements of this section. An exit passageway shall not be used for any purpose other than as a means of egress.

1020.2Width. The width of exit passageways shall be determined as specified in Section 1005.1 but such width shall not be less than 44 inches (1118 mm), except that exit passageways serving an occupant load of less than 50 shall not be less than 36 inches (914 mm) in width.

The required width of exit passageways shall be unobstructed.

Exception: Doors, when fully opened, and handrails, shall not reduce the required width by more than 7 inches (178 mm). Doors in any position shall not reduce the required width by more than one-half. Other nonstructural projections such as trim and similar decorative features are permitted to project into the required width 1.5 inches (38 mm) on each side.

1020.3Construction. Exit passageway enclosures shall have walls, floors and ceilings of not less than 1-hour fire-resistance rating, and not less than that required for any connecting exit enclosure. Exit passageways shall be constructed as fire barriers in accordance with Section 706.

1020.4Openings and penetrations. Exit passageway opening protectives shall be in accordance with the requirements of Section 715.

Except as permitted in Section 402.4.6, openings in exit passageways other than unexposed exterior openings shall be limited to those necessary for exit access to the exit passageway from normally occupied spaces and for egress from the exit passageway.

Where interior exit enclosures are extended to the exterior of a building by an exit passageway, the door assembly

from the exit enclosure to the exit passageway shall be protected by a fire door conforming to the requirements in Section 715.3. Fire door assemblies in exit passageways shall comply with Section 715.3.4.

Elevators shall not open into an exit passageway.

1020.5 Penetrations. Penetrations into and openings through an exit passageway are prohibited except for required exit doors, equipment and ductwork necessary for independent pressurization, sprinkler piping, standpipes, electrical raceway for fire department communication and electrical raceway serving the exit passageway and terminating at a steel box not exceeding 16 square inches (0.010 m²). Such penetrations shall be protected in accordance with Section 712. There shall be no penetrations or communicating openings, whether protected or not, between adjacent exit passageways.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 10: MEANS OF EGRESS
SECTION BC 1021: HORIZONTAL EXITS

NYC Administrative Code § 28-BC 1021

1021.1 Horizontal exits.

Horizontal exits serving as an exit in a means of egress system shall comply with the requirements of this section. A horizontal exit shall not serve as the only exit from a portion of a building, and where two or more exits are required, not more than one-half of the total number of exits or total exit width shall be horizontal exits.

Exceptions:

1. Horizontal exits are permitted to comprise two-thirds of the required exits from any building or floor area for occupancies in Group I-2.
2. Horizontal exits are permitted to comprise 100 percent of the exits required for occupancies in Group I-3. At least 6 square feet (0.6 m²) of accessible space per occupant shall be provided on each side of the horizontal exit for the total number of people in adjoining compartments. Every fire compartment for which credit is allowed in connection with a horizontal exit shall not be required to have a stairway or door leading directly outside, provided the adjoining fire compartments have stairways or doors leading directly outside and are so arranged that egress shall not require the occupants to return through the compartment from which egress originates. The area into which a horizontal exit leads shall be provided with exits adequate to meet the occupant requirements of this chapter, but not including the added occupant capacity imposed by persons entering it through horizontal exits from another area. At least one of its exits shall lead directly to the exterior or to an exit enclosure.

1021.2 Separation. The separation between buildings or areas of refuge connected by a horizontal exit shall be provided by a fire wall complying with Section 705 or a fire barrier complying with Section 706 and having a fire-resistance rating of not less than 2 hours. Opening protectives in horizontal exit walls shall also comply with Section 715. The horizontal exit separation shall extend vertically through all levels of the building unless floor assemblies are of 2-hour fire resistance with no unprotected openings.

Exception: A fire-resistance rating is not required at horizontal exits between a building area and an above-grade pedestrian walkway constructed in accordance with Section 3104, provided that the distance between connected buildings is more than 20 feet (6096 mm). Horizontal exit walls constructed as fire barriers shall be continuous from exterior wall to exterior wall so as to divide completely the floor served by the horizontal exit.

1021.3 Opening protectives. Fire doors in horizontal exits shall be self-closing or automatic-closing when activated by a smoke detector installed in accordance with Section 907.10. Opening protectives in horizontal exits shall be consistent with the fire-resistance rating of the wall. Such doors where located in a cross-corridor condition shall be automatic-closing by activation of a smoke detector installed in accordance with Section 907.10.

1021.4 Capacity of area of refuge. The area of refuge of a horizontal exit shall be spaces occupied by the same tenant or public areas and each such area of refuge shall be adequate to house the original occupant load of the refuge space plus the occupant load anticipated from the adjoining compartment. The anticipated occupant load from the adjoining compartment shall be based on the capacity of the horizontal exit doors entering the area of refuge. The capacity of areas of refuge shall be computed on a net floor area allowance of 3 square feet (0.28 m²) for each occupant to be accommodated therein, not including areas of stairways, elevators and other shafts or courts.

Exception: The net floor area allowable per occupant shall be as follows for the indicated occupancies:

1. Six square feet (0.6 m²) per occupant for occupancies in Group I-3.
2. Fifteen square feet (1.4 m²) per occupant for ambulatory occupancies in Group I-2.
3. Thirty square feet (2.8 m²) per occupant for nonambulatory occupancies in Group I-2.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1021.3 amended L.L. 8/2008 § 111, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 10: MEANS OF EGRESS
SECTION BC 1022: EXTERIOR EXIT RAMPS AND STAIRWAYS

NYC Administrative Code § 28-BC 1022

1022.1 Exterior exit ramps and stairways.

Exterior exit ramps and stairways serving as an element of a required means of egress shall comply with this section.

Exception: Exterior exit ramps and stairways for outdoor stadiums complying with Section 1019.1, Exception 2.

1022.2 Use in a means of egress. Exterior exit ramps and stairways shall not be used as an element of a required means of egress for occupancies in Group I-2. For occupancies in other than Group I-2, exterior exit ramps and stairways shall be permitted as an element of a required means of egress for buildings not exceeding six stories or 75 feet (22 860 mm) in height.

1022.3 Open side. Exterior exit ramps and stairways serving as an element of a required means of egress shall be open on at least one side. An open side shall have a minimum of 35 square feet (3.3 m²) of aggregate open area adjacent to each floor level and the level of each intermediate landing. The required open area shall be located not less than 42 inches (1067 mm) above the adjacent floor or landing level.

1022.4 Adjoining open areas. The open areas adjoining exterior exit ramps or stairways shall be either yards, courts or public ways; the remaining sides are permitted to be enclosed by the exterior walls of the building.

1022.5 Location. Exterior exit ramps and stairways shall be located in accordance with Section 1023.3.

1022.6 Exterior ramps and stairway protection. Exterior exit ramps and stairways shall be separated from the interior of the building as required in Section 1019.1. Openings shall be limited to those necessary for egress from normally occupied spaces.

Exceptions:

1. In other than Group R-1 or R-2 occupancies, separation from the interior of the building is not required in

buildings that are no more than two stories above grade where the level of exit discharge is the first story above grade.

2. Separation from the interior of the building is not required where the exterior ramp or stairway is served by an exterior ramp and/or balcony that connects two remote exterior stairways or other approved exits, with a perimeter that is not less than 50 percent open. To be considered open, the opening shall be a minimum of 50 percent of the height of the enclosing wall, with the top of the openings no less than 7 feet (2134 mm) above the top of the balcony.

3. Separation from the interior of the building is not required for an exterior ramp or stairway located in a building or structure that is permitted to have unenclosed interior stairways in accordance with Section 1019.1.

4. Separation from the interior of the building is not required for exterior ramps or stairways connected to open-ended corridors, provided that Items 4.1 through 4.4 are met:

4.1. The building, including corridors and ramps and/or stairs, shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.

4.2. The open-ended corridors comply with Section 1016.

4.3. The open-ended corridors are connected on each end to an exterior exit ramp or stairway complying with Section 1022.

4.4. At any location in an open-ended corridor where a change of direction exceeding 45 degrees (0.79 rad) occurs, a clear opening of not less than 35 square feet (3.3 m²) or an exterior ramp or stairway shall be provided. Where clear openings are provided, they shall be located so as to minimize the accumulation of smoke or toxic gases.

1022.7 Fire towers. Fire towers may be used as exits in lieu of interior stairs provided they comply with all of the requirements for stairways as per Section 1009, except as modified below.

1022.7.1 Enclosure. The enclosing walls of fire towers shall be of noncombustible materials or assemblies having a fire-resistance rating of at least 4 hours. Such walls shall be without openings, except for doors serving as means of egress.

1022.7.2 Access. At each story served by a fire tower, access to the stairways of such fire tower shall be provided through outside balconies or fireproof vestibules. Such balconies or vestibules shall be at least 44 inches (1118 mm) in width and shall have unpierced floors of noncombustible materials and shall be provided with substantial guard railings at least 4 feet (1219 mm) high, without any openings greater than 5 inches (127 mm) in width.

1022.7.3 Balconies and vestibules. Such balconies or vestibules of fire towers shall be level with the floors of the structure and the platforms of the stairs connected by such balconies. Such balconies or vestibules shall be separated from the structure and the stairs by self-closing swinging doors with a one and one-half hour fire protection rating, capable of being opened from both sides without the use of a key or other unlocking device.

Balconies or vestibules of fire towers shall open on a street or yard, or on a court open vertically to the sky for its full height, having a minimum net area of 105 square feet (9.7 m²) and a minimum dimension of 7 feet (2134 mm). The opening from the vestibule to the street, yard or court shall have a minimum area of 18 square feet (1.7 m²) and a minimum dimension of 30 inches (762 mm). It shall be unlawful to leave openings in the court walls surrounding an interior fire tower, other than the openings from the vestibules, within 15 feet (4572 mm) of the balcony, except that self-closing windows with a three-quarter hour fire protection rating may be used if such windows are at least 10 feet (3048 mm) from the balcony, provided that the area of the court is at least 12 feet (3658 mm) by 24 feet (7315 mm).

1022.7.4 Termination. Fire towers shall terminate at grade level and shall exit directly to the street independently of corridors serving other stairways, except when the fire tower terminates in the ground floor corridor outside of the inner

vestibule and within 10 feet (3048 mm) of the building line.



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Chapter 10: MEANS OF EGRESS
SECTION BC 1023: EXIT DISCHARGE

NYC Administrative Code § 28-BC 1023

1023.1 General.

Exits shall discharge directly to the exterior of the building. The exit discharge shall be at grade or shall provide direct access to grade. The exit discharge shall not reenter a building.

Exceptions:

1. A maximum of 50 percent of the number and capacity of the exit enclosures is permitted to egress through protected areas on the level of discharge provided all of the following are met:

1.1. Such protected area shall provide a free and unobstructed way to the exterior of the building, which way is readily visible and identifiable from the point of termination of the exit enclosure.

1.2. The protected area shall be separated from areas below by construction conforming to the fire-resistance rating for the exit enclosure.

1.3. The protected area shall be provided with an approved automatic sprinkler system. All portions of the level of discharge with access to the egress path shall either be protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, or separated from the egress path in accordance with the requirements for the enclosure exits.

1.4. All spaces and openings communicating with the protected area shall be separated by construction conforming to the fire-resistance rating for the exit enclosure or, if the entire level of discharge in the building is sprinklered in accordance with Section 903.3.1.1 or 903.3.1.2, the separation may comprise smoke barriers complying with Section 709.

1.5. The capacity of the protected area shall not be less than required by Section 1023.2 in addition to the occupant load of all exits serving communication spaces.

2. A maximum of 50 percent of the number and capacity of the exit enclosures is permitted to egress through a vestibule provided all of the following are met:

2.1. The entire area of the vestibule is separated from areas below by construction conforming to the fire-resistance rating for the exit enclosure.

2.2. The depth from the exterior of the building is not greater than 10 feet (3048 mm) and the length is not greater than 30 feet (9144 mm).

2.3. The area is separated from the remainder of the level of exit discharge by construction providing protection at least the equivalent of approved wired glass in steel frames.

2.4. The area is used only for means of egress and exits directly to the outside.

3. Stairways in open parking garages complying with Section 1019.1, Exception 5, are permitted to egress through the open parking garage at the level of exit discharge.

4. In buildings in occupancy Group R-2, up to 100 percent of the number and capacity of the exit enclosures is permitted to egress through a protected area on the level of discharge, if all of the following conditions are met:

4.1. Egress is provided in two different directions from the discharge points of all exit enclosures to the exterior of the building that are remote from each other.

4.2. The exit discharges are arranged and constructed so as to minimize the possibility that all exit discharges would be compromised by smoke, fire or other emergency condition, and

4.3. Such protected areas shall comply with all requirements of Exception 1, above.

1023.2 Exit discharge capacity. The capacity of the exit discharge shall be not less than the required discharge capacity of the exits being served.

1023.3 Exit discharge location. Exterior balconies, stairways and ramps shall be located at least 10 feet (3048 mm) from adjacent lot lines and from other buildings on the same lot unless the adjacent building exterior walls and openings are protected in accordance with Section 704 based on fire separation distance.

Exception: Noncombustible stoops and ramps not exceeding one story above grade plane located at the street wall and terminating at the street are permitted to be located within 10 feet (3048 mm) of adjacent lot lines or buildings on the same lot when serving:

1. Group R-2 occupancies in buildings of noncombustible construction not exceeding four stories in height and a total of four dwelling units.

2. Group R-3 occupancies.

1023.4 Exit discharge components. Exit discharge components shall be sufficiently open to the exterior so as to minimize the accumulation of smoke and toxic gases.

1023.5 Egress courts. Egress courts serving as a portion of the exit discharge in the means of egress system shall comply with the requirements of Section 1023.

1023.5.1 Width. The width of egress courts shall be determined as specified in Section 1005.1, but such width shall not be less than 44 inches (1118 mm), except as specified herein. Egress courts serving occupancies in Group R-3 and Group U shall not be less than 36 inches (914 mm) in width. The required width of egress courts shall be unobstructed

to a height of 7 feet 6 inches (2286 mm).

Where an egress court exceeds the minimum required width and the width of such egress court is then reduced along the path of exit travel, the reduction in width shall be gradual. The transition in width shall be affected by a guard not less than 36 inches (914 mm) in height and shall not create an angle of more than 30 degrees (0.52 rad) with respect to the axis of the egress court along the path of egress travel. In no case shall the width of the egress court be less than the required minimum.

1023.5.1.1 Projections. Doors, when fully opened, and handrails shall not reduce the required width by more than 7 inches (178 mm). Doors in any position shall not reduce the required width by more than one-half. Other nonstructural projections such as trim and similar decorative features are permitted to project into the required width 1.5 inches (38 mm) from each side.

1023.5.2 Construction and openings. Where an egress court serving a building or portion thereof is less than 10 feet (3048 mm) in width, the egress court walls shall be not less than 1-hour fire-resistance-rated exterior walls complying with Section 704 for a distance of 10 feet (3048 mm) above the floor of the court, and openings therein shall be equipped with fixed or self-closing, 3/4-hour opening protective assemblies.

Exceptions. Protection of exterior walls shall not be required where:

1. Egress courts serving an occupant load of less than 10.
2. Egress courts serving Group R-3.

1023.6 Access to a public way. The exit discharge shall provide a direct and unobstructed access to a public way.

Exception: Where access to a public way cannot be provided, a safe dispersal area shall be provided where all of the following are met:

1. The area shall be of a size to accommodate at least 5 squarefeet (0.28 m²) for each person.
2. The area shall be located on the same property at least 50 feet (15 240 mm) away from the building requiring egress.
3. The area shall be permanently maintained and identified as a safe dispersal area.
4. The area shall be provided with a safe and unobstructed path of travel from the building.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 10: MEANS OF EGRESS
SECTION BC 1024: ASSEMBLY

NYC Administrative Code § 28-BC 1024

1024.1 General.

Occupancies in Group A shall comply with this section. No place of assembly shall be located within 250 feet (76 200 mm) of any occupancy containing explosive contents.

1024.1.1Place of assembly certificate of operation.It shall be unlawful to occupy any building or space as a place of assembly unless and until a certificate of operation therefore has been issued by the department pursuant to the provisions of Chapter 1 of Title 28 of the Administrative Code.

1024.1.2Posted capacity sign.Signs shall be posted in all assembly spaces, indicating the number of persons who may legally occupy the space. Signs shall not be required where seating is fixed in place in accordance with an approved plan and no provision is made for standee spaces. Such signs, where required, shall read as follows:OCCUPANCY BY MORE THAN PERSONS IS DANGEROUS AND UNLAWFUL Certificate of Operation No. Commissioner,(where applicable)Dept. of Buildings, City of New York

1024.1.2.1Multiple occupant load sign.When a space is occupied for multiple purposes involving different occupant loads the sign shall read as follows:OCCUPANCY BY MORE THAN (number) PERSONS AS (type of occupancy) OR BY (number) PERSONS AS (type of occupancy) OR BY (number) PERSONS AS (type of occupancy) IS DANGEROUS AND UNLAWFUL

Certificate of Operation No. Commissioner,

(where applicable)Dept. of Buildings, City of New York

1024.1.2.2 Design of capacity signs. Signs shall be at least 12 inches (305 mm) wide and 16 inches (406 mm) high. The lettering shall be red on a white background. The letters shall be at least 1 inch (25 mm) high and the numerals at least 1 1/4 inches (32 mm) high. Signs shall be framed under a transparent protective cover, and permanently mounted in a location that is conspicuously visible to a person entering the space. Signs shall be lighted by artificial illumination at all times during occupancy to maintain at least 5 foot candles (54 lux) on the surface of the sign.

1024.1.3 Approved plans. In every place of assembly providing seating or other moveable furnishings, copies of approved plans and approved alternate plans shall be kept on the premises. The plans shall be readily available for inspection, and shall provide the following information:

1. For assembly spaces:

1.1. The location of each seat of each tier of seating, along with the number of occupants of each seating section.

1.2. The location and number of standees for each standee area.

1.3. The total number of occupants of each tier and of the assembly space.

1.4. The location and classification of all exits.

2. For safe areas:

2.1. The furniture and equipment arrangement and location.

2.2. The number of occupants to be accommodated.

3. For stage areas:

3.1. The maximum number of occupants, including audience seating on the stage.

3.2. Any conditions limiting the use of the stage area.

3.3. The location of all exits.

These plans shall not be smaller in size than required for one-eighth inch scale plans.

1024.2 Assembly with occupant load greater than 300. Buildings or spaces occupied by Group A that have an occupant load of greater than 300 shall be provided with a main exit. Such main exit shall be of sufficient width to accommodate not less than one-half of the occupant load, but such width shall not be less than the total required width of all means of egress leading to the exit. Where the main use or dominant occupancy of the building is classified as Group A, the main exit shall front on at least one street or an unoccupied space of not less than 10 feet (3048 mm) in width that adjoins a street or public way. Other additional exits shall provide an egress capacity for at least one-half of the total occupant load served by that level and comply with Section 1014.2.

Exception: In assembly occupancies where there is no well-defined main exit or where multiple main exits are provided, exits shall be permitted to be distributed around the perimeter of the building provided that the total width of egress is not less than 100 percent of the required width.

1024.2.1 Exit classification. Where the net floor area of an assembly space, exclusive of stage area, is less than 12 square feet (1.1 m²) per person, such spaces shall also comply with Section 1024.17.

1024.3 Reserved.

1023.4 Foyers and lobbies. In Group A-1 occupancies, where persons are admitted to the building at times when

seats are not available and are allowed to wait in a lobby or similar space, such use of lobby or similar space shall not encroach upon the required clear width of the means of egress. Such waiting areas shall be separated from the required means of egress by substantial permanent partitions or by fixed rigid railings not less than 42 inches (1067 mm) high. Such foyer, if not directly connected to a public street by all the main entrances or exits, shall have a straight and unobstructed corridor or path of travel to every such main entrance or exit.

1024.5 Interior balcony and gallery means of egress. For balconies or galleries having a seating capacity of over 50 located in Group A occupancies, at least two means of egress shall be provided, one from each side of every balcony or gallery, with at least one leading directly to an exit.

1024.5.1 Enclosure of balcony openings. Interior stairways and other vertical openings shall be enclosed in a vertical exit enclosure as provided in Section 1019.1, except that stairways are permitted to be open between the balcony and the main assembly floor in occupancies such as theaters, houses of worship and auditoriums. At least one accessible means of egress is required from a balcony or gallery level containing accessible seating locations in accordance with Section 1007.3 or 1007.4.

1024.6 Width of means of egress for assembly. The clear width of aisles and other means of egress shall comply with this section. The clear width shall be measured to walls, edges of seating and tread edges except for permitted projections.

1024.6.1 Without smoke protection. The clear width of aisles and other means of egress shall provide sufficient capacity in accordance with all of the following, as applicable:

1. At least 0.3 inch (7.6 mm) of width for each occupant served shall be provided on stairs having riser heights 7 inches (178 mm) or less and tread depths 11 inches (279 mm) or greater, measured horizontally between tread nosing.

2. At least 0.005 inch (0.127 mm) of additional stair width for each occupant shall be provided for each 0.10 inch (2.5 mm) of riser height above 7 inches (178 mm).

3. Where egress requires stair descent, at least 0.075 inch (1.9 mm) of additional width for each occupant shall be provided on those portions of stair width having no handrail within a horizontal distance of 30 inches (762 mm).

4. Level or ramped means of egress, where slopes are not steeper than one unit vertical in 12 units horizontal (8-percent slope), shall have at least 0.20 inch (5.1 mm) of clear width for each occupant served. Ramped means of egress, where slopes are steeper than one unit vertical in 12 units horizontal (8-percent slope), shall have at least 0.22 inch (5.6 mm) of clear width for each occupant served.

1024.6.2 Smoke-protected seating. The clear width of aisles and other means of egress for smoke-protected assembly seating shall be not less than the occupant load served by the egress element multiplied by the appropriate factor in Table 1024.6.2. The total number of seats specified shall be those within a single assembly space and exposed to the same smoke-protected environment. Interpolation is permitted between the specific values shown. A life safety evaluation, complying with NFPA 101, shall be done for a facility utilizing the reduced width requirements of Table 1024.6.2 for smoke-protected assembly seating subject to the approval by the commissioner.

Table 1024.6.2 Width of Aisles for Smoke-Protected Assembly

Total Number of Seats in the Smoke-Protected Assembly	Occupancy Inches of Clear Width Per Seat Served
Stairs and aisle steps with handrails within 30 inches	0.200
Stairs and aisle steps without handrails within 30 inches	0.250
Passageways, doorways and ramps not steeper than 1 in 10	0.150
Ramps steeper than 1 in 10	0.165
Equal to or less than 5,000	0.130
5,000 to 10,000	0.163
10,000 to 15,000	0.100
15,000 to 20,000	0.110
20,000 to 25,000	0.096
25,000 to 30,000	0.120
30,000 to 35,000	0.070
35,000 to 40,000	0.077
40,000 to 45,000	0.076
45,000 to 50,000	0.095
50,000 to 55,000	0.056
55,000 to 60,000	0.062
Equal to or greater than 25,000	0.060
For SI: 1 inch = 25.4 mm.	0.075
	0.044
	0.048

Exception: For an outdoor smoke-protected assembly with an occupant load not greater than 18,000, the clear width shall be determined using the factors in Section 1024.6.3.

1024.6.2.1Smoke control.Means of egress serving a smoke-protected assembly seating area shall be provided with a smoke control system complying with Section 909 or natural ventilation designed to maintain the smoke level at least 6 feet (1829 mm) above the floor of the means of egress.

1024.6.2.2Roof height.A smoke-protected assembly seating area with a roof shall have the lowest portion of the roof deck not less than 15 feet (4572 mm) above the highest aisle or aisle accessway.

Exception: A roof canopy in an outdoor stadium shall be permitted to be less than 15 feet (4572 mm) above the highest aisle or aisle accessway provided that there are no objects less than 80 inches (2032 mm) above the highest aisle or aisle accessway.

1024.6.2.3Automatic sprinklers.Enclosed areas with walls and ceilings in buildings or structures containing smoke-protected assembly seating shall be protected with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

Exceptions:

1. The floor area used for contests, performances or entertainment provided the roof construction is more than 50 feet (15 240 mm) above the floor level and the use is restricted to low fire hazard uses.
2. Press boxes and storage facilities less than 1,000 square feet (93 m²) in area.
3. Outdoor seating facilities where seating and the means of egress in the seating area are essentially open to the outside.

1024.6.3Width of means of egress for outdoor smoke-protected assembly.The clear width in inches (mm) of aisles and other means of egress shall be not less than the total occupant load served by the egress element multiplied by 0.08 (2.0 mm) where egress is by aisles and stairs and multiplied by 0.06 (1.52 mm) where egress is by ramps, corridors, tunnels or vomitories.

Exception: The clear width in inches (mm) of aisles and other means of egress shall be permitted to comply with Section 1024.6.2 for the number of seats in the outdoor smoke-protected assembly where Section 1024.6.2 permits less width.

1024.7Travel distance.Exits and aisles shall be so located such that the travel distance to an exit door shall be provided in accordance with Table 1024.7. At least one exit opening shall be available from every attached seat or standee space in an assembly space, or from the most remote point in the space when movable seats are provided or, when no seats are provided, within the primary travel distance limitation listed in Table 1024.7. In addition, an alternate exit opening shall be available from every attached seat or standee space, or from the most remote point when attached seats are not provided within the secondary travel distance limitation listed in Table 1024.7. Such alternate exit openings may serve to satisfy the requirements for primary travel distance for other seats or locations. Exit openings satisfying the primary and secondary travel distance requirements for any one seat or location shall be separated from each other by a distance of at least 25 feet (7620 mm). Where aisles are provided for seating, the distance shall be measured along the aisles and aisle accessway without travel over or on the seats.

Exception: Smoke-protected assembly seating: The travel distance from each seat to the nearest entrance to a vomitory or concourse shall not exceed 200 feet (60 960 mm). The travel distance from the entrance to the vomitory or concourse to a stair, ramp or walk on the exterior of the building shall not exceed 200 feet (60 960 mm).Table 1024.7
Travel Distance OccupancyNon-Sprinklered PrimarySecondarySprinklered PrimarySecondaryA-1, A-2,A-3,
A-4100150150250A-5200300200300

1024.8Common path of travel.The common path of travel shall not exceed 30 feet (9144 mm) from any seat to a

point where a person has a choice of two paths of egress travel to two exits.

Exceptions:

1. For areas such as box seats, galleries or balconies serving not more than 50 occupants, the common path of travel shall not exceed 75 feet (22 860 mm).

2. For smoke-protected assembly seating, the common path of travel shall not exceed 50 feet (15 240 mm).

1024.9 Assembly aisles are required. Every occupied portion of any occupancy in Group A that contains seats, tables, displays, similar fixtures or equipment shall be provided with aisles leading to exits or exit access doorways in accordance with this section. Aisle accessways for tables and seating shall comply with Section 1013.4.2.

1024.9.1 Minimum aisle width. The minimum clear width of aisles shall be as shown:

1. Forty-eight inches (1219 mm) for aisle stairs having seating on each side.

Exception: Thirty-six inches (914 mm) where the aisle does not serve more than 50 seats.

2. Thirty-six inches (914 mm) for aisle stairs having seating on only one side.

3. Twenty-three inches (584 mm) between an aisle stair handrail or guard and seating where the aisle is subdivided by a handrail.

4. Forty-two inches (1067 mm) for level or ramped aisles having seating on both sides.

Exception: Thirty-six inches (914 mm) where the aisle does not serve more than 50 seats.

5. Thirty-six inches (914 mm) for level or ramped aisles having seating on only one side.

1024.9.2 Aisle width. The aisle width shall provide sufficient egress capacity for the number of persons accommodated by the catchment area served by the aisle. The catchment area served by an aisle is that portion of the total space that is served by that section of the aisle. In establishing catchment areas, the assumption shall be made that there is a balanced use of all means of egress, with the number of persons in proportion to egress capacity.

1024.9.3 Converging aisles. Where aisles converge to form a single path of egress travel, the required egress capacity of that path shall not be less than the combined required capacity of the converging aisles.

1024.9.4 Uniform width. Those portions of aisles, where egress is possible in either of two directions, shall be uniform in required width.

1024.9.5 Assembly aisle termination. Each end of an aisle shall terminate at cross aisle, foyer, doorway, vomitory or concourse having access to an exit.

Exceptions:

1. Dead-end aisles shall not be greater than 20 feet (6096 mm) in length.

2. For smoke-protected assembly seating, the dead-end aisle length of vertical aisles shall not exceed a distance of 50 feet (15 240 mm).

1024.9.6 Assembly aisle obstructions. There shall be no obstructions in the required width of aisles except for handrails as provided in Section 1024.13.

1024.10 Clear width of aisle accessways serving seating. Where seating rows have 14 or fewer seats, the minimum clear aisle accessway width shall not be less than 12 inches (305 mm) measured as the clear horizontal distance from the back of the row ahead and the nearest projection of the row behind. Where chairs have automatic or self-rising seats, the measurement shall be made with seats in the raised position. Where any chair in the row does not have an automatic or self-rising seat, the measurements shall be made with the seat in the down position. For seats with folding tablet arms, row spacing shall be determined with the tablet arm down.

1024.10.1 Dual access. For rows of seating served by aisles or doorways at both ends, there shall not be more than 100 seats per row. The minimum clear width of 12 inches (305 mm) between rows shall be increased by 0.3 inch (7.6 mm) for every additional seat beyond 14 seats, but the minimum clear width is not required to exceed 22 inches (559 mm).

Exception: For smoke-protected assembly seating, the row length limits for a 12-inch-wide (305 mm) aisle accessway, beyond which the aisle accessway minimum clear width shall be increased, are in Table 1024.10.1. Table 1024.10.1 Smoke-Protected Assembly Aisle Accessways Total Number of Seats in the Smoke-Protected Assembly Occupancy Maximum Number of Seats Per Row Permitted to have a Minimum 12-Inch Clear Width Aisle Accessway Aisle or doorway at both ends of row Less than 4,000 14 4,000 15 7,000 16 10,000 17 13,000 18 16,000 19 19,000 20 22,000 and greater 21 For SI: 1 inch = 25.4 mm

1024.10.2 Single access. For rows of seating served by an aisle or doorway at only one end of the row, the minimum clear width of 12 inches (305 mm) between rows shall be provided. Not more than eight chairs shall be provided in such row of seating.

1024.11 Assembly aisle walking surfaces. Aisles with a slope not exceeding one unit vertical in eight units horizontal (12.5-percent slope) shall consist of a ramp having a slip-resistant walking surface. Aisles with a slope exceeding one unit vertical in eight units horizontal (12.5-percent slope) shall consist of a series of risers and treads that extends across the full width of aisles and complies with Sections 1024.11.1 through 1024.11.3.

1024.11.1 Treads. Tread depths shall be a minimum of 11 inches (279 mm) and shall have dimensional uniformity.

Exception: The tolerance between adjacent treads shall not exceed 0.188 inch (4.8 mm).

1024.11.2 Risers. Where the gradient of aisle stairs is to be the same as the gradient of adjoining seating areas, the riser height shall not be less than 4 inches (102 mm) nor more than 8 inches (203 mm) and shall be uniform within each flight.

Exception: Riser height nonuniformity shall be limited to the extent necessitated by changes in the gradient of the adjoining seating area to maintain adequate sightlines. Where nonuniformities exceed 0.188 inch (4.8 mm) between adjacent risers, the exact location of such nonuniformities shall be indicated with a distinctive marking stripe on each tread at the nosing or leading edge adjacent to the nonuniform risers. Such stripe shall be a minimum of 1 inch (25 mm), and a maximum of 2 inches (51 mm), wide. The edge marking stripe shall be distinctively different from the contrasting marking stripe.

1024.11.3 Tread contrasting marking stripe. A contrasting marking stripe shall be provided on each tread at the nosing or leading edge such that the location of each tread is readily apparent when viewed in descent. Such stripe shall be a minimum of 1 inch (25 mm), and a maximum of 2 inches (51 mm), wide.

Exception: The contrasting marking stripe is permitted to be omitted where tread surfaces are such that the location of each tread is readily apparent when viewed in descent.

1024.11.4 Step lighting. Each step shall have a steplight.

1024.11.5Aisle illumination.Aisles and cross aisles shall be illuminated in accordance with Section 1006.2.

1024.12Seat stability.In places of assembly, the seats shall be securely fastened to the floor.

Exceptions:

1. In places of assembly or portions thereof without ramped or tiered floors for seating and with 200 or fewer seats, the seats shall not be required to be fastened to the floor, provided that the seating area has a minimum net floor area of 12 square feet (1.11 m²) per person.

2. In places of assembly or portions thereof with seating at tables and without ramped or tiered floors for seating, the seats shall not be required to be fastened to the floor.

3. In places of assembly or portions thereof without ramped or tiered floors for seating and with greater than 200 seats, the seats shall be securely fastened to the floor, or all seats in a row shall be fastened together with a maximum of 12 seats between aisles.

4. In places of assembly where flexibility of the seating arrangement is an integral part of the design and function of the space and seating is on tiered levels, a maximum of 200 seats shall not be required to be fastened to the floor, provided that the seating area has a minimum net floor area of 12 square feet (1.11 m²) per person.

5. Groups of seats within a place of assembly separated from other seating by railings, guards, partial height walls or similar barriers with level floors and having no more than 14 seats per group shall not be required to be fastened to the floor.

6. Seats intended for musicians or other performers and separated by railings, guards, partial height walls or similar barriers shall not be required to be fastened to the floor.

1024.13Handrails.Ramped aisles having a slope exceeding one unit vertical in 15 units horizontal (6.7-percent slope) and aisle stairs shall be provided with handrails located either at the side or within the aisle width.

Exceptions:

1. Handrails are not required for ramped aisles having a gradient no greater than one unit vertical in eight units horizontal (12.5-percent slope) and seating on both sides.

2. Handrails are not required if, at the side of the aisle, there is a guard that complies with the graspability requirements of handrails.

1024.13.1Discontinuous handrails.Where there is seating on both sides of the aisle, the handrails shall be discontinuous with gaps or breaks at intervals not exceeding five rows to facilitate access to seating and to permit crossing from one side of the aisle to the other. These gaps or breaks shall have a clear width of at least 22 inches (559 mm) and not greater than 36 inches (914 mm), measured horizontally, and the handrail shall have rounded terminations or bends.

1024.13.2Intermediate handrails.Where handrails are provided in the middle of aisle stairs, there shall be an additional intermediate handrail located approximately 12 inches (305 mm) below the main handrail.

1024.14Assembly guards.Assembly guards shall comply with Sections 1024.14.1 through 1024.14.3.

1024.14.1Cross aisles.Cross aisles located more than 30 inches (762 mm) above the floor or grade below shall have guards in accordance with Section 1012. Where an elevation change of 30 inches (762 mm) or less occurs between a cross aisle and the adjacent floor or grade below, guards not less than 26 inches (660 mm) above the aisle floor shall be

provided.

Exception: Where the backs of seats on the front of the cross aisle project 24 inches (610 mm) or more above the adjacent floor of the aisle, a guard need not be provided.

1024.14.2 Sightline-constrained guard heights. Unless subject to the requirements of Section 1024.14.3, a fascia or railing system in accordance with the guard requirements of Section 1012 and having a minimum height of 26 inches (660 mm) shall be provided where the floor or footboard elevation is more than 30 inches (762 mm) above the floor or grade below and the fascia or railing would otherwise interfere with the sightlines of immediately adjacent seating. At bleachers, a guard must be provided where the floor or footboard elevation is more than 24 inches (610 mm) above the floor or grade below and the fascia or railing would otherwise interfere with the sightlines of the immediately adjacent seating.

1024.14.3 Guards at the end of aisles. A fascia or railing system complying with the guard requirements of Section 1012 shall be provided for the full width of the aisle where the foot of the aisle is more than 30 inches (762 mm) above the floor or grade below. The fascia or railing shall be a minimum of 36 inches (914 mm) high and shall provide a minimum 42 inches (1067 mm) measured diagonally between the top of the rail and the nosing of the nearest tread.

1024.14.4 Toe guard at balconies. An unperforated curb or toe guard at least 12 inches (305 mm) high above the level of the floor shall be provided at the fascia of all balconies.

1024.15 Bench seating. Where bench seating is used, the number of persons shall be based on one person for each 18 inches (457 mm) of length of the bench.

1024.16 Standee areas. Standee areas may be permitted within assembly spaces provide each standee has a minimum width of 22 inches (559 mm) and a minimum depth of 21 inches (533 mm). Standee areas shall not encroach on the required exit facilities and shall be separated from the space to be left clear for passage by tape, ribbon or other easily broken material, supported by lightweight posts fixed in stationary sockets.

1024.17 Places of assembly with an occupant load of less than 12 square feet per person. Places of assembly in which the net floor area, exclusive of stage area, is less than 12 square feet (1.11 m²) per person shall have special egress provisions in accordance with this Section.

1024.17.1 Classification of exit openings. For the purposes of this Section 1024.17, exit openings shall be classified as follows:

1. Class 1-Exit openings that are used for normal entry to the assembly space, and that open directly to a safe area or to an open exterior space.
2. Class 2-Exit openings that are not used for normal entry to the assembly space, and that open directly to a safe area or to an open exterior space.
3. Class 3-Exit openings that open from the assembly space into corridors, exit passageways, or vertical exits.

1024.17.2 Distribution of classes. The required exit capacity from assembly spaces in which the net floor area, exclusive of stage area, is less than 12 square feet (1.11 m²) per person shall be distributed so that exit openings of each class are provided to comply with the following requirements:

1. For assembly spaces in which the mean floor level is not more than 15 feet (4572 mm) above or below the adjoining grade elevation, the exit capacity shall be distributed as follows:

- 1.1. Class 1-not less than 40 percent.

1.2. Class 2-not more than 60 percent.

1.3. Class 3-not more than 40 percent.

2. For assembly spaces in which the mean floor level is more than 15 feet (4572 mm) above or below the adjoining grade elevation, the exit capacity shall be distributed as follows:

2.1. Class 1-not less than 60 percent.

2.2

Class 3-not more than 40 percent.

1024.17.3 Safe areas. The capacity of exits from safe areas shall be provided for all occupants of the safe area. Safe areas shall comply with the following requirements:

1. When provided to serve Class 1 or Class 2 exit openings, safe areas shall be separated from assembly spaces by noncombustible construction having a two hour fire-resistance rating, and shall serve as transition areas in the line and direction of exit travel. They shall serve for normal entry to the assembly space and may be used as corridors, lobbies, or lounges.

2. No room or space classified in occupancy Group H, S-1, F-1 or F-2 shall open upon a safe area.

3. Safe areas shall be at a level not more than 6 feet (1829 mm) above or below the level at which egress is made from the assembly space.

4. Ventilating systems for safe areas shall not be connected to systems serving any other spaces, unless separated from such systems by fire/smoke dampers actuated by smoke detectors.

5. Collecting safe areas. Places of assembly having more than one assembly space may have a collecting safe area that receives the occupant load discharged into it by other safe areas. Collecting safe areas shall be located within 6 feet (1829 mm) above or below the assembly space nearest to grade.

6. Occupant load. The occupant load of a safe area shall be the aggregate occupant load of all exit openings discharging directly into it. The occupant load of a collecting safe area shall be the aggregate occupant load of all exit openings discharging directly into it, plus 50 percent of the occupant load of other safe areas discharging into it.

7. Dimensions. The clear unobstructed floor area of each safe area shall be sufficient to accommodate the total occupant load of the safe area on the basis of 3 square feet (0.28 m²) per person, not including space occupied by furniture or equipment. The minimum dimension of such unobstructed space shall be 8 feet (2438 mm). The width of the unobstructed space shall be measured at right angles to the direction of travel to an exit and shall not be less than required for the occupant load. The height of safe areas shall be at least 8 feet (2438 mm) at all points.

8. Safe areas near grade. When a safe area provides egress to an open exterior space, either directly or through a vestibule, the safe area need not provide the floor area required by this section when the level of discharge from the safe area to the open exterior space is not more than 4 feet (1219 mm) above or below the grade of the open exterior space.

1024.17.3.1 Unenclosed vertical exits. Vertical exits leading directly from one safe area to another, or leading from a safe area directly to an open exterior space, need not be enclosed.

1024.17.3.2 Safe area lighting. In addition to requirements of Section 1006, safe areas shall be artificially lighted by electrical means at all times during occupancy of a place of assembly so as to provide illumination of at least 5 foot-candles (54 lux) at the level of the floor and on the surface of all stairs, steps, ramps, and escalators within the safe

area.

1024.17.4 Open exterior space. The following provisions shall apply when an open exterior space is used as an exit discharge:

1. Capacity. Open exterior spaces shall be adequate in width and area to accommodate the accumulated occupant load of all exits discharging into them on the basis of 2 square feet (0.19 m²) per person.

2. Minimum dimensions. The minimum dimension of open exterior spaces shall be 20 feet (6096 mm), except that when the principal entrance to the place of assembly is from an open exterior space, the minimum dimension of this space shall be 30 feet (9144 mm). No open exterior space shall have less than 400 square feet (37 m²) of floor area, and floor area shall be measured exclusive of the following:

2.1. The area immediately outside any exit door from the place of assembly for a distance perpendicular to the exit doors of 10 feet (3048 mm) for the full width of the exit opening.

2.2. The area of steps, platforms, stairs, or ramps within or leading to or from the space.

2.3. The area of obstructions such as shrubs, trees, fixed furniture, signs, sculptures, pools, and similar obstructions to occupancy or exit travel.

3. Above or below grade. When an open exterior space is more than 15 feet (4572 mm) above or below the grade of the street or public space to which it discharges, its required area shall be increased by one-third.

4. Egress from open exterior spaces. Exterior exit passageways, ramps, or steps leading from open exterior spaces shall be not less in width than required for the occupant load of all exits discharging into the open exterior space. The width of such exit passageways shall be based on the capacities listed in Table 1005.1, but in no case less than 10 feet (3048 mm).

5. Open exterior spaces. Yards or courts which serve as open exterior spaces shall be artificially lighted by electrical means at all times between sunset and sunrise during occupancy of a place of assembly so as to provide illumination of at least 5 foot-candles (54 lux) at the level of the floor over at least the required area.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 10: MEANS OF EGRESS
SECTION BC 1025: EMERGENCY ESCAPE AND RESCUE

NYC Administrative Code § 28-BC 1025

1025.1 General.

In addition to the means of egress required by this chapter, provisions shall be made for emergency escape and rescue in Group R and Group I-1 occupancies. Sleeping rooms below the fourth story above grade plane and below grade stories shall have at least one exterior emergency escape and rescue opening in accordance with this section. Where below grade stories contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room, but shall not be required in adjoining areas of such below grade story. Such opening shall open directly into a public street, public alley, yard or court.

Exceptions:

1. Buildings equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
2. Sleeping rooms provided with a door to a fire-resistance-rated corridor having access to two remote exits in opposite directions.
3. The emergency escape and rescue opening is permitted to open onto a balcony within an atrium in accordance with the requirements of Section 404, provided the balcony provides access to an exit and the dwelling unit or sleeping unit has a means of egress that is not open to the atrium.
4. High-rise buildings in accordance with Section 403.
5. Emergency escape and rescue openings are not required from below grade stories or sleeping rooms which have an exit door or exit access door that opens directly into a public street, public alley, yard, egress court or to an exterior exit balcony that opens to a public street, public alley, yard or egress court.
6. Below grade stories without habitable spaces and having no more than 200 square feet (19 m²) in floor area shall

not be required to have emergency escape windows.

1025.2 Minimum size. Emergency escape and rescue openings shall have a minimum net clear opening of 6 square feet (0.56 m²).

Exception: The minimum net clear opening for emergency escape and rescue grade-floor openings shall be 5 square feet (0.46 m²) unless such opening is required for natural ventilation in accordance with Chapter 12.

1025.2.1 Minimum dimensions. The net clear opening height dimension shall not be less than 30 inches (762 mm). The net clear opening width dimension shall not be less than 24 inches (610 mm). The final dimensions shall result in a net clear opening area as required above. The net clear opening dimensions shall be the result of normal operation of the opening.

1024.3 Maximum height from floor. Emergency escape and rescue openings shall have the bottom of the clear opening not greater than 36 inches (914 mm) measured from the floor.

1025.4 Operational constraints. Emergency escape and rescue openings shall be operational from the inside of the room without the use of keys or tools in accordance with the provisions of Chapter 10 of the New York City Fire Code.

1025.5 Window wells. An emergency escape and rescue opening with a finished sill height below the adjacent ground level shall be provided with a window well in accordance with Sections 1025.5.1 and 1025.5.2.

1025.5.1 Minimum size. The minimum horizontal area of the window well shall be 9 square feet (0.84 m²), with a minimum dimension of 36 inches (914 mm). The area of the window well shall allow the emergency escape and rescue opening to be fully opened.

1025.5.2 Ladders or steps. Window wells with a vertical depth of more than 44 inches (1118 mm) shall be equipped with an approved permanently affixed ladder or steps. Ladders or rungs shall have an inside width of at least 12 inches (305 mm), shall project at least 3 inches (76 mm) from the wall and shall be spaced not more than 18 inches (457 mm) on center (o.c.) vertically for the full height of the window well. The ladder or steps shall not encroach into the required dimensions of the window well by more than 6 inches (152 mm). The ladder or steps shall not be obstructed by the emergency escape and rescue opening. Ladders or steps required by this section are exempt from the stairway requirements of Section 1009.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 10: MEANS OF EGRESS
SECTION BC 1026: SIGNAGE

NYC Administrative Code § 28-BC 1026

1026.1 Signage.

Signage shall be provided in accordance with this section.

1026.2 Exit signs. Exits signs shall be provided in accordance with Section 1011.

1026.3 Stairway and elevator identification signs. Stairway floor number and stairway identification signs shall be provided in accordance with Section 1019.1.7. Elevator identification and emergency signs shall be provided in accordance with Section 3002.3.

1026.4 Door signs. For the following buildings, signs shall be posted and maintained on exit stair doors in accordance with this section:

1. Buildings or portions thereof occupied by Group B or arranged to be occupied by more than 100 persons above or below the street level or more than 500 persons in the entire building.
2. High-rise buildings subject to Section 403
3. Buildings where any stair side door is locked pursuant to Section 1008.1.8.7.

Exception: Signs shall not be required on exit stair doors opening directly to dwelling or sleeping units in occupancy Group R where permitted by Section 1013.6.

1026.4.1 Occupied side. Where re-entry is not provided from a stair to every floor, a sign that reads, "NO RE-ENTRY FROM THIS STAIR" shall be posted on the occupied side of the stair door at every floor.

1026.4.2 Stair side. On the stair side, signs shall be posted and maintained at all stair doors at every floor. Such signs shall be either:

1. Re-entry. Where re-entry is provided, a sign shall read, "RE-ENTRY ON THIS FLOOR".

2. No re-entry. Where re-entry is not provided on that floor, the sign shall read:

2.1. "NO RE-ENTRY"; where re-entry is not provided on any floor;

2.2. "NO RE-ENTRY, NEAREST RE-ENTRY ON THE AND FLOORS"; where re-entry is provided on other floors; and

2.3. "NO RE-ENTRY. RE-ENTRY IS PROVIDED ONLY DURING FIRE EMERGENCIES. NEAREST TELEPHONE ON THE AND FLOORS"; where stair side doors are locked in accordance with Section 403.12.

1026.4.3Graphics. The lettering and numerals of the signs shall be at least 1/2 inch (12.7 mm) high of bold type. The lettering and background shall be contrasting colors and the signs shall be securely attached approximately 5 feet (1524 mm) above the floor. The signs may be either independent or combined with floor and stairway identification signs.

1026.5Wall signs, stair side. In high-rise buildings subject to Section 403, signs shall be posted and maintained on the wall as follows:

1. Re-entry. Where a re-entry door is recessed, a supplementary sign complying with Section 1026.4.3, except that the lettering and numerals shall be at least 1 inch (25 mm) high, shall be securely attached on the wall of the landing and shall be readily visible to the evacuee on the stairs indicating the location of such recessed re-entry door.

2. No re-entry. Where there is no re-entry from the stair, an additional sign complying with Subdivision 2 of Section 1026.4.2 and 1026.4.3, except that the lettering and numerals shall be at least 1 inch (25 mm) high, shall be securely attached at the beginning of the descent into such portion of the stair on the wall of the landing and shall be readily visible to the evacuee on the stairs.

1026.6Accessible means of egress signs. Accessible means of egress shall be provided with signs in accordance with Sections 1007.6.5 and 1007.7.

1026.7Capacity sign. Occupant load signs shall be provided in accordance with Sections 1004.3.

1026.8Access-controlled doors. Access-controlled doors shall be provided with signs in accordance with Sections 1008.1.3.4.

1026.9Delayed egress locks. Doors equipped with delayed egress shall be provided with signs in accordance with Sections 1008.1.8.6.

1026.10Signs in sleeping rooms. A sign shall be posted on the inside of every door opening onto a corridor giving access to a sleeping room in all Group R-1 occupancies. The sign shall contain a diagram showing the location where it is posted and the location and letter identification of the exit stairs on the floor. The diagram shall indicate the number of doors opening onto the public corridor which must be passed to reach each exit stair. The sign shall be at least 8 inches by 10 inches (203 mm by 254 mm), located on the inside of the door and securely attached. The top of such sign shall not be more than 6 feet (1829 mm) from the floor level. Such sign shall contain such additional information as the New York City Fire Department may require.

1026.11Photoluminescent exit path marking. Photoluminescent exit path markings in high-rise buildings subject to Section 403.16 shall be provided in accordance with this section. All exit path markings required herein shall be of an approved photoluminescent material. The markings shall be washable, non-toxic, non-radioactive, and if subjected to fire must be self-extinguishing when the flame is removed. Exit path markings shall at a minimum be located:

1. On all doors opening to exits, exit passageways, or horizontal exits and shall be marked with the word "EXIT".
2. Within exit stairs, horizontal extensions in exit stairs, horizontal exits, and exit passageways

Exception: Within street level lobbies where egress direction is immediately discernable.

Required markings for exit paths shall comply with the technical standards for installation and placement in accordance with rules promulgated by the commissioner.

1026.12 Materials for signs. Signs required by this section shall be of metal or other durable material.



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SECTION BC 103: DEPARTMENT OF BUILDINGS

NYC Administrative Code § 28-BC 103

103.1 General.

Refer to the New York City Charter and Chapter 1 of Title 28 of the Administrative Code.



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CHAPTER 1: ADMINISTRATION
SECTION BC 104: DUTIES AND POWERS OF COMMISSIONER OF BUILDINGS

NYC Administrative Code § 28-BC 104

104.1 General.

The commissioner shall have the authority to render interpretations and to adopt rules establishing policies, and procedures to clarify and implement the provisions of this code. Such interpretations and rules shall be in compliance with the intent and purpose of this code. Refer to the New York City Charter and Chapter 1 of Title 28 of the Administrative Code for additional provisions relating to the authority of the Commissioner of Buildings.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
CHAPTER 1: ADMINISTRATION
SECTION BC 105: PERMITS

NYC Administrative Code § 28-BC 105

105.1 General.

Permits shall comply with this section, with Article 105 of Chapter 1 of Title 28 of the Administrative Code, and with requirements found elsewhere in this code.

105.2Required. Any owner or authorized agent who intends to construct, add to, alter, repair, move, demolish, or change the occupancy of a building or structure, or to erect, install, add to, alter, repair, remove, convert or replace any gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be done, shall first make application for construction document approval in accordance with Chapter 1 of Title 28 of the Administrative Code and this chapter and obtain the required permit.

105.3Work exempt from permit. Exemptions from permit requirements of this code as authorized in Chapter 1 of Title 28 of the Administrative Code and the rules of the department shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or rules.

105.4Validity of permit. The issuance or granting of a permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other law. Permits presuming to give authority to violate or cancel the provisions of this code or other law shall not be valid. The issuance of a permit based on construction documents and other data shall not prevent the commissioner from requiring the correction of errors in the construction documents and other data. The commissioner is also authorized to prevent occupancy or use of a structure where in violation of this code or of any other law.

105.5Foundation and earthwork permits. In addition to the requirements of Chapter 1 of Title 28 of the Administrative Code and Chapter 33 of this code, applications for foundation and earthwork permits shall include:

1. Notice to adjoining owners. Proof of notice to adjoining owners as required by Section 3304.3.2.

2. Liens. Satisfactory evidence that the property is free from any lien for unpaid city taxes, assessments, water rates, bail bonds, or judgments obtained by the city, together with consent in writing of the mortgagee, if there is a mortgage upon the property, and the consent in writing of the surrogate's court or supreme court, if the owner of the property is a minor or incompetent.

105.5.1 Notice to the department of commencement of foundation and earthwork. The foundation and earthwork permit shall be issued on the condition that the applicant will provide written notice to the department at least 24 but no more than 48 hours prior to the commencement of the foundation or earthwork as required by Section 3304.3.1.

105.6 Full demolition permits. In addition to the requirements of Chapter 1 of Title 28 of the Administrative Code and Chapter 33 of this code, applications for full demolition permits shall include:

1. Utility certifications. Certifications by the respective utility companies or governmental agencies having jurisdiction that all gas, electric, water, steam and other service lines to the building have been disconnected as required by Section 3306.9.1.

2. Notice to adjoining owners. Proof of notice to adjoining owners as required by Section 3306.3.2.

3. Certification of rodent extermination. Certification in accordance with department rules that the building has been treated effectively for rodent extermination as required by Section 3306.9.13.

105.6.1 Notice to department of commencement of demolition work. The full demolition permit shall be issued on the condition that the applicant will provide written notice to the department at least 48 hours prior to the commencement of demolition work.

105.7 Sign permits. In addition to the requirements of Chapter 1 of Title 28, permits for the erection, alteration or installation of signs shall be subject to the special provisions set forth in Sections 105.7.1 through 105.7.5.

105.7.1 Identification number. Every sign permit shall have an identification number.

105.7.2 Changing copy or structural change of sign or sign structure. The changing of copy on a sign not permitted for changeable copy or any structural change of the sign or sign structure shall require a new permit pursuant to this code.

105.7.3 Permit does not constitute authorization for illegal sign. The issuance of a permit for the erection, alteration or installation of a sign or sign structure issued pursuant to this code shall not be deemed to constitute permission or authorization to maintain a sign that would otherwise be illegal without a maintenance permit for an outdoor sign if required pursuant to this code and department rule or that is otherwise illegal pursuant to any other provision of law nor shall any permit issued hereunder constitute a defense in an action or proceeding with respect to such an unlawful sign.

105.7.4 Name and business address of licensed sign hanger. The application shall contain the name and business address of the licensed sign hanger who is to perform or supervise the proposed work.

105.7.5 Outdoor advertising company. If the sign or sign location is under the control of an outdoor advertising company, as defined in Chapter 5 of Title 28 of the Administrative Code, the application shall be accompanied by the name and, where provided by rule, the registration number of such outdoor advertising company.

105.8 Temporary construction equipment permits. In addition to the requirements of Chapter 1 of Title 28, permits for the erection, installation and use of temporary construction equipment shall be subject to the special provisions set forth in Sections 105.8.1 through 105.8.3.

105.8.1 Application. The need for each specific item of construction equipment shall be stated on the application.

105.8.2Term of permit.Notwithstanding any other provision of this code, the term of a construction equipment permit shall be one year, or the expiration of the contractor's insurance or the street obstruction bond, if such time period is less than one year and shall be renewable. The permit must be in effect at all times during which the equipment is at the work site.

105.8.3Special provisions for renewal of permit for a sidewalk shed.An application for the renewal of a construction equipment permit for a sidewalk shed used in connection with the alteration of a building shall be accompanied by a report, acceptable to the department, prepared by a registered design professional who has examined that part of the premises on which the work requiring the use of a sidewalk shed is being performed. Such report shall document the condition of the applicable part of the premises and the scope of work that has been performed thereon since the issuance of the permit and shall provide an estimate of the additional time needed to complete the work.

105.9Mandatory sewer and catch basin work required by Section 24-526 of the Administrative Code.In addition to the requirements of Chapter 1 of Title 28, an applicant for a permit who is required pursuant to Section 24-526 of the Administrative Code to construct or repair defects in sewers or catch basins that lie outside the property shall submit certification from the Department of Environmental Protection that the applicant or owner has provided the Department of Environmental Protection with:

1. A performance bond or other security satisfactory to the Department of Environmental Protection and approved as to form by the Law Department for the full cost, as estimated by the Department of Environmental Protection, of constructing the part of the storm water drainage system for such property which shall lie outside the property line and repairing defects in such construction, if and as required by Section 24-526 of the Administrative Code;
2. Any license or other written instrument that the Department of Environmental Protection or the Law Department may reasonably request that gives the Department of Environmental Protection, its agents and contractors and the surety for a performance bond described in Item 1 above the legal right to enter private property to perform the work described in Item 1 above, pursuant to the terms of the performance bond or in accordance with the conditions of acceptance of other security described in Item 1 above, and the legal right to connect to, to extend or to discharge storm water into any private sewer authorized as a point of disposal pursuant to Section 24-526 of the Administrative Code, in the event that the owner of property fails to do so, if and as required pursuant to Section 24-526 of the Administrative Code;
3. Insurance of a kind and in an amount that the Department of Environmental Protection and the Law Department deem satisfactory to insure the city fully for all risks of loss, damage to property or injury to or death of persons to whomever occurring, arising out of or in connection with the performance of all work described in this section.



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CHAPTER 1: ADMINISTRATION
SECTION BC 106: CONSTRUCTION DOCUMENTS

NYC Administrative Code § 28-BC 106

106.1 General.

Construction documents shall comply with Chapter 1 of Title 28 of the Administrative Code, this section and other applicable provisions of this code and its referenced standards.

106.2 Required construction documents. In addition to the requirements of Chapter 1 of Title 28 of the Administrative Code, the applicant shall submit any and all of the documents specified in Sections 106.3 through 106.15 as appropriate to the nature and extent of the work proposed.

106.2.1 Composite plans. Composite plans showing architectural, structural, and mechanical parts of a building may be submitted provided that a clear understanding of each part is not impaired.

106.2.2 Multiple building developments. The same set of plans may be used for several buildings of the same construction, if such buildings are located on adjoining lots under the same ownership, and if applications for construction document approval for the lots are filed simultaneously.

106.3 Lot diagram. The lot diagram shall show compliance with the New York City Zoning Resolution, indicating: the size, height, and location of the proposed construction including parking and curb cuts; all existing structures on the zoning lot and their distances from lot and street lines; the established grade and existing curb elevations; and the proposed final grade elevations of the site shown by contours or spot grades at reasonable intervals. The lot diagram shall be drawn in accordance with an accurate boundary survey to the city datum, made by a land surveyor, which shall be attached to and form part of the application. A complete zoning analysis shall accompany the lot diagram with citation to the relevant sections of the New York City Zoning Resolution.

106.4 Building classification statement. The statement shall identify:

1. The occupancy group or groups that apply to parts of the building in accordance with Section 302;

2. The occupancy group of the main use or dominant occupancy of the building;
3. The construction class of the building in accordance with Section 602;
4. The Structural Occupancy Category in accordance with Table 1604.5;
5. The height of the building as defined in Section 502.1;
6. The applicable measurements to the highest and lowest level of Fire Department access;
7. Whether the building is inside or outside of the fire districts; and
8. For multiple dwellings, the multiple dwelling classification as established by the New York State Multiple Dwelling Law.

106.5 Means of egress plans. Floor and roof plans shall show compliance with the requirements of Chapter 10, with sufficient notations indicating egress features and complete egress analysis as required by this code.

106.6 Architectural plans. Construction documents for all buildings shall provide detailed drawings of all architectural elements of the building showing compliance with the code, including but not limited to doors, windows and interior finish schedules, and other details necessary to substantiate all required fire-protection characteristics, as well as other details demonstrating compliance with the accessibility requirements of this code. Site safety features shall be shown where applicable. Plans shall also provide details of the exterior wall envelope as required, including flashing, intersections with dissimilar materials, corners, end details, control joints, intersections at roof, eaves or parapets, means of drainage, water-resistive membrane and details around openings.

Exception: Where a curtain wall system is to be employed containing elements that are normally detailed on shop or working drawings, approval of construction documents shall be conditioned upon deferred submittal of such shop or working drawings showing the approval of the registered design professional who prepared the architectural construction documents, or of a signed statement by such registered design professional that such drawings were prepared to his or her satisfaction. In such cases, submittal of construction documents showing compliance with the Energy Conservation Construction Code of New York State related to such curtain wall may also be deferred.

106.7 Structural plans. Structural plans shall include the data and information described in this section and in Chapter 16.

Exceptions:

1. Where structural elements are normally detailed on shop or working drawings, approval of construction documents shall be conditioned upon deferred submittal of such shop or working drawings showing the approval of the registered design professional who prepared the structural construction documents, or of a signed statement by such registered design professional that such drawings were prepared to his or her satisfaction.

2. In cases where the detailing of structural elements has been made on the basis of fire-resistance ratings, load tables, or similar data as given in manufacturer's catalogues, approval of construction documents shall be conditional upon submission of a manufacturer's designation attesting to the accuracy of the data and indicating that such data were derived in conformance with the provisions of this code. Where the detailing of structural elements has been made on the basis of data published in technical documents of recognized authority issued or accredited by the agency or association promulgating the applicable referenced standard, such manufacturer's designation will not be required.

106.7.1 Foundation plans. Foundation plans shall show compliance with the requirements of Chapter 18 of this code regarding foundation design and shall show the plan locations, design elevations of the bottoms, and details as to sizes, reinforcements, and construction of all footings, piers, foundation walls, pile groups, and pile caps. The levels of

footings of adjacent structures shall be indicated or, if the adjacent structures are pile supported, this shall be stated. Where applicable, the plans shall include underpinning details. In addition, there shall be a statement indicating the character and minimum class of the soil strata required for the support of the foundation; the allowable soil pressure used for the design of footings; and the character, class, and presumptive bearing capacity of the bearing stratum to which piling is required to penetrate. The types and design capacities of piling and the records of required borings or test pits shall also be shown.

106.7.2Floor plans.Floor plans and sections showing all structural requirements shall be provided for all levels.

106.7.3Detailed drawings.Drawings shall show sizes, sections, and locations of members, and such other information as may be required to indicate clearly all structural elements and special structural engineering features.

106.7.4Column schedules.Column schedules shall show the design load contributed by the framing at any level and the total accumulated design load at each level.

106.7.5Truss forces.Where trusses are employed, a diagram or table shall indicate the loads or moments in the various members under the design loading conditions. The requirement for a diagram or table may be waived when the trusses consist of elements selected from load tables or similar data, subject to the requirements for verification described in this code.

106.7.6Prestressing forces.Where prestressed members are employed, a schedule or table shall show the total prestressing forces and the method and sequence of application.

106.8Excavation and earthwork plans.Where the application is sought solely for earthwork excavation or fill operations , the applicant shall submit 1) a lot diagram and 2) plans showing the exact location, extent, and depth or height of the proposed excavation or fill operation and any protective railings or equipment required by Chapter 33

106.9Fire protection system plans.Construction documents for fire protection systems shall include a plot plan to scale indicating the location of the system in relation to the rest of the building and shall comply with Sections 106.14.1 through 106.14.4. Such plans shall not be required in connection with applications for limited standpipe alterations and limited sprinkler alterations.

106.9.1Sprinkler systems.Sprinkler systems plans shall comply with Section 903.1.2.

106.9.2Alternative automatic fire-extinguishing systems.Alternative automatic fire-extinguishing systems plans shall comply with Section 904.1.1.

106.9.3Standpipe systems.Standpipe systems plans shall comply with Section 905.1.1.

106.9.4Fire alarm and detection systems.Fire alarm and detection systems plans shall comply with Section 907.1.1.

106.10Sign installation plans.Construction documents for signs applications shall comply with Section H105.2 in Appendix H.

106.11Sewer adequacy verification for increases in impervious surfaces.Whenever an alteration increases impervious surfaces on the lot to greater than 20 percent of the impervious surfaces existing when the structure was constructed, the applicant shall submit a house/site connection application approved or accepted by the Department of Environmental Protection as to the availability of a public sewer system, as well as an evaluation of the adequacy of any existing system for the disposal of storm water by any means other than storm or combined sewers.

Exception: Where the total area of impervious surfaces proposed to be increased after the effective date of this code is less than or equal to 1,000 square feet (93 m2).

106.12Pre-demolition photographs.In addition to the requirements of Section 3306.3, construction documents for full demolition shall comply with the following requirements for archival photographs:

1. Number required. Applications shall contain two sets of photographs of the building or buildings to be demolished or removed. Both sets shall be received by the department on behalf of the New York City Landmarks Preservation Commission and the New York City Municipal Archives Division of the Department of Records and Information Services.

2. Format. The photographs shall conform to the standards and specifications established by rules promulgated by the commissioner upon the advice of the commissioner of the Department of Records and Information Services and the chairperson of the Landmarks Preservation Commission.

Exceptions: Applications made on behalf of the Department of Housing Preservation and Development or made pursuant to Article 215 of chapter 2 of title 28 of the Administrative Code are exempt from the requirements of this section.

106.13Energy efficiency.Construction documents shall include a statement by the registered design professional of record that: "To the best of my knowledge, belief and professional judgment, these plans and specifications are in compliance with the Energy Conservation Construction Code of New York State." In addition, the following requirements shall apply:

1. A lead energy professional shall be identified for each project, who shall draw the relevant information regarding envelope, mechanical systems, service water heating system and lighting and power systems from construction documents into an energy analysis. The energy analysis shall balance total energy consumption of all systems in accordance with the Energy Conservation Construction Code of New York State and shall be signed and sealed by the lead energy professional.

2. The format for the energy analysis shall be as established in the Energy Conservation Construction Code of New York State, or as approved by the department, and shall comprise a sheet within the drawing set. Supporting documentation shall be available within the drawing set or upon request of the department.

106.14Mechanical and fuel gas plans.Construction documents for gas piping, heating, ventilation, refrigeration and other mechanical work to be performed shall be submitted as per New York City Mechanical and Fuel Gas Codes.

106.15Plumbing plans.Construction documents for plumbing work to be performed shall be submitted as per the New York City Plumbing Code.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

106.4 item 2 amended L.L. 8/2008 § 66, eff. July 1, 2008.

106.4 item 4 amended L.L. 8/2008 § 66, eff. July 1, 2008.

106.11 amended L.L. 8/2008 § 67, eff. July 1, 2008.

106.15 repealed and added L.L. 8/2008 § 68, eff. July 1, 2008.



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CHAPTER 1: ADMINISTRATION

SECTION BC 107: TEMPORARY STRUCTURES AND USES

NYC Administrative Code § 28-BC 107

107.1 General.

Refer to Chapter 1 of Title 28 of the Administrative Code.



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SECTION BC 108: FEES

NYC Administrative Code § 28-BC 108

108.1 Payment of fees.

Refer to Chapter 1 of Title 28 of the Administrative Code.



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SECTION BC 109: INSPECTIONS

NYC Administrative Code § 28-BC 109

109.1 General.

Except as otherwise specifically provided, inspections required by this code or by the department during the progress of work may be performed on behalf of the owner by approved inspection agencies or, if applicable, by special inspectors. However, in the interest of public safety, the commissioner may direct that any of such inspections be performed by the department. All inspections shall be performed at the sole cost and expense of the owner. Refer to Chapter 1 of Title 28 of the Administrative Code for additional provisions relating to inspections.

109.2 Preliminary inspection. Refer to Chapter 1 of Title 28 of the Administrative Code.

109.3 Required progress inspections. The inspections set forth in Sections 109.3.1 through 109.3.8 shall be made during the progress of work to verify substantial compliance with the code and with approved construction documents

109.3.1 Footing and foundation inspection. Footing and foundation inspections shall be made after excavations for footings are complete and any required reinforcing steel is in place. For concrete foundations, any required forms shall be in place prior to inspection. Materials for the foundation shall be on the job, except where concrete is ready mixed in accordance with ASTM C 94, the concrete need not be on the job.

109.3.2 Lowest floor elevation. In areas of special flood hazard, upon placement of the lowest floor, including the basement (for flood zone purposes), and prior to further vertical construction, the elevation inspection report required in Item 1 of Section G105.3 of Appendix G shall be submitted to the department.

109.3.3 Frame inspection. Framing inspections shall be performed to determine compliance with the approved construction documents.

Exception: Work regulated and inspected under Chapter 17.

109.3.4 Fire resistance rated construction inspection. Fire resistance rated construction shall be inspected to

determine compliance with the approved construction documents, including inspection of the following work:

1. Fire resistance rated partitions, floors, ceilings, shafts;
2. Fire blocking of concealed spaces;
3. Through-penetration firestopping, draftstopping and fireblocking;
4. Fire dampers;
5. Fire shutters; and
6. Protection of structural members.

Exception: Work regulated and inspected under Chapter 17.

109.3.5 Energy code compliance inspections. Inspections shall be made to determine compliance with approved construction documents.

109.3.6 Other inspections. In addition to the inspections specified above, the commissioner is authorized to make or require other inspections of any construction work to ascertain compliance with the provisions of this code and other laws that are enforced by the department.

109.4 Special inspections. Special inspections required by this code or by the commissioner shall be performed by special inspectors.

109.5 Final inspection. Refer to Chapter 1 of Title 28 of the Administrative Code.

109.6 Issuance of Certificate of compliance. Upon satisfactory inspection of service equipment and the project satisfied all the requirements for sign-off, the department shall issue certificate of compliance as applicable for the following service equipment:

1. Elevators;
2. Escalators;
3. Moving walkways;
4. Heating systems; and
5. Dumbwaiters.

109.7 Inspection agencies. Refer to Chapter 1 of Title 28 of the Administrative Code.

109.8 Inspection requests. Refer to Chapter 1 of Title 28 of the Administrative Code.

109.9 Satisfactory inspection report required. Portions of work requiring inspection may be sequenced or phased to allow continuing progress of that work provided that work shall not be done beyond the point indicated in each successive required inspection for that phase. The inspector shall either indicate the portion of the construction that is satisfactory as completed, or notify the permit holder or the superintendent of construction wherein the same fails to comply with this code. Any portions that do not comply shall be corrected and such portion shall not be covered or concealed until corrected. The person performing the inspection shall complete a report of satisfactory inspection. Refer to Chapter 1 of Title 28 of the Administrative Code.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE

CHAPTER 1: ADMINISTRATION

SECTION BC 110: CERTIFICATE OF OCCUPANCY

NYC Administrative Code § 28-BC 110

110.1 General.

Refer to Chapter 1 of Title 28 of the Administrative Code.



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Chapter 11: ACCESSIBILITY
SECTION BC 1101: GENERAL

NYC Administrative Code § 28-BC 1101

1101.1 Scope.

The provisions of this chapter and appendices E, N and P shall control the design and construction of facilities for accessibility to persons with physical disabilities.

1101.2Design. Buildings and facilities shall be designed and constructed to be accessible in accordance with this code and ICC A117.1 (Accessible and Usable Buildings and Facilities).



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Chapter 11: ACCESSIBILITY
SECTION BC 1102: DEFINITIONS

NYC Administrative Code § 28-BC 1102

1102.1 Definitions.

The following words and terms shall, for the purposes of this chapter, applicable appendices and as used elsewhere in this code, have the following meanings:

ACCESSIBLE. A site, building, facility or portion thereof that complies with this chapter.

ACCESSIBLE ROUTE. A continuous, unobstructed path that complies with this chapter.

ACCESSIBLE UNIT. A dwelling unit or sleeping unit that complies with this code and Chapter 1-Chapter 10 of ICC A117.1.

CIRCULATION PATH. An exterior or interior way of passage provided for pedestrian travel.

COMMON USE. Interior or exterior circulation paths, rooms, spaces or elements that are made available for the shared use of two or more people but are not for public use.

DETECTABLE WARNING. A standardized surface feature built in or applied to walking surfaces or other elements to warn visually impaired persons of hazards on a circulation path.

DWELLING UNIT (ACCESSIBILITY). For the purposes of Chapter 11 and applicable appendices: A single unit providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.

DWELLING UNIT OR SLEEPING UNIT, MULTI-STORY. A dwelling unit or sleeping unit with habitable space located on more than one story.

DWELLING UNIT OR SLEEPING UNIT, TYPE B. A dwelling unit or sleeping unit designed and constructed for

accessibility in accordance with this code, Section 1004 (Type B Units) of ICC A117.1 where applicable, and Appendix P of this code where applicable, consistent with or exceeding the design and construction requirements of the federal Fair Housing Act.

EMPLOYEE WORK AREA. All or any portion of a space used only by employees and only for work. Corridors, toilet rooms, kitchenettes and break rooms are not employee work areas.

FACILITY. All or any portion of buildings, structure, site improvements, elements and pedestrian or vehicular routes located on a site.

INTENDED TO BE OCCUPIED AS A RESIDENCE. This refers to a dwelling unit or sleeping unit that can or will be used all or part of the time as the occupant's place of abode.

MULTILEVEL ASSEMBLY SEATING. Seating that is arranged in distinct levels where each level is comprised of either multiple rows, or single row of box seats accessed from a separate level.

PUBLIC ENTRANCE. An entrance that is not a service entrance.

PUBLIC-USE AREAS. Interior or exterior rooms or spaces that are made available to the general public.

RESTRICTED ENTRANCE. An entrance that is made available for public use but on a controlled basis, and that is not a service entrance.

SELF-SERVICE STORAGE FACILITY. Real property designed and used for the purpose of renting or leasing individual storage spaces to customers for the purpose of storing and removing personal property on a self-service basis.

SERVICES. Includes but is not limited to toilet rooms, drinking fountains, public telephones, and food.

SERVICE ENTRANCE. An entrance solely for delivery of goods or services.

SITE. A parcel of land bounded by a property line or a designated portion of a public right-of-way.

SLEEPING UNIT (ACCESSIBILITY). For the purposes of Chapter 11 and applicable appendices: A room or space in which people sleep, which can also include permanent provisions for living, eating, and either sanitation or kitchen facilities but not both. Such rooms and spaces that are also part of a dwelling unit are not sleeping units.

WHEELCHAIR SPACE. A space for a single wheelchair and its occupant.



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SECTION BC 1103: SCOPING REQUIREMENTS

NYC Administrative Code § 28-BC 1103

1103.1 Where required.

Buildings and structures, temporary or permanent, including their associated sites and facilities, shall be accessible to persons with physical disabilities.

1103.2 General exceptions. Sites, buildings, facilities and elements shall be exempt from this chapter to the extent specified in this section.

1103.2.1 Specific requirements. Accessibility is not required in buildings and facilities, or portions thereof, to the extent permitted by Sections 1104 through 1110.

1103.2.2 Existing buildings. Existing buildings shall comply with Section 28-101.4.

1103.2.3 Employee work areas. All or any portion of a space used exclusively by employees and only for work shall be required to comply only with Section 1103.2.3. However, common use circulation paths, located within employee work areas shall also comply with Section 1104.3.1.

1103.2.3.1 Employee work areas and work stations. Spaces and elements within employee work areas shall comply with Sections 907.9.1.2, 1007 and 1104.3.1 and shall be designed and constructed so that individuals with disabilities can approach, enter and exit the work area. In addition, at least one and not less than five percent of seating, tables and/or work stations, if provided, within employee work areas shall comply with applicable sections of ICC A117.1.

1103.2.3.2 Elevated employee work areas. Where the elevation is critical to the proper work operations, work areas or portions of work areas that are less than 150 square feet (14 m²) in area and elevated 7 inches (178 mm) or more above the ground or finish floor shall be exempt from all requirements.

1103.2.4 Detached dwellings. Detached one and two-family dwellings and their accessory structures, and their associated sites and facilities are not required to be accessible.

1103.2.5Utility buildings.Occupancies in Group U are exempt from the requirements of this chapter other than the following:

1. In agricultural buildings and live stock shelters, access is required to paved work areas and areas open to the general public.
2. Green houses and stables open to the public.
3. Private garages or carports that contain required accessible parking.

1103.2.6Construction sites.Structures, sites and equipment directly associated with the actual processes of construction including, but not limited to, scaffolding, bridging, materials hoists, materials storage or construction trailers are not required to be accessible.

1103.2.7Raised areas.Raised areas used for purposes of security, life safety or fire safety including, but not limited to, observation galleries, prison guard towers, fire towers or lifeguard stands are not required to be accessible or to be on an accessible route.

1103.2.8Limited access spaces.Nonoccupiable spaces accessed only by ladders, catwalks, crawl spaces, freight elevators that are not part of an accessible route, or very narrow passageways are not required to be accessible.

1103.2.9Equipment spaces.Spaces frequented only by personnel for maintenance, repair or monitoring of equipment are not required to be accessible. Such spaces include, but are not limited to, elevator pits, elevator penthouses, mechanical, electrical or communications equipment rooms, piping or equipment catwalks, water or sewerage treatment pump rooms and stations, electrical substations and transformer vaults, and highway and tunnel utility facilities.

1103.2.10Non-grade single-occupant structures.Single-occupant structures that are accessed only by passageways below grade or above grade including, but not limited to, toll booths that are accessed only by bridges or underground tunnels, are not required to be accessible.

1103.2.11Residential Group R-1.Buildings or portions of buildings occupied by Group R-1 containing not more than five sleeping units for rent or hire that are also occupied as the residence of the proprietor are not required to be accessible.

1103.2.12Detention and correctional facilities.In detention and correctional facilities, common use areas that are used only by inmates or detainees and security personnel, and that do not serve holding cells or housing cells required to be accessible pursuant to Section 1107.5.5, are not required to be accessible or to be on an accessible route.

1103.2.13Fuel-dispensing systems.The operable parts on fuel-dispensing devices shall comply with Section 308.2.1 (Forward Reach Unobstructed) or 308.3.1 (Side Reach Unobstructed) of ICC A117.1.



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SECTION BC 1104: ACCESSIBLE ROUTE

NYC Administrative Code § 28-BC 1104

1104.1 Site arrival points.

Accessible routes within the site shall be provided from public transportation stops, accessible parking and accessible passenger loading zones, and public streets or sidewalks to the accessible building entrance served.

1104.2 Within a site. At least one accessible route shall connect accessible buildings, accessible facilities, accessible elements and accessible spaces that are on the same site and shall comply with Section 1104.5.

1104.3 Connected spaces. When a building, or portion of a building, is required to be accessible, an accessible route shall be provided to each portion of the building, to accessible building entrances connecting accessible pedestrian walkways and the public way. Where only one accessible route is provided, the accessible route shall not pass through kitchens, storage rooms, restrooms, closets or similar spaces.

Exceptions:

1. In assembly areas with seating required to be accessible, an accessible route shall not be required to serve seating where wheelchair spaces or designated aisle seats required to be on an accessible route are not provided.
2. Accessible routes shall not be required to mezzanines provided that the building or facility has no more than one story, or where multiple stories are not required to be connected by an accessible route as permitted by Section 1104.4.
3. A single accessible route is permitted to pass through a kitchen or storage room in an accessible dwelling unit.

1104.3.1 Circulation paths within employee work areas. Common use circulation paths within employee work areas shall be accessible routes.

Exceptions: The following exceptions apply only to the common use circulation paths within an employee work area and are not intended to remove the requirement of Section 1103.2.3 that employee work areas be designed and

constructed so that individuals with disabilities can approach, enter and exit the employee work area.

1. Common use circulation paths, located within employee work areas less than 300 square feet (27.9 m²) in size, and defined by permanently installed partitions, counters, casework or furnishings not serving accessible employee work stations that are required in Section 1103.2.3.1, shall not be required to be accessible routes.

2. Common use circulation paths, located within employee work areas, that are an integral component of equipment, shall not be required to be accessible routes.

1104.3.2 Press boxes. Press boxes in assembly areas shall be on an accessible route.

Exceptions:

1. An accessible route shall not be required to press boxes in bleachers that have points of entry at only one level, provided that the aggregate area of all press boxes is 500 square feet (46.5 m²) maximum.

2. An accessible route shall not be required to free-standing press boxes that are elevated above grade 12 feet (3658 mm) minimum provided that the aggregate area of all press boxes is 500 square feet (46.5 m²) maximum.

1104.4 Multilevel buildings and facilities. At least one accessible route shall connect each accessible level, including mezzanines, in multilevel level buildings and facilities.

Exceptions:

1. An accessible route is not required to stories and mezzanines above and below accessible levels in non-residential buildings where the aggregate area of all such stories and mezzanines that are not provided with accessible routes is not more than 2,500 square feet (232.3 m²). This exception shall not apply to:

1.1. Multiple tenant facilities of Group M occupancies containing five or more tenant spaces;

1.2. Levels containing offices of health care providers (Group B or I);

1.3. Passenger transportation facilities and airports (Group A-3 or B); or

1.4. Levels frequented by the public for assembly, government, public utility or health facility purposes.

2. In group A, I, R and S occupancies, levels that do not contain accessible elements or other spaces required by in Sections 1107 or 1108 are not required to be served by an accessible route from an accessible level.

3. Where a two-story building or facility has one story with an occupant load of five or fewer persons that does not contain public use space, that story shall not be required to be connected by an accessible route to the story above or below.

1104.5 Location. Accessible routes shall coincide with or be located in the same area as a general circulation path. Where the circulation path is interior, the accessible route shall also be interior.

1104.6 Security barriers. Security barriers including, but not limited to, security bollards and security check points shall not obstruct a required accessible route or accessible means of egress.

Exception: Where security barriers incorporate elements that cannot comply with these requirements, such as certain metal detectors, fluoroscopes or other similar devices, the accessible route shall be permitted to be provided adjacent to security screening devices. The accessible route shall permit persons with disabilities passing around security barriers to maintain visual contact with their personal items to the same extent provided others passing through

the security barrier.



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SECTION BC 1105: ACCESSIBLE ENTRANCES

NYC Administrative Code § 28-BC 1105

1105.1 Public entrances.

In addition to accessible entrances required by Sections 1105.1.1 through 1105.1.6, all public entrances shall be accessible.

Exceptions:

1. An accessible entrance is not required to areas that are not required to be accessible by this chapter or Appendix E.
2. Loading and service entrances that are not the only entrance to a building or a tenant space.
3. Revolving doors, revolving gates, or turnstiles shall not be required to be accessible provided that an accessible entrance is available adjacent to such revolving doors, revolving gates or turnstiles.

1105.1.1 Parking garage entrances. Where provided, direct access for pedestrians from parking structures to buildings or facility entrances shall be accessible.

1105.1.2 Entrances from tunnels or elevated walkways. Where direct access is provided for pedestrians from a pedestrian tunnel or elevated walkway to a building or facility, entrances from such access to the building or facility shall be accessible.

1105.1.3 Restricted entrances. Where restricted entrances are provided to a building or facility, all such restricted entrances shall be accessible.

1105.1.4 Entrances for inmates and detainees. Where entrances used only by inmates or detainees and security personnel are provided at judicial facilities, detention facilities or correctional facilities, all such entrances shall be accessible.

1105.1.5 Service entrances. If a service entrance is the only entrance to a building or a tenant space in a facility, that entrance shall be accessible.

1105.1.6 Tenant spaces. All entrances to tenant spaces that are required to be accessible shall be accessible entrances.

1105.1.6.1 Dwelling units and sleeping units. Doors and doorways at entrance(s) to Accessible units, including hardware, shall comply with Section 404 (Doors and doorways) of ICC A117.1. Doors and doorways, including hardware, at entrance(s) to Type B units shall comply with Section 1003.5 (Doors and doorways) of ICC A117.1.

Exceptions:

1. An accessible entrance is not required to dwelling units and sleeping units that are not required to be Accessible units or Type B units.

2. Entrances to multi-story dwelling or sleeping units in R-2 occupancy as provided in Section 1107.2.5 that are not on the primary entry story to the unit and are not part of the accessible route required in exception 1 of Section 1107.2.5 shall not be required to be accessible.



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SECTION BC 1106: PARKING AND PASSENGER LOADING FACILITIES

NYC Administrative Code § 28-BC 1106

1106.1 Required.

Where parking is provided, five percent of the total number of parking spaces, but not less than one parking space, shall be accessible parking spaces except as otherwise required by Sections 1106.2 through 1106.4. Van-accessible parking spaces shall be provided in accordance with Section 1106.5. Accessible parking spaces shall be designed and constructed in accordance with Section 502 (Parking Spaces) of ICC A117.1. The number of accessible parking spaces shall be determined based on the total number of parking spaces provided for the facility. Where a determination of the minimum number of parking spaces results in a number containing a decimal of 0.5 or more, the next highest integer shall be used.

Exception: This section does not apply to parking spaces used exclusively for buses, trucks, other delivery vehicles, law enforcement vehicles or vehicular impound where lots accessed by the public are provided with an accessible passenger loading zone.

1106.2 Groups R-2 and R-3. Where parking is provided for occupancies in groups R-2 and R-3, which are required to have Accessible or Type B dwelling or sleeping units, the number of accessible parking spaces shall be in compliance with Section 1106.1 and such number of accessible parking spaces shall be dispersed in accordance with Section 1106.6. Where parking is provided within or beneath a building, accessible parking spaces shall also be provided within or beneath the building.

1106.2.1 Lease, rental, or assignment of spaces. In a parking facility accessory to Occupancy Group R-2 or R-3 serving only the residents or employees of the management of such occupancy, or provided in compliance with Section 25-412 of the New York City Zoning Resolution, the accessible parking spaces in such facility may be leased, rented or assigned to a person without physical disabilities on a no longer than month-to-month basis. Such leases, rentals, or assignments of the accessible parking spaces to persons without physical disabilities shall be on written condition that such spaces be relinquished immediately at the end of the term of such lease, rental, or assignment to a resident or employee of the management of such occupancy who is a person with physical disabilities.

1106.3Hospital outpatient facilities.Ten percent, but not less than one, of patient and visitor parking spaces provided to serve hospital outpatient facilities shall be accessible.

1106.4Rehabilitation facilities and outpatient physical therapy facilities.Twenty percent, but not less than one, of the portion of patient and visitor parking spaces serving rehabilitation facilities and outpatient physical therapy facilities shall be accessible.

1106.5Van spaces.For every six or fraction of six accessible parking spaces, at least one space shall be a van-accessible parking space. Van-accessible parking spaces shall be designed and constructed in accordance with ICC A117.1 including Section 502 (Parking Spaces).

1106.6Location.Accessible parking spaces shall be located on the shortest accessible route of travel from adjacent parking to an accessible building entrance. Accessible parking spaces shall be dispersed among the various types of parking facilities provided. In parking facilities that do not serve a particular building, accessible parking spaces shall be located on the shortest route to an accessible pedestrian entrance to the parking facility. Where buildings have multiple accessible entrances with adjacent parking, accessible parking spaces shall be dispersed and located near the accessible entrances. In occupancies group R-2 and R-3, at least one of each type of parking space shall be accessible.

Exceptions:

1. In multilevel parking structures, van-accessible parking spaces complying with Section 502 (Parking Spaces) of ICC A117.1 may be provided on one level.

2. In an attended parking facility in which vehicles customarily are parked and later returned to their drivers by an attendant employed by the parking facility, accessible parking spaces need not be designated by a sign or lines if all of the following conditions are met:

2.1. Van-accessible parking spaces complying with Section 502 (Parking Spaces) of ICC A117.1 are provided,

2.2. A passenger loading zone complying with Section 1106.7 is provided where an attendant shall take control of the vehicles. A vertical clearance of 98 inches (2489 mm) shall be permitted at such loading zone,

2.3. At least one accessible parking space shall remain available unless all accessible parking spaces are occupied,

2.4. The attendant shall park and retrieve all vehicles not equipped with special controls entering the facility in which a person with disabilities is either the driver or a passenger, provided accessible parking space is available,

2.5. The attendant shall direct the drivers of vehicles equipped with special controls to accessible parking spaces. The attendant shall accompany such drivers to and from such space along an accessible route when they enter and exit the facility. If necessary, the accessible route and accessible parking space shall be created by the repositioning of vehicles parked previously by the attendant, and

2.6. Each van-accessible parking space shall have two permanently and prominently posted signs. One shall include the International Symbol of Accessibility complying with Section 703.6.3.1 of ICC A117.1. The other sign shall note that vehicles parked in such spaces are subject to being moved by an attendant of the parking facility in order to accommodate a vehicle which cannot be accommodated in another accessible parking space. Such signs shall not be obstructed by a vehicle parked in the space.

1106.7Passenger loading zones.Passenger loading zones shall be designed and constructed in accordance with ICC A117.1 including Section 503 (Passenger Loading Zones). Where there are curbs between the access aisle and the vehicle pull-up space, a curb ramp complying with ICC A117.1 including Section 406 (Curb Ramps) shall be provided.

1106.7.1Continuous loading zones.Where passenger loading zones are provided, at least one accessible passenger

loading zone shall be provided within each continuous 100 linear feet (30.4 m) of loading zone space, or fraction thereof, so that travel between accessible passenger loading zones will not exceed 100 linear feet (30.4 m).

1106.7.2Medical facilities.A passenger loading zone shall be provided at an accessible entrance to licensed medical and long-term care facilities where people receive physical or medical treatment or care and where the period of stay exceeds 24 hours.

1106.7.3Valet parking.A passenger loading zone shall be provided at valet parking services.



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SECTION BC 1107: DWELLING UNITS AND SLEEPING UNITS

NYC Administrative Code § 28-BC 1107

1107.1 General.

In addition to the other requirements of this chapter, occupancies having dwelling units or sleeping units shall be provided with accessible features in accordance with this section.

1107.2Design. Dwelling units and sleeping units which are required to be Accessible units or Type B units shall comply with this code including Appendix P where applicable, and the applicable provisions of Chapter 10 of ICC A117.1. In addition, Type B units in R-2 occupancies shall comply with Sections 1107.2.1 through 1107.2.8. Units required to be Type B units are permitted to be designed and constructed as Accessible units.

1107.2.1Type B unit doors and doorways in R-2 occupancy. Doors and doorways at the entrance(s) to the dwelling or sleeping unit shall comply with Section 1105.1.6. All other doors and doorways within the dwelling or sleeping unit meant for human passage shall comply with Section 1003.5 (Doors and Doorways) of ICC A117.1. In addition, doors and doorways serving toilet and bathing facilities that are required to comply with Appendix P shall also comply with Section P102.3.

Exceptions:

1. Maneuvering clearance at doors. Where pull side, latch approach maneuvering clearance is required within the dwelling or sleeping unit for a door without a closer as per Fig. 404.2.3.1 (f) of ICC A117.1, the minimum maneuvering clearance perpendicular to the doorway shall be permitted to be reduced to 42 inches (1067 mm).
2. Door hardware. Door hardware on doors within the dwelling or sleeping unit, except on entrance doors, shall not be required to comply with Section 404.2.6 (Door Hardware) of ICC A117.1 provided such hardware is readily replaceable without the removal or replacement of the door.
3. Future reversibility for bedroom doors. Bedroom door and frames shall be permitted to be provided with

mortised hinge and latch blanks to permit future reversal of the door on the same frame using common hand tools and without further alterations to the door and frame, provided such future swing of the door will not obstruct the maneuvering clearances required at the door or doorway.

4. Flex-closet. Where front approach, pull side maneuvering clearance is required at a manual swinging door per Fig. 404.2.3.1(a) of ICC A117.1, such clearance space may be used for a readily removable storage closet provided that:

4.1

Such closet is so constructed that the front approach, pull side maneuvering clearance can be restored by removing the closet doors, floor tracks, and shelves using common hand tools and without alterations to the floor or flooring, walls or partitions; and

4.2. In any dwelling unit or sleeping unit containing a flex-closet, the dwelling unit or sleeping unit must contain the following additional closets:

4.2.1. An accessible non-flex-closet in each bedroom equivalent to at least one 4 feet (1219 mm) wide by 2 feet 6 inches (762 mm) deep and 5 feet (1524 mm) high or, in an efficiency apartment, at least one such closet; and

4.2.2. An accessible non-flex-closet equal in cubic footage to the flex closet that is located outside of bedrooms, kitchen or bathroom.

5. Supplemental toilet and bathing facilities. Where one Type A toilet and bathing facility is provided in a Type B unit in accordance with the exception in Section 1107.2.2, the doors and doorways to all other toilet and bathing facilities in that dwelling unit shall not be required to comply with maneuvering clearances, but shall comply with Section 1004.5.2 (User Passage Doorways) of ICC A117.1 and shall provide clear opening width of 32 inches (813 mm) minimum.

1107.2.2 Type B unit toilet and bathing facilities in R-2 occupancy. Where toilet and bathing facilities are provided in the dwelling unit or sleeping unit, all such toilet and bathing facilities shall comply with Appendix P.

Exception for Type A toilet and bathing facility: Where at least one toilet and bathing facility in the dwelling or sleeping unit is constructed in accordance with the Type A toilet and bathing facilities requirements of Section 1003.11 (Toilet and Bathing Facilities), including Section 1003.3.2 (Turning Space), of ICC A117.1 and is in compliance with the following:

1. At least one lavatory, one water closet and either a bathtub or shower within such toilet or bathing facility shall comply with Section 1003.11 of ICC A117.1. Such toilet and bathing fixtures shall be in a single toilet or bathing area, such that travel between fixtures does not require travel beyond the area in which the fixtures of such toilet or bathing facility are located.

2. Toilet paper dispensers within such facilities shall comply with Section 604.10.7 (Dispensers) of ICC A117.1.

3. Medicine cabinets, if provided, must include a storage shelf no higher than 44 inches (1118 mm) above the floor.

Where at least one toilet and bathing facility complying with Sections 1003.11 and 1003.3.2 of ICC A117.1 is provided within the dwelling or sleeping unit in accordance with this exception, other toilet and bathing facilities shall be required to comply only with Sections 1004.3 (Accessible route), 1004.4 (Walking Surfaces), 1004.5.2 (User Passage Doorways), 1004.9 (Operable Parts) and 1004.11.2 (Reinforcement) of ICC A117.1. Doors and doorways to such toilet and bathing facilities shall provide clear opening width of 32 inches (813 mm) minimum.

1107.2.3 Type B unit kitchen and kitchenette in R-2 occupancy. Where kitchens and kitchenettes are provided in the dwelling unit or sleeping unit, the primary kitchen or kitchenette shall be constructed in accordance with the kitchen

requirements of Section 1003.12 (Kitchen) of ICC A117.1 and Section 1107.2.3.1 through 1107.2.3.4. Secondary kitchens and kitchenettes within the same dwelling unit or sleeping unit shall be required to comply only with Section 1004.12 (Kitchens) of ICC A117.1.

1107.2.3.1 Kitchen counters. A kitchen counter that is required to comply with Section 1003.12.3.2 or 1003.12.4.2 (Height) of ICC A117.1 shall be permitted to be adjustable or designed to be replaceable as a unit at variable heights between 29 inches and 36 inches in (737 mm and 914 mm), measured from the floor to the top of the work surface. The owner shall adjust or replace such countertop at the time a person with physical disabilities takes occupancy of the unit, or within 10 days of the date the request is made by a person with physical disabilities, whichever is later, at the owner's expense.

1107.2.3.2 Appliances in kitchen and kitchenette. Appliances shall comply with Section 1003.12.6 (Appliances) of ICC A117.1.

Exception: Where appliances' controls are not in compliance with Section 309.4 (Operation) of ICC A117.1, the owner shall replace such appliances with appliances in conformance with Section 309.4 of ICC A117.1 at the time a person with physical disabilities takes occupancy of the unit, or within 10 days of the date the request is made by a person with physical disabilities, whichever is later, at the owner's expense. However, the owner shall not be responsible to provide a particular model or type of appliances provided such appliances and controls complies with Sections 1003.12.6 and 309.4 of ICC A117.1.

1107.2.3.3 Refrigerator/Freezers. Combination refrigerators and freezers shall comply with Section 1003.12.6.6 (Refrigerator/Freezers) of ICC A117.1. In addition, where less than 100 percent of storage volume of the freezer is located within 54 inches (1372 mm) maximum above the floor, such freezer shall be a self-defrosting type.

Exception: Where refrigerators and freezers are not in compliance with this section, the owner shall replace such appliances with complying appliances at the time a person with physical disabilities takes occupancy of the unit, or within 10 days of the date the request is made by a person with physical disabilities, whichever is later, at the owner's expense. However, the owner shall not be responsible to provide a particular model or type of appliances provided such appliances comply with this section.

1107.2.3.4 Kitchen and kitchenette storage. Kitchen storage, kitchen cabinets, drawers, and shelf storage areas, within kitchen and kitchenette that are required to comply with Section 1003.12 of ICC A117.1 pursuant to Section 1107.2.3, except overhead cabinets, shall comply with Section 905 (Storage Facilities) of ICC A117.1. In addition, at least one storage shelf or cabinet, mounted above work counters at 48 inches (1219 mm) maximum above the floor, shall be provided.

1107.2.4 Type B unit operable windows in R-2 occupancy. All operable windows in rooms or spaces in the dwelling unit or sleeping unit shall have operable parts complying with Section 309 (Operable Parts) of ICC A117.1.

Exception: Compliance with Section 1107.2.4 is not required in kitchenettes less than 80 square feet (7.4 m²) in area and equipped with an accessible mechanical means of ventilation complying with the New York City Mechanical Code, and in bathrooms equipped with an accessible mechanical means of ventilation complying with the New York City Mechanical Code.

1107.2.5 Type B multi-story units in R-2 occupancy. Multi-story dwelling or sleeping units shall comply with the following:

1. One of the stories with an accessible entrance shall be designated as the primary entry story to the unit;
2. All rooms, spaces and doors on the primary entry story shall comply with Section 1107.2; and

3. Rooms, spaces or doors located on other than the primary entry story, and interior routes thereto, need not comply with Section 1107.2 where the primary entry story contains equivalent functional facilities.

Exception: Functional facilities in compliance with Section 1107.2 may be located on any story within the dwelling or sleeping unit, provided that all rooms, spaces and doors located on such story containing such functional facilities comply with Section 1107.2. In addition, a toilet facility complying with Section 1107.2.2 shall be provided on the primary entry story, and one of the following conditions shall be met:

1. An accessible external elevator is provided to connect all such stories of the multi-story dwelling or sleeping unit; or

2. A stairway complying with Section 504 (Stairways) of ICC A117.1 with a minimum clear width of 36 inches (914 mm) is provided within the multi-story dwelling or sleeping unit to connect all such stories of the unit; or

3. An accessible route complying with Section 402 (accessible routes) of ICC A117.1 is provided within the dwelling or sleeping unit to connect all such stories of the unit.

1107.2.6 Type B unit raised or sunken floor area in R-2 occupancy. Where a raised or sunken floor area in a portion of a living, dining, or sleeping room within a dwelling or sleeping unit that is permitted by Section 1004.3 (accessible route, Exception 1 and 2) of ICC A117.1 is provided, steps complying with Section 504 (Stairways) of ICC A117.1 with a minimum clear width of 36 inches (914 mm) shall connect such portion of raised or sunken floor area to an accessible route. In addition, a minimum area of 80 square feet (7.4 m²), and 8 feet (2438 mm) in one dimension, of each of such living, dining, or sleeping room shall be connected by an accessible route that is in compliance with Section 1004.3.2 (Components) of ICC A117.1.

1107.2.7 Type B unit storage facilities in R-2 occupancy. Where storage facilities are provided within the dwelling or sleeping unit, they shall comply with Section 905 (Storage Facilities) of ICC A117.1.

1107.2.8 Type B unit laundry equipment in R-2 occupancy. Where washing machines or clothes dryers are provided within the dwelling or sleeping unit, such equipment shall comply with Section 611 (Washing Machines and Clothes Dryers) of ICC A117.1 and shall be front loading. Laundry equipment in accessible common-use area as required in Section 1107.3 shall comply with Section E105.3.

Exception: At the option of the owner, laundry equipment conforming to this section within the dwelling or sleeping unit may be provided at the time a person with physical disabilities takes occupancy of the unit, or within ten 10 days of the date the request is made by a person with physical disabilities, whichever is later, at the owner's expense. However, the owner shall not be responsible to provide a particular model or type of equipment provided such equipment complies with this section.

1107.3 Accessible spaces. Rooms and spaces available to the general public or available for use by residents of Accessible units or Type B units shall be accessible. Accessible spaces shall include, but not be limited to, spaces for residents' use, such as laundry rooms, refuse disposal and storage locations, mailbox areas, recreational facilities, assembly and tenants' meeting rooms, storage rooms, parking areas, toilet and bathing rooms, kitchen, living and dining areas, any exterior spaces, including patios, terraces and balconies, management offices, and stores.

1107.4 Accessible route. At least one accessible route shall connect accessible building or facility entrances with the required accessible entrance(s) of each Accessible unit and Type B unit within the building or facility and with those exterior and interior spaces and facilities that serve the units.

Exceptions:

1. Roof terraces of Type B units above residential occupancies. Roof terraces that are part of Type B units and that

are not for public use or common use, located on the floor immediately above enclosed residential occupancies.

2. Other exterior spaces of Type B units. All other exterior spaces, including but not limited to roof terraces, exterior decks, patios or balconies that are part of Type B units, that are not for public use or common use, that have impervious surfaces, and that are not more than 4 inches (102 mm) below the finished floor level of the adjacent interior space of the unit. Such roof terraces, decks, patios or balconies shall be designed so that accessibility can be readily provided, without modifications to the guard rail heights and structural supports, by the installation of a non-combustible ramp in compliance with Section 405 (Ramps) of ICC A117.1, or a non-combustible level platform, with removable panel for access to floor drainage, that is permeable to weather and in compliance with Section 302 (Floor Surfaces) and Section 303 (Changes in Level) of ICC A117.1.

1107.5 Group I. Occupancies in Group I shall be provided with accessible features in accordance with Sections 1107.5.1 through 1107.5.5.

1107.5.1 Group I-1. Group I-1 occupancies shall be provided with accessible features in accordance with Section 1107.5.1.1.

1107.5.1.1 Accessible units. In Group I-1 occupancies, 100 percent of the dwelling units and sleeping units shall be Accessible units.

1107.5.2 Group I-2 Nursing homes. Nursing homes of Group I-2 shall be provided with accessible features in accordance with Section 1107.5.2.1.

1107.5.2.1 Accessible units. In Nursing homes, 100 percent of the dwelling units and sleeping units shall be Accessible units.

1107.5.3 Group I-2 Hospitals. General-purpose hospitals, psychiatric facilities, detoxification facilities and residential care/assisted living facilities of Group I-2 shall be provided with accessible features in accordance with Section 1107.5.3.1.

1107.5.3.1 Accessible units. In such Group I-2 facilities, 100 percent of the dwelling units and sleeping units shall be Accessible units.

1107.5.4 Group I-2 Rehabilitation facilities. In hospitals and rehabilitation facilities of Group I-2 which specialize in treating conditions that affect mobility, or units within either which specialize in treating conditions that affect mobility, 100 percent of the dwelling units and sleeping units shall be Accessible units.

1107.5.5 Group I-3. Buildings, facilities or portions thereof with Group I-3 occupancies shall comply with Sections 1107.5.5.1 through 1107.5.5.3.

1107.5.5.1 Group I-3 sleeping units. In occupancies in Group I-3, at least two percent, but not less than one, of the dwelling units and sleeping units shall be Accessible units.

1107.5.5.2 Special holding cells and special housing cells or rooms. In addition to the units required to be accessible by Section 1107.5.5.1, where special holding cells or special housing cells or rooms are provided, at least one serving each purpose shall be accessible. Cells or rooms subject to this requirement include, but are not limited to, those used for purposes of orientation, protective custody, administrative or disciplinary detention or segregation, detoxification and medical isolation.

Exception: Cells or rooms specially designed without protrusions and that are used solely for purposes of suicide prevention shall not be required to include grab bars.

1107.5.5.3 Medical care facilities. Patient sleeping units or cells required to be accessible in medical care facilities

shall be provided in addition to any medical isolation cells required to comply with Section 1107.5.5.2.

1107.6 Group R. Occupancies in Group R shall be provided with accessible features in accordance with Sections 1107.6.1 through 1107.6.3.

1107.6.1 Group R-1. Group R-1 occupancies shall be provided with accessible features in accordance with Sections 1107.6.1.1 through 1107.6.1.3.

Exception: Boarding houses, dormitories, fraternity houses and sorority houses shall comply with Section 1107.6.1.4.

1107.6.1.1 Accessible units. In occupancies in Group R-1, accessible dwelling units and sleeping units shall be provided in accordance with Table 1107.6.1.1. All facilities on a site shall be considered to determine the total number of Accessible units. Accessible units shall be dispersed among the various classes of units. Roll-in showers provided in Accessible units shall include a permanently mounted folding shower seat. In addition, required Accessible units in occupancies in group R-1 shall comply with the following:

Where hard wiring of audible and visual smoke detectors and/or carbon monoxide detectors is not required to be provided by Chapter 9, portable smoke and/or carbon monoxide detectors with both audible and visual features shall be available for a minimum of three percent of the total number of dwelling and sleeping units, or fraction thereof, but not fewer than one. Such detectors shall have a flash frequency range of 60 to 120 flashes per minute. Where the average illumination level with motion present is more than 20 lumens per square foot, the visible signaling appliance shall have an effective intensity rating between 100 and 1000 candela. A sign with a minimum height of 3 inches (76 mm) shall be posted at the main desk or other equivalent locations indicating the availability of such detectors.

Table 1107.6.1.1
Accessible Dwelling and Sleeping Units
Total Number of Units Provided Minimum Required Number of Accessible Units
Associated With Roll-In Showers
Total Number of Required Accessible Units
1 to 25 0 1 26 to 49 0 2 50 to 75 1 4 76 to 100 1 5 101 to 149 2 7 150 and over 1% of total* 5% of total* *|Where determination by percentage results in a number containing a decimal of 0.5 or more, the next higher number shall be used.

1107.6.1.2 Type B units. In structures with four or more dwelling or sleeping units intended to be occupied as a residence, every dwelling and sleeping unit intended to be occupied as a residence shall be a Type B unit.

Exceptions:

1. The number of Type B units is permitted to be reduced in accordance with Section 1107.7.
2. Compliance with Sections 1107.2.1 through 1107.2.8 is not required.

1107.6.1.3 Doors and doorways. Entrances, doors, and doorways providing user passage into and within units that are not required to comply with Accessible units' requirements shall comply with Section 404.2.2 (Clear Width) of ICC A117.1.

1107.6.1.4 Boarding houses, dormitories, fraternity houses and sorority houses. Accessible units and Type B dwelling units and sleeping units shall be provided in boarding houses, dormitories, fraternity houses and sorority houses in accordance with Sections 1107.6.1.4.1 and 1107.6.1.4.2.

1107.6.1.4.1 Accessible units. Accessible dwelling units and sleeping units shall be provided in accordance with Table 1107.6.1.1.

1107.6.1.4.2 Type B units. Every dwelling unit and every sleeping unit not required to be accessible shall be a Type B unit and shall comply with Section 1107.2, and Sections 1107.2.1 through 1107.2.8, regardless of intent to occupy such unit as a residence.

Exception: The number of Type B units is permitted to be reduced in accordance with Section 1107.7.

1107.6.2 Group R-2. Accessible units and Type B units shall be provided in occupancies in Group R-2 in accordance with Section 1107.6.2.1.

1107.6.2.1 Apartment houses, monasteries and convents. Type B units shall be provided in apartment houses, monasteries and convents in accordance with Section 1107.6.2.1.1.

1107.6.2.1.1 Type B units. Every dwelling unit and sleeping unit, regardless of intent to occupy such unit as a residence, shall be a Type B unit and shall comply with Section 1107.2, and Sections 1107.2.1 through 1107.2.8.

Exception: The number of Type B units is permitted to be reduced in accordance with Section 1107.7.

1107.6.3 Group R-3. In occupancies in Group R-3 where there are four or more dwelling units or sleeping units intended to be occupied as a residence in a single structure, every dwelling and sleeping unit intended to be occupied as a residence shall be a Type B unit.

Exceptions:

1. The number of Type B units is permitted to be reduced in accordance with Section 1107.7.
2. Compliance with Sections 1107.2.1 through 1107.2.8 is not required.

1107.7 General exceptions. Where specifically permitted by Section 1107.6, the required number of Type B units is permitted to be reduced in accordance with Sections 1107.7.1 through 1107.7.3.

1107.7.1 Buildings without elevator service. Where no elevator service is provided in a building, only the dwelling and sleeping units that are located on stories indicated in Sections 1107.7.1.1 and 1107.7.1.2 are required to be Type B units.

1107.7.1.1 One story with Type B units required. For occupancies in other than Group R-2, at least one story containing dwelling units or sleeping units intended to be occupied as a residence shall be provided with an accessible entrance from the exterior of the building and all units intended to be occupied as a residence on that story shall be Type B units. Occupancies in Group R-2 shall comply with the following:

1. Cellar, basement, or first story. For occupancies in Group R-2, in buildings where the lowest story containing dwelling or sleeping units is the cellar, basement, or first floor, at least one such story containing dwelling or sleeping units, regardless of intent to occupy as a residence, shall be provided with an accessible entrance and all units on that story, regardless of intent to occupy as a residence, shall be Type B units.

2. Second story or higher. For occupancies in Group R-2, in structures where the lowest story containing dwelling or sleeping units is the second story or higher, at least one story containing dwelling or sleeping units intended to be occupied as a residence shall be provided with an accessible entrance from the exterior of the building and all units intended to be occupied as a residence on that story shall be Type B units. Notwithstanding the foregoing, Type B units shall not be required in such structures that contain only multi-story dwelling or sleeping units and shall not be required in such structures that contain fewer than four dwelling or sleeping units.

1107.7.1.2 Other stories with Type B units required. If other stories containing dwelling or sleeping units intended to be occupied as a residence are served by a building entrance that is in proximity to arrival points as indicated in Items 1 and 2, such building entrance shall be accessible and all dwelling units and sleeping units intended to be occupied as a residence served by that entrance on that story shall be Type B units.

1. Where the slopes of the undisturbed site measured between the planned entrance and all vehicular or pedestrian

arrival points within 50 feet (15 240 mm) of the planned entrance are 10 percent or less, and

2. Where the slopes of the planned finished grade measured between the entrance and all vehicular or pedestrian arrival points within 50 feet (15 240 mm) of the planned entrance are 10 percent or less.

Where no such arrival points are within 50 feet (15 240 mm) of the entrance, the closest arrival point shall be used unless that arrival point serves the story required by Section 1107.7.1.1.

1107.7.2Multistory units in Occupancy Group R-3.A multistory dwelling or sleeping unit which is not provided with elevator service is not required to be a Type B unit. Where a multistory unit is provided with external elevator service to only one floor, the floor provided with elevator service shall be the primary entry to the unit, shall comply with the requirements for a Type B unit and a toilet facility shall be provided on that floor.

1107.7.3Elevator service to the lowest story with units.Where elevator service in the building is provided for the sole purpose of complying with the provisions of Section 1107.7.1.1 to serve as an accessible route only to the lowest story containing dwelling or sleeping units intended to be occupied as a residence, only the units intended to be occupied as a residence on the lowest story served by the elevator are required to be Type B units.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1107.2.2 amended L.L. 8/2008 § 112, eff. July 1, 2008.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 11: ACCESSIBILITY
SECTION BC 1108: SPECIAL OCCUPANCIES

NYC Administrative Code § 28-BC 1108

1108.1 General.

In addition to the other requirements of this chapter and applicable provisions of Appendices E and N, the requirements of Sections 1108.2 through 1108.4 shall apply to specific occupancies.

1108.2 Assembly area seating. Assembly areas with seating shall comply with 1108.2.1 through 1108.2.8. Dining areas shall comply with 1108.2.9.

1108.2.1 Services. Services and facilities provided in areas not required to be accessible in Section 1108.2.9 shall be provided on an accessible level and shall be accessible.

1108.2.2 Wheelchair spaces. In theaters, bleachers, grandstands, stadiums, arenas and other assembly areas, accessible wheelchair spaces, companion seats, and designated aisle seats complying with ICC A117.1 including Section 802 (Assembly Areas) shall be provided in accordance with Sections 1108.2.2.1 through 1108.2.2.3. Required accessible wheelchair spaces and their companion seats as required in Section 1108.2.5 shall be delineated on the approved seating plans. Such spaces and seats which are unsold one day (24 hours) before the event shall be permitted to be released for sale to the public, including persons without physical disabilities.

1108.2.2.1 General Seating. Wheelchair spaces shall be provided in accordance with Table 1108.2.2.1. Table 1108.2.2.1 Accessible Wheelchair Spaces Capacity of Seating in Assembly Areas Minimum Required Number of Wheelchair Spaces 4 to 25 1 26 to 50 2 51 to 100 4 101 to 300 5 301 to 500 6 501 to 5,000 6, plus 1 for each 150, or fraction thereof, between 501 through 5,000 5,001 and over 36 plus 1 for each 200, or fraction thereof, over 5,000

1108.2.2.2 Luxury boxes, club boxes and suites. In each luxury box, club box, and suite within arenas, stadiums and grandstands, wheelchair spaces shall be provided in accordance with Table 1108.2.2.1.

1108.2.2.3 Other boxes. In boxes other than those required to comply with Section 1108.2.2.2, the total number of

wheelchair spaces provided shall be determined in accordance with Table 1108.2.2.1. Wheelchair spaces shall be located in not less than 20 percent of all boxes provided.

1108.2.3Integration. Wheelchair spaces shall be an integral part of the seating plan.

1108.2.4Dispersion of wheelchair spaces. Dispersion of wheelchair spaces shall be based on the availability of accessible routes to various seating areas including seating at various levels in multilevel facilities.

1108.2.4.1Multilevel assembly seating areas. In multilevel assembly seating areas, wheelchair spaces shall be provided on the main floor level and on each additional floor or mezzanine levels. Wheelchair spaces shall be provided in each luxury box, club box and suite within assembly facilities

Exceptions:

1. In multilevel assembly spaces utilized for worship services, where the second floor or mezzanine level contains 25 percent or less of the total seating capacity, all wheelchair space clusters shall be permitted to be located on the main level.

2. In multilevel assembly seating where the second floor or mezzanine level provides 25 percent or less of the total seating capacity and 300 or fewer seats, wheelchair space clusters shall be permitted to all be located on the main level.

1108.2.5Companion seating. At least one companion seat complying with ICC A117.1 including Section 802.7 (Companion Seat) shall be provided for each wheelchair space required by Section 1108.2.2.

1108.2.6Designated aisle seats. At least five percent, but not less than one, of the total number of aisle seats provided shall be designated aisle seats and shall comply with ICC A117.1 including Section 802.8 (Designated Aisle Seats).

1108.2.7Assistive listening systems. Each assembly area where audible communications are integral to the use of the space shall have an assistive listening system in compliance with ICC A117.1 including Section 706 (Assistive Listening System) and Appendix N of this code.

Exception: Other than in courtrooms, an assistive listening system is not required where there is no audio amplification system.

1108.2.7.1Receivers. Receivers shall be provided for assistive listening system in accordance with Table 1108.2.7.1. All receivers shall be hearing aid compatible. Table 1108.2.7.1 Receivers for Assistive Listening Systems Capacity of Seating in Assembly Areas Minimum Required Number Receivers Minimum Number of Receivers to be Hearing-Aid Compatible 50 or less 2 51 to 200 2, plus 1 per 25 seats over 50 seats* 2 201 to 500 2, plus 1 per 25 seats over 50 seats* 1 per 4 receivers* 501 to 1,000 20, plus 1 per 33 seats over 500 seats* 1 per 4 receivers* 1,001 to 2,000 35, plus 1 per 50 seats over 1,000 seats* 1 per 4 receivers* Over 2,000 55, plus 1 per 100 seats over 2,000 seats* 1 per 4 receivers* NOTE: * = or fraction thereof

1108.2.7.2Public Address systems. Where stadiums, arenas and grandstands provide audible public announcements, they shall also provide equivalent text information regarding events and facilities in compliance with Sections 1108.2.7.2.1 and 1108.2.7.2.2

1108.2.7.2.1Prerecorded text messages. Where electronic signs are provided and have the capability to display prerecorded text messages containing information that is the same, or substantially equivalent, to information that is provided audibly, signs shall display text that is equivalent to audible announcements.

Exception: Announcements that cannot be prerecorded in advance of the event shall not be required to be displayed.

1108.2.7.2.2Real-time messages.Where electronic signs are provided and have the capability to display real-time messages containing information that is the same, or substantially equivalent, to information that is provided audibly, signs shall display text that is equivalent to audible announcements.

1108.2.8Performance areas.An accessible route shall directly connect the performance area to the assembly seating area where a circulation path directly connects a performance area to an assembly seating area. An accessible route shall be provided from performance areas to ancillary areas or facilities used by performers.

1108.2.9Dining Areas.In dining areas, the total floor area allotted for seating and tables shall be accessible.

Exceptions:

1. In buildings or facilities not required to provide an accessible route between levels as described in Section 1104.4 Exception 1, an accessible route to a mezzanine seating area is not required, provided that the mezzanine contains less than 33 percent of the total seating area and the same services are provided in the accessible area.

2. In sports facilities, tiered dining areas providing seating required to be accessible shall be required to have accessible routes serving at least 25 percent of the dining area, provided that accessible routes serve accessible seating and where each tier is provided with the same services and similar view.

1108.2.9.1Dining surfaces.Where dining surfaces for the consumption of food or drink are provided, at least five percent, but not less than one, of the seating and standing spaces at the dining surfaces shall be accessible and be distributed throughout the facility.

Exception: Where food or drink is served at counters exceeding 34 inches (864 mm) in height, such dining surfaces shall not be required to comply with Section 1108.2.9.1 provided equivalent service is available at accessible tables or counters that are in compliance with Section 902 (Dining Surfaces and Work Surfaces) of ICC A117.1 within the same dining area.

1108.3Self-service storage facilities.Self-service storage facilities shall provide accessible individual self-storage spaces in compliance with Section 1104 of this code and ICC A117.1 including Section 905 (Storage Facilities). The number of required self-storage spaces shall be in accordance with Table 1108.3.Table 1108.3 Accessible Self-Service Storage Facilities Total Spaces in Facility Minimum Number of Required Accessible Spaces 1 to 200 5%, but not less than 1 Over 200 10, plus 2% of total number of units over 200

1108.3.1Dispersion.Accessible individual self-service storage spaces shall be dispersed throughout the various classes of spaces provided. Where more classes of spaces are provided than the number of required accessible spaces, the number of accessible spaces shall not be required to exceed that required by Table 1108.3. Accessible spaces are permitted to be dispersed in a single building of a multibuilding facility.

1108.4Judicial facilities.Judicial facilities shall comply with Sections 1108.4.1 through 1108.4.3.

1108.4.1Courtrooms.Each courtroom shall comply with ICC A117.1 including Section 807 (Courtrooms).

1108.4.2Holding cells.Where provided, central holding cells and court-floor holding cells shall comply with Sections 1108.4.2.1 and 1108.4.2.2.

1108.4.2.1Central holding cells.Where separate central holding cells are provided for adult males, juvenile males, adult females or juvenile females, one of each type shall be accessible. Where central holding cells are provided and are not separated by age or sex, at least one accessible cell shall be provided.

1108.4.2.2Court-floor holding cells.Where separate court-floor holding cells are provided for males, juvenile males, adult females or juvenile females, each courtroom shall be served by one accessible cell of each type. Where court-floor

holding cells are provided and are not separated by age or sex, courtrooms shall be served by at least one accessible cell. Accessible cells shall be permitted to serve more than one courtroom.

1108.4.3 Visiting areas. Visiting areas shall comply with Sections 1108.4.3.1 and 1108.4.3.2.

1108.4.3.1 Cubicles and counters. At least five percent, but not fewer than one, of cubicles shall be accessible on both the visitor and detainee sides. Where counters are provided, at least one shall be accessible on both the visitor and detainee sides.

Exception: This requirement shall not apply to the detainee side of cubicles or counters at noncontact visiting areas not serving holding cells.

1108.4.3.2 Partitions. Where solid partitions or security glazing separate visitors from detainees, at least one of each type of cubical or counter partition shall be accessible.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 11: ACCESSIBILITY
SECTION BC 1109: OTHER FEATURES AND FACILITIES

NYC Administrative Code § 28-BC 1109

1109.1 General.

Accessible building features and facilities shall be provided in accordance with 1109.2 through 1109.15.

Exception: Type B dwelling and sleeping units shall comply with Section 1107 and ICC A117.1.

1109.2 Toilet and bathing facilities. Toilet rooms and bathing facilities shall be accessible. Where a floor level is not required to be connected by an accessible route, the only toilet rooms or bathing facilities provided within the facility shall not be located on the in accessible floor. At least one of each type of fixture, element, control or dispenser in each accessible toilet room and bathing facility shall be accessible.

Exceptions:

1. In non-residential occupancies, for toilet rooms or bathing facilities accessed only through a private office, not for common or public use, and intended for use by a single occupant of such private office, any of the following alternatives are allowed:

1.1. Doors are permitted to swing into the clear floor space provided the door swing can be reversed to meet the requirements in Section 603.2.3 (Door Swing) of ICC A117.1; and

1.2. The height requirements for the water closet in Section 604.4 (Height) of ICC A117.1 are not applicable; and

1.3. Grab bars are not required to be installed in a toilet room, provided that the reinforcement has been installed in the walls and located so as to permit the installation of such grab bars; and

1.4. The requirement for height, knee and toe clearance shall not apply to a lavatory.

2. This section is not applicable to dwelling units, sleeping units and patient toilet and bathing facilities that are not

required to be accessible by Section 1107.

3. Where multiple single-user toilet rooms or bathing facilities are clustered to be within sight of, or adjacent to one another at a single location and contain fixtures in excess of the minimum required number of plumbing fixtures, at least five percent, but not less than one room for each use at each cluster, shall be accessible.

4. Where no more than one urinal is provided in a toilet room or bathing facility, the urinal is not required to be accessible.

5. Toilet rooms that are part of critical-care or intensive-care patient sleeping rooms are not required to be accessible.

1109.2.1 Unisex toilet and bathing rooms. In assembly and mercantile occupancies, an accessible unisex toilet room shall be provided where an aggregate of six or more male and female water closets is required. In buildings of mixed occupancy, only those water closets required for the assembly or mercantile occupancy shall be used to determine the unisex toilet room requirement. In recreational facilities where separate-sex bathing rooms are provided, an accessible unisex bathing room shall be provided. Fixtures located within unisex toilet and bathing rooms may be included in determining the number of fixtures provided in an occupancy.

Exception: Where each separate-sex bathing room has only one shower or bathtub fixture, a unisex bathing room is not required.

1109.2.1.1 Standard. Unisex toilet and bathing rooms shall comply with Sections 1109.2.1.2 through 1109.2.1.7 and ICC A117.1.

1109.2.1.2 Unisex toilet rooms. Unisex toilet rooms shall include only one water closet and only one lavatory. A unisex bathing room in accordance with 1109.2.1.3 shall be considered a unisex toilet room.

Exception: A urinal is permitted to be provided in addition to the water closet in a unisex toilet room.

1109.2.1.3 Unisex bathing rooms. Unisex bathing rooms shall include only one shower or bathtub fixture. Unisex bathing rooms shall also include one water closet and one lavatory. Where storage facilities are provided for separate-sex bathing rooms, accessible storage facilities complying with Section 1109.8 shall be provided for unisex bathing rooms.

1109.2.1.4 Location. Unisex toilet and bathing rooms shall be located on an accessible route. Unisex toilet rooms shall be located not more than one story above or below separate-sex toilet rooms. The accessible route from any separate-sex toilet room to a unisex toilet room shall not exceed 500 feet (152 m).

1109.2.1.5 Prohibited location. In passenger transportation facilities and airports, the accessible route from separate-sex toilet rooms to a unisex toilet room shall not pass through security checkpoints.

1109.2.1.6 Clear floor space. Where doors swing into a unisex toilet or bathing room, a clear floor space not less than 30 inches by 48 inches (762 mm by 1219 mm) shall be provided, within the room, beyond the area of the door swing.

1109.2.1.7 Privacy. Doors to unisex toilet and bathing rooms shall be securable from within the room.

1109.2.2 Water closet compartment. Where water closet compartments are provided in a toilet room or bathing facility, at least one wheelchair-accessible compartment shall be provided. Where the combined total water closet compartments and urinals provided in a toilet room or bathing facility is six or more, at least one ambulatory-accessible water closet compartment shall be provided in addition to the wheelchair-accessible compartment. Wheelchair-accessible and ambulatory-accessible compartments shall comply with ICC A117.1 including Section 604.8

(Wheelchair Accessible Compartments) and 604.9 (Ambulatory Accessible Compartments).

1109.3Sinks. Where sinks are provided, at least five percent, but not less than one, provided in accessible spaces shall comply with ICC A117.1 including Section 606 (Lavatories and Sinks).

Exception: Mop or service sinks are not required to be accessible.

1109.4Kitchens, kitchenettes and wet bars. Where kitchen, kitchenettes and wet bars not located within dwelling or sleeping units, are provided in accessible spaces or rooms, they shall be accessible in accordance with ICC A117.1 including Section 804 (Kitchens and Kitchenettes).

1109.5Drinking fountains. On floors where drinking fountains are provided, at least 50 percent, but not less than one fountain, shall be accessible.

1109.6Elevators. Passenger elevators on an accessible route shall be accessible and comply with 3001.3.

1109.6.1Limited-Use/Limited-Application (LULA) elevators. LULA elevators shall comply with Section 408 (Limited-Use/Limited-Application Elevator) of ICC A117.1 and with Part XXV of ASME A17.1 and shall be limited to a maximum rise of not more than 25 feet (7620 mm). In new construction, such LULA elevators shall be permitted to be a part of the required accessible route:

1. Where the total floor area of the entire building is less than 10,000 square feet (929 m²) provided such LULA elevator serves not more than three contiguous floors and elevators are not otherwise required by Chapter 30; or
2. Where either a wheelchair lift complying with Section 1109.7 is permitted or a private residence elevator complying with Section 409 (Private Residence Elevators) of ICC A117.1 is permitted; or
3. In houses of worship.

1109.7Lifts. Platform (wheelchair) lifts shall not be a part of a required accessible route in new construction except as indicated in Items 1 through 6. Platform (wheelchair) lifts shall be installed in accordance with Chapter 30 and ASME A18.1. Platform (wheelchair) lifts are permitted to be part of a required accessible route in new construction as follows:

1. An accessible route to a performing area in occupancies in Group A.
2. An accessible route to wheelchair spaces required to comply with the wheelchair space dispersion requirements of Section 1108.2.2 through 1108.2.4.
3. An accessible route to spaces that are not open to the general public with an occupant load of not more than five.
4. An accessible route as permitted in Section 1107.2.5 within a dwelling or sleeping unit.
5. An interior accessible route to raised judges' benches, clerks' stations, jury boxes, witness stands and other raised or depressed areas in a court.
6. An accessible route where existing exterior site constraints make use of a ramp or elevator infeasible as determined by the commissioner pursuant to the rules of the department.

1109.8Storage. Where fixed or built-in storage elements such as cabinets, shelves, medicine cabinets, closets, and drawers are provided in required accessible spaces, at least one of each type shall contain storage space complying with ICC A117.1.

1109.8.1Lockers.Where lockers are provided in accessible spaces, at least five percent, but not less than one, of each type shall be accessible.

1109.8.2Shelving and display units.Self-service shelves and display units shall be located on an accessible route. Such shelving and display units shall not be required to comply with reach-range provisions.

1109.8.3Coat hooks and folding shelves.Where coat hooks and folding shelves are provided in toilet rooms, toilet compartments, or in dressing, fitting or locker rooms, at least one of each type shall be provided in accessible toilet rooms without toilet compartment, accessible toilet compartments, and accessible dressing, fitting and locker rooms.

1109.9Detectable warnings.Detectable warnings shall be provided where required in Sections 1109.9.1 through 1109.9.5.

1109.9.1Detectable warnings at passenger transit platforms.Passenger transit platform edges bordering a drop-off and not protected by platform screens or guards shall have a detectable warning.

Exception: Detectable warnings are not required at bus stops.

1109.9.2Detectable warnings at hazardous vehicular areas.If a walk crosses or adjoins a vehicular way, and the walking surfaces are not separated by curbs, railings, or other elements between the pedestrian areas and vehicular areas, the boundary between the areas shall be defined by a continuous detectable warning which is 36 inches (914 mm) wide.

1109.9.3Detectable warnings at pools.The edges of pools shall be provided with detectable warnings.

1109.9.4Detectable warnings at curb ramps.A curb ramp shall have a detectable warning. The detectable warning shall extend the full width and depth of the curb ramp.

1109.9.5Detectable warnings at other locations.Detectable warnings shall be located at hazardous locations on floors, doors, and stairs. Doors that lead to areas that might prove hazardous to a person who is blind, including, but not limited to, doors to leading platforms, boiler rooms, and stages, shall be made identifiable to the touch by a textured surface on the door handle, knob, pull or other operating hardware. This textured surface may be made by knurling or roughening or by material applied to the contact surface. Such textured surfaces shall not be provided for emergency exit doors or any doors other than those too hazardous areas.

1109.10Assembly area seating.Assembly areas in every occupancy shall comply with 1108.2 for accessible seating and assistive listening devices.

1109.11Seating at tables, counters and work surfaces.Where seating at fixed or built-in tables, counters or work surfaces is provided in accessible spaces, at least five percent of the seating, but not less than one, shall be accessible. In Group I-3 occupancy visiting areas at least five percent, but not less than one, cubical or counter shall be accessible on both the visitor and detainee sides.

Exceptions:

1. Check-writing surfaces at check-out aisles not required to comply with Section 1109.12.2 are not required to be accessible.

2. In Group I-3 occupancies, the counter or cubicle on the detainee side is not required to be accessible at noncontact visiting areas or in areas not serving accessible holding cells or sleeping units.

1109.11.1Dispersion.Accessible fixed or built-in seating at tables, counters or work surfaces shall be distributed throughout the space or facility containing such elements.

1109.12 Service facilities. Customer service facilities shall provide for accessible features in accordance with 1109.12.1 through 1109.12.5.

1109.12.1 Dressing, fitting and locker rooms. Where dressing rooms, fitting rooms, or locker rooms are provided, at least five percent, but not less than one, of each type of use in each cluster provided shall be accessible.

1109.12.2 Check-out aisles. Where check-out aisles are provided, accessible check-out aisles shall be provided in accordance with Table 1109.12.2. Where check-out aisles serve different functions, at least one accessible check-out aisle shall be provided for each function. Where check-out aisles serve different functions, accessible check-out aisles shall be provided in accordance with Table 1109.12.2 for each function. Where check-out aisles are dispersed throughout the building or facility, accessible check-out aisles shall also be dispersed. Traffic control devices, security devices and turnstiles located in accessible check-out aisles or lanes shall be accessible.

Exception: Where the area of the selling space is less than 5,000 square feet (465 m²), only one check-out aisle is required to be accessible.

Table 1109.12.2 Accessible Check-Out Aisles	
Total Check-Out Aisles of Each Function	Minimum Number of Accessible Check-Out Aisles of Each Function
1 to 4	1
5 to 8	2
9 to 15	3
Over 15	3, plus 20% of additional aisles

1109.12.3 Point of sales and service counters. Where counters are provided for sales or distribution of goods or services, at least one of each type provided shall be accessible. Where such counters are dispersed throughout the building or facility, the accessible counters shall also be dispersed.

1109.12.4 Food service lines. Food service lines shall be accessible. Where self-service shelves are provided, at least 50 percent, but not less than one, of each type provided shall be accessible.

1109.12.5 Queue and waiting lines. Queue and waiting lines servicing accessible counters or check-out aisles shall be accessible.

1109.13 Controls, operating mechanisms and hardware. Controls, operating mechanisms and hardware intended for operation by the occupant, including switches that control lighting and ventilation, and electrical convenience outlets, in accessible spaces, along accessible routes or as parts of accessible elements shall be accessible.

Exceptions:

1. Operable parts that are intended for use only by service or maintenance personnel shall not be required to be accessible.
2. Electrical or communication receptacles serving a dedicated use shall not be required to be accessible.
3. Where two or more outlets are provided in a kitchen above a length of countertop that is uninterrupted by a sink or appliance, one outlet shall not be required to be accessible.
4. Floor electrical receptacles shall not be required to be accessible.
5. HVAC diffusers shall not be required to be accessible.
6. Except for light switches, where redundant controls are provided for a single element, one control in each space shall not be required to be accessible.

1109.13.1 Operable windows. Where operable windows are provided in rooms or spaces that are required to be accessible in accordance with 1107.5.1 through 1107.5.4 and 1107.6.1.1, at least one window in each room shall be accessible and each required operable window shall be accessible. Where operable windows are provided in Type B units in accordance with Section 1107.6.2, such windows shall comply with Section 1107.2.4.

Exception: Accessible windows are not required in bathrooms or kitchens unless otherwise required in Section 1107.2.4.

1109.14Recreational facilities.Recreational facilities shall be accessible.

1109.15Stairways.Stairways located alongside accessible routes connecting floor levels that are not connected by an elevator shall be designed and constructed to comply with ICC A117.1 and Chapter 10.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
CHAPTER 1: ADMINISTRATION
SECTION BC 111: SERVICE UTILITIES

NYC Administrative Code § 28-BC 111

111.1 General.

Refer to Chapter 1 of Title 28 of the Administrative Code.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 11: ACCESSIBILITY
SECTION BC 1110: SIGNAGE

NYC Administrative Code § 28-BC 1110

1110.1 Signs.

Required accessible elements shall be identified by the International Symbol of Accessibility at the following locations:

1. Accessible parking spaces required by Section 1106.1 except where the total number of parking spaces provided is no more than one.

2. Accessible passenger loading zones.

3. Accessible areas of rescue assistance required by Section 1007.6.

4. Accessible rooms where multiple single-user toilet or bathing rooms are clustered at a single location.

5. Accessible entrances where not all entrances are accessible.

6. Accessible check-out aisles where not all aisles are accessible. The sign, where provided, shall be above the check-out aisle in the same location as the check-out aisle number or type of check-out identification.

7. Unisex toilet and bathing rooms.

8. Accessible dressing, fitting and locker rooms where not all such rooms are accessible.

9. Accessible seating.

10. Accessible portable toilets.

11. Public telephones.

1110.2 Directional signage. Directional signage indicating the route to the nearest like accessible element shall be

provided at the following locations. These directional signs shall include the International Symbol of Accessibility:

1. In accessible building entrances.
2. In accessible public toilets and bathing facilities.
3. Elevators not serving an accessible route.
4. At each separate-sex toilet and bathing room indicating the location of the nearest accessible unisex toilet or bathing room where provided in accordance with Section 1109.2.1.
5. At exits and elevators serving an accessible space, but not providing an approved accessible means of egress, signage shall be provided in accordance with Section 1007.7.

1110.3 Other signs. Signage indicating special accessibility provisions shall be provided as follows:

1. Each assembly area required to comply with Section 1108.2.7 shall provide a sign notifying patrons of the availability of assistive listening systems.

Exception: Where ticket offices or windows are provided, signs are not required at each assembly area provided that signs are displayed at each ticket office or window informing patrons of the availability of assistive listening systems.

2. At each door to an egress stairway, exit passageway and exit discharge, signage shall be provided in accordance with Section 1011.3.
3. At areas of rescue assistance, signage shall be provided in accordance with Sections 1007.6.3 through 1007.6.5.
4. At exterior areas for assisted rescue, signage shall be provided in accordance with Section 1007.8.3.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
CHAPTER 1: ADMINISTRATION
SECTION BC 113: VIOLATIONS

NYC Administrative Code § 28-BC 113

113.1 General.

Refer to Chapter 2 of Title 28 of the Administrative Code.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE

CHAPTER 1: ADMINISTRATION

SECTION BC 114: STOP WORK ORDER

NYC Administrative Code § 28-BC 114

114.1 General.

Refer to Chapter 2 of Title 28 of the Administrative Code..



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE

CHAPTER 1: ADMINISTRATION

SECTION BC 115: UNSAFE STRUCTURES AND EQUIPMENT

NYC Administrative Code § 28-BC 115

115.1 General.

Refer to Chapter 2 and Chapter 3 of Title 28 of the Administrative Code.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 12: INTERIOR ENVIRONMENT
SECTION BC 1201: GENERAL

NYC Administrative Code § 28-BC 1201

1201.1 Scope.

The provisions of this chapter shall govern ventilation, temperature control, lighting, yards and courts, sound transmission, room dimensions, surrounding materials and rodent proofing associated with the interior spaces of buildings.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 12: INTERIOR ENVIRONMENT
SECTION BC 1202: DEFINITIONS

NYC Administrative Code § 28-BC 1202

1202.1 General.

The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

HABITABLE SPACE. All rooms and spaces within a dwelling unit in group R or I-1, including bedrooms, living rooms, studies, recreation rooms, kitchens, dining rooms, and other similar spaces.

Exception: The following spaces within a dwelling unit shall not be considered habitable spaces:

1. A dining space 55 square feet (5.1 m2) or less located off a living room, foyer, or kitchen;
2. A kitchenette;
3. A bathroom or toilet room;
4. A laundry room;

5. A corridor, passageway, or private hall; and a foyer used as an entrance hall in a dwelling unit: not exceeding 10 percent of the total floor area of the dwelling unit; or not exceeding 20 percent of the floor area of the dwelling unit where every habitable room is at least 20 percent larger than the required minimum room sizes established by the New York City Housing Maintenance Code.

KITCHEN. A room with 80 square feet (7.4 m2) or more of floor area which is intended, arranged, designed or used for cooking or warming of food.

KITCHENETTE. A space with less than 80 square feet (7.4 m2) of floor area which is intended, arranged, designed or used for cooking or warming of food.

OCCUPIABLE SPACE. A room or enclosed space, other than a habitable space, designed for human occupancy or use in which individuals may remain for a period of time for rest, amusement, treatment, education, dining, shopping, employment, labor or other similar purposes.

THERMALLY ISOLATED SUNROOM ADDITION. A one-story addition added to an existing building with a glazed area in excess of 40 percent of the gross area of its exterior walls and roof, with a separation of conditioned spaces, between such addition and a dwelling unit, consisting of existing or new wall(s), doors and/or windows.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 12: INTERIOR ENVIRONMENT
SECTION BC 1203: VENTILATION

NYC Administrative Code § 28-BC 1203

1203.1 General.

Buildings shall be provided with natural ventilation in accordance with Section 1203.4, and/or mechanical ventilation in accordance with the New York City Mechanical Code. All habitable spaces shall be provided with natural ventilation in accordance with Section 1203.4.

1203.2Attic spaces.Enclosed attics and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof framing members shall have cross ventilation for each separate space by ventilating openings protected against the entrance of rain and snow. Blocking and bridging shall be arranged so as not to interfere with the movement of air. A minimum of 1 inch (25 mm) of airspace shall be provided between the insulation and the roof sheathing. The net free ventilating area shall not be less than 1/150 of the area of the space ventilated, with 50 percent of the required ventilating area provided by ventilators located in the upper portion of the space to be ventilated at least 3 feet (914 mm) above eave or cornice vents with the balance of the required ventilation provided by eave or cornice vents.

Exception: The minimum required net free ventilating area shall be 1/300 of the area of the space ventilated, provided a vapor retarder having a transmission rate not exceeding 1 perm in accordance with ASTM E 96 is installed on the warm side of the attic insulation and provided 50 percent of the required ventilating area provided by ventilators located in the upper portion of the space to be ventilated at least 3 feet (914 mm) above eave or cornice vents, with the balance of the required ventilation provided by eave or cornice vents.

1203.2.1Openings into attic.Exterior openings into the attic space of any building intended for human occupancy shall be covered with corrosion-resistant wire cloth screening, hardware cloth, perforated vinyl or similar material that will prevent the entry of birds, squirrels, rodents, snakes and other similar creatures. The openings therein shall be a minimum of 1/8 inch (3.2 mm) and shall not exceed 1/4 inch (6.4 mm). Where combustion air is obtained from an attic area, it shall be in accordance with Chapter 7 of the New York City Mechanical Code.

1203.3Under-floor ventilation.The space between the bottom of the floor joists and the earth under any building except spaces occupied by a basement or cellar shall be provided with ventilation openings through foundation walls or exterior walls. Such openings shall be placed so as to provide cross ventilation of the under-floor space.

1203.3.1Openings for under-floor ventilation.The minimum net area of ventilation openings shall not be less than 1 square foot for each 150 square feet (0.09 m² for each 13.9m²) of crawl-space area. Ventilation openings shall be covered for their height and width with any of the following materials, provided that the least dimension of the covering shall not exceed 1/4 inch (6.4 mm):

1. Perforated sheet metal plates not less than 0.070 inch (1.8 mm) thick.
2. Expanded sheet metal plates not less than 0.047 inch (1.2 mm) thick.
3. Cast-iron grills or gratings.
4. Extruded load-bearing vents.
5. Hardware cloth of 0.035 inch (0.89 mm) wire or heavier.
6. Corrosion-resistant wire mesh, with the least dimension not exceeding 1/8 inch (3.2 mm).

1203.3.2Exceptions.The following are exceptions to Sections 1203.3 and 1203.3.1:

1. Where warranted by climatic conditions, ventilation openings to the outdoors are not required if ventilation openings to the interior are provided.
2. The total area of ventilation openings is permitted to be reduced to 1/1,500 of the under-floor area where the ground surface is treated with an approved vapor retarder material and the required openings are placed so as to provide cross ventilation of the space. The installation of operable louvers, in accordance with Section 1203.3.1, shall not be prohibited.
3. Ventilation openings are not required where continuously operated mechanical ventilation is provided at a rate of 1.0 cubic foot per minute (cfm) for each 50 square feet (1.02 L/s for each 10 m²) of crawl-space floor area and the ground surface is covered with an approved vapor retarder.
4. Ventilation openings are not required when the ground surface is covered with an approved vapor retarder, the perimeter walls are insulated and the space is conditioned in accordance with the New York State Energy Conservation Construction Code.
5. For buildings in areas of special flood hazard, the openings for under-floor ventilation shall comply with Appendix G.

1203.4Natural ventilation.Natural ventilation of occupiable and habitable space shall be through openings to the outdoors. The openings shall be of a type permitted under Sections 1203.4.1.1, 1203.4.1.2, 1203.4.1.3 and 1203.4.1.4. The operating mechanism for such openings shall be provided with ready access so that the openings are readily controllable by the building occupants.

1203.4.1Ventilation area required.Ventilation areas shall be as set forth in Sections 1203.4.1.1 through 1203.4.1.4.

1203.4.1.1Occupiable spaces.Where occupiable spaces are not required to be provided with mechanical ventilation in accordance with the New York City Mechanical Code, natural ventilation shall be provided in accordance with Section 1203.4.1.1. Openings providing required natural ventilation to occupiable spaces shall be windows, doors, louvers, skylights, or other similar ventilating openings.

Exceptions:

1. Bathrooms and toilet rooms in R or I-1 occupancies shall comply with Section 1203.4.1.3.

2. Kitchenettes in R or I-1 occupancies shall comply with Section 1203.4.1.4.

1203.4.1.1.1 Minimum opening. The minimum openable area to the outdoors shall be 4 percent of the floor area of the occupiable space being ventilated.

1203.4.1.1.2 Adjoining spaces. Where occupiable rooms and spaces without openings to the outdoors are ventilated through an adjoining room, the opening to the adjoining room shall be unobstructed and shall have an area of not less than 8 percent of the floor area of the interior room or space, but not less than 25 square feet (2.3 m²). The minimum openable area to the outdoors shall be based on the total floor area being ventilated.

Exception: Exterior openings required for ventilation shall be permitted to open into a thermally isolated sunroom addition or covered patio provided that the openable area between such sunroom addition or covered patio and the interior room shall have an area of not less than 8 percent of the floor area of the interior room or space, but not less than 20 square feet (1.9 m²). The minimum openable area to the outdoors shall be based on the total floor area being ventilated.

1203.4.1.1.3 Openings below grade. Where openings below grade provide required natural ventilation, the outside horizontal clear space measured perpendicular to the opening shall be one and one-half times the depth of the opening. The depth of the opening shall be measured from the average adjoining ground level to the bottom of the opening.

1203.4.1.1.4 Mezzanines. Where an interior balcony or mezzanine opens to form part of another room or space, its area shall be added to the area of the room or space in which it is located to compute the ventilation required for both spaces.

1203.4.1.2 Habitable spaces. All habitable spaces shall be provided with natural ventilation in accordance with Section 1203.4.1.2. Openings providing required natural ventilation to habitable spaces shall be windows and/or glazed doors.

Exception: R-3 occupancies. Openable skylights opening directly to the outer air, transparent or translucent panels, or other natural light-transmitting media may be substituted for window openings in R-3 occupancies provided that they meet the minimum dimensional requirements of Section 1203.4.1.2.1.

1203.4.1.2.1 Minimum opening. The minimum openable area to the outdoors shall be 5 percent of the floor area of the habitable space being ventilated. Every opening providing required natural ventilation shall be at least 12 square feet (1.1 m²) of glazed area, providing a minimum of 6 square feet (0.56 m²) of openable area.

Exceptions:

1. Where fresh air is furnished in any habitable room or space by mechanical means supplying a minimum of 40 cubic feet per minute (0.02 m³/s), the free openable area of the openings may be reduced to 21/2 percent of the floor area but each such opening shall provide not less than 51/2 square feet (0.51 m²) of openable area

The minimum free openable area of a mullioned casement window shall be 51/2 square feet (0.51 m²), provided that the minimum ratio of floor area to openable area is met.

1203.4.1.2.2 Adjoining spaces. An alcove or room opening off another room or space shall be considered as a separate room in determining its requirements for ventilation.

Exceptions:

1. Alcoves within R-3 dwelling units. In R-3 occupancies, where an opening between the alcove and the room or space is at least 80 percent of the area of the common wall and the floor area of the alcove does not exceed twice the area of the opening, the alcove and the room opening into the alcove may be considered as a single space.

2. Balconies, partially enclosed. Exterior openings required for ventilation shall be permitted to open upon a partially enclosed balcony or space above a setback when:

2.1. Such balcony or space faces upon a public street, space, alley, park, highway, or right of way; or upon a yard, court, plaza, or space above a setback where such yard, court, plaza, or space above a setback complies with Section 1206;

2.2. The maximum depth of any habitable room is 30 feet (9144 mm) measured from the outer face of the exterior wall forming the partial or full enclosure of the balcony or space;

2.3. The enclosure of the balcony or space is not more than one story in height; and

2.4. The front of a partially enclosed balcony or space above a setback shall be open to the outer air with an open area equal to at least 75 percent of the floor surface area of such balcony or space.

3. Balconies, fully enclosed. Exterior openings required for ventilation shall be permitted to open upon a fully enclosed balcony or space above a setback, including thermally isolated sunroom additions and patio covers, when:

3.1. Such balcony or space faces upon a public street, space, alley, park, highway, or right of way; or upon a yard, court, plaza, or space above a setback where such yard, court, plaza, or space above a setback complies with Section 1206;

3.2. The maximum depth of any habitable room is 30 feet (9144 mm) measured from the outer face of the exterior wall forming the partial or full enclosure of the balcony or space; 3.3. The enclosure of the balcony or space is not more than one story in height;

3.4. The building is Type I or II construction;

3.5. The outer enclosing walls of the balcony or space are glazed with an area at least 50 percent of the area of the interior enclosing walls of such balcony or space; the glazing may be clear plate glass or slow burning plastic;

3.6. At least 50 percent of the glazed area required by Exception 3.5 of this section is openable; and

3.7. No window from any bathroom, toilet room, kitchen or kitchenette shall open on such balcony or space.

4. Mezzanines and split-level rooms. Where a habitable mezzanine or portion of a split-level room or space is not directly served by an opening providing natural ventilation in accordance with Section 1203.4.1.2, such mezzanine or space shall open for its full width with no obstruction, except for railings, to an adjoining habitable room which is provided with natural ventilation. The floor area of such mezzanine or portion of the split level room or space shall be added to the floor area of the adjoining room to compute the required ventilation in accordance with Section 1203.4.1.2.1. The combined space shall also comply with Sections 1203.4.1.2.4 and 1203.4.5.

1203.4.1.2.3 Basements and cellars. Where openings provide natural ventilation to habitable spaces located in basements or cellars, such opening shall also comply with the applicable provisions of Section 27-2081 through 27-2087 of the New York City Housing Maintenance Code and Sections 26(8) and 34 of the New York State Multiple Dwelling Law.

1203.4.1.2.4 Maximum depth of room. No part of any room shall be more than 30 feet (9144

mm) from a window opening onto a street or yard unless such room also opens onto a court complying with Section 1206.

Exception: In dwelling units containing more than 3 habitable rooms in group R1 or R2 occupancies in buildings of Type I or II construction, rooms may be greater than 30 feet (9144 mm) in depth provided that all other requirements of Section 1203.4.1.2 are met and that the required windows are so located as to properly light all portions of the room in accordance with Section 1205.

1203.4.1.3 Bathrooms and toilet rooms in R and I-1 occupancies. Bathrooms or toilet rooms in R or I-1 occupancies shall be provided with natural ventilation in accordance with Section 1203.4.1.3, unless provided with exhaust ventilation in accordance with the New York City Mechanical Code. Openings providing required natural ventilation shall be windows.

Exception: Openable skylights may be substituted for windows provided that the bathroom or toilet room is on the top story.

1203.4.1.3.1 Minimum opening. The minimum openable area to the outdoors shall be 5 percent of the floor area of the space being ventilated. Every window or skylight providing required natural ventilation shall be at least 3 square feet (0.28 m²) providing a minimum of 11/2 square feet (0.14

m²) of openable area.

1203.4.1.3.2 Adjoining spaces. Natural ventilation for bathrooms and toilet rooms may not be through openings from another room or space.

Exception: A bathroom or toilet room may open onto a partially enclosed balcony or space above a setback conforming with Exception 2 of Section 1203.4.1.2.2.

1203.4.1.3.3 Basements and cellars. Where openings provide natural ventilation to bathrooms or toilet rooms located in basements or cellars, such opening shall also comply with the applicable provisions of Section 27-2081 through 27-2087 of the New York City Housing Maintenance Code and Sections 26(8) and 34 of the New York State Multiple Dwelling Law.

1203.4.1.4. Kitchenettes in R and I-1 occupancies. Kitchenettes in R or I-1 occupancies shall be provided with natural ventilation in accordance with Section 1203.4.1.4, unless provided with exhaust ventilation in accordance with the New York City Mechanical Code. Openings providing required natural ventilation shall be windows.

Exception: Openable skylights may be substituted for windows provided that:

1. The kitchenette is on the top story;
2. The skylight is 12 inches (305 mm) in its least dimensions;
3. The skylight is at least 4 square feet (0.37 m²) or 1/8 of the area of the kitchenette, whichever is greater; and
4. The skylight provides ventilating openings for at least 1/2 of its area.

1203.4.1.4.1 Minimum opening. The minimum openable area to the outdoors shall be 5 percent of the floor area of the space being ventilated. Every window or other opening providing required natural ventilation shall be at least 1 foot (305 mm) wide and at least 3 square feet (0.28 m²) in total area, providing a minimum of 11/2 square feet (0.14 m²) of openable area.

Exception: Skylights shall comply with the Exception of Section 1203.4.1.4.

1203.4.1.4.2 Adjoining spaces. Natural ventilation for kitchenettes shall not be through openings off another room or space.

Exception: A kitchenette may open onto a partially enclosed balcony or space above a setback conforming with Exception 2 of Section 1203.4.1.2.2.

1203.4.1.4.3 Basements and cellars. Where openings provide natural ventilation to kitchenettes less than 80 square feet (7.4

m²) located in basements or cellars, such opening shall also comply with the applicable provisions of Sections 27-2081 through 27-2087 of the New York City Housing Maintenance Code and Sections 26(8) and 34 of the New York State Multiple Dwelling Law.

1203.4.2 Contaminants exhausted. Contaminant sources in naturally ventilated spaces shall be removed in accordance with the New York City Mechanical Code.

1203.4.2.1 Bathrooms. Rooms containing bathtubs, showers, spas and similar bathing fixtures in other than R and I-1 occupancies shall be mechanically ventilated in accordance with the New York City Mechanical Code, whether or not they are also provided with natural ventilation.

1203.4.3 Openings on yards or courts. Natural ventilation shall be provided by openings to a public street, space, alley, park, highway, or right of way; or upon a yard, court, plaza, or space above a setback where such yard, court, plaza, or space above a setback complies with Section 1206. No such opening shall be on a recess of less than 6 feet (1829 mm) in width.

Exceptions:

1. Openings providing natural ventilation to habitable spaces located in basements or cellars shall also comply with the applicable provisions of Sections 27-2081 through 27-2087 of the New York City Housing Maintenance Code and Sections 26(8) and 34 of the New York State Multiple Dwelling Law.

2. A kitchenette, a bathroom, or a water closet compartment may be located on a recess of less than 6 feet (1829 mm).

1203.4.4 Measurement of openings. Dimensions of windows and other openings shall always be taken between stop beads or, if there are no stop beads, between the sides, head, and sill of the sash opening.

1203.4.5 Height of openings. The top of at least one opening providing required natural ventilation to a habitable room or space shall be a minimum of 7 feet (2134 mm) above the floor of the room or space served by the window or opening.

Exception: Mezzanines. Where the required natural ventilation for a habitable mezzanine level is provided by a window(s) on the lower level in accordance with Section 1203.4.1.2.2 (Exception 4), and where compliance with Section 1203.4.5 is not feasible on the mezzanine floor, Section 1203.4.5 shall not apply to such mezzanine floor provided that either:

1. Such window(s) is on the opposite wall from the mezzanine, and the top of such window is at least 12 inches (305 mm) above the floor of the mezzanine; or

2. Mechanical ventilation is provided to the mezzanine level in accordance with the New York City Mechanical Code capable of providing 2 cubic feet per minute (0.00094 m³/s) of fresh air per square foot (0.09 m²) of floor area of mezzanine.

1203.5 Other ventilation and exhaust systems. Ventilation and exhaust systems for occupancies and operations involving flammable or combustible hazards or other contaminant sources as covered in the New York City Mechanical Code or the New York City Fire Code shall be provided as required by both codes.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1203.4.1.2 amended L.L. 8/2008 § 113, eff. July 1, 2008.



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 Chapter 12: INTERIOR ENVIRONMENT
 SECTION BC 1204: TEMPERATURE AND HUMIDITY CONTROL

NYC Administrative Code § 28-BC 1204

1204.1 Equipment and Systems.

Interior spaces intended for human occupancy shall be provided with active or passive space-heating systems capable of maintaining a minimum indoor temperature as indicated in Table 1204.1 at a point 3 feet (914 mm) above the finished floor. The heating capacity of heat-producing devices and equipment which are contained in the room and in constant use during occupancy may be deducted from the capacity of the heating system. Portable heating systems shall not be considered as contributing to the capacity of the heating system.

Exception: Where specific rooms or spaces are not listed, the temperature shall be determined by the requirements of the listed space to which they most nearly conform or as determined by the registered design professional.3]Table 1204.1 Minimum Space Temperature Requirementsa Rooms or Spaces Minimum Temperature (degree F) 1]Rooms or Spaces Minimum Temperature (degree F) 2]Habitable rooms in all buildings68Building equipment and machinery rooms50Patients' rooms, bathrooms and toilet rooms, stairs and corridors in hospitals and nursing homesAs per the New York State Health CodeBathrooms and toilet rooms except patients bathrooms and toilet rooms in hospitals and nursing homes68Offices, waiting rooms, art galleries, museums, libraries, meeting rooms, houses of worship, classrooms, auditoriums, lecture halls, night clubs, restaurants, theatres, locker rooms, dressing rooms, and spaces where persons are engaged in sedentary activities68Laboratories, light machine work, product inspections, loft buildings, shops, stores, display rooms, show rooms, sales rooms, and spaces where persons are engaged in moderate physical activities65Gymnasia, dance halls, skating rinks, bowling alleys, heavy assembly workrooms or shops, and spaces where persons are engaged in vigorous physical activities 60Automotive repair shops50Storage areas, garages, space where work or process requires a low temperatureNoneHospital operating rooms, and recovery, labor, delivery, and nursery roomsAs per the New York State Health CodeSwimming pools, bath houses, and shower rooms754]a. Temperatures listed here are the minimum requirements of the department. However, otherjurisdictional authorities may have more stringent requirements.

Exceptions:

1. Heating systems are not required when occupancy is seasonal and the rooms or buildings are not occupied between November 1st and May 1st of the following year.

2. Heating systems are not required when the processes or activities normally conducted in the space will generate sufficient heat to maintain the prescribed temperatures during the time of occupancy.

3. Spaces where strict process requirements mandate temperatures other than those cited above shall be exempt from the minimum requirements listed in Table 1204.1.

1204.2Air Conditioning.Interior spaces intended for human occupancy that are provided with air conditioning shall be provided with active or passive systems that are capable of maintaining 78(degrees)F (26(degrees)C) at 50 percent relative humidity when the outdoor air temperature is 89(degrees)F (32(degrees)C) and the coincident wet bulb temperature is 73(degrees)F (23(degrees)C). Interior spaces without air conditioning shall be provided with mechanical or natural ventilation in compliance with other subsections of this code.

1204.3Freeze Protection.All interior spaces shall be provided with active or passive systems or with methods of construction capable of preventing wet piping systems and vessels from freezing at all times, including permanently installed pipe heat tracing systems.

1204.4System Design.The heating system and air conditioning system, as applicable, shall be designed to provide sufficient capacity to meet the temperature and humidity requirements of Section 1204 when considering the outdoor air ventilation requirements and all losses in the system and ancillary uses, such as domestic hot water, for which the system is used. The system shall be designed and installed to meet all other applicable provisions of this code.



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Chapter 12: INTERIOR ENVIRONMENT
SECTION BC 1205: LIGHTING

NYC Administrative Code § 28-BC 1205

1205.1 General.

Every room and space in every building shall be provided with artificial light in accordance with Section 1205.3. Every habitable room and space shall also be provided with natural light by means of exterior glazed openings in accordance with Section 1205.2.

Exceptions. Artificial light need not be provided in rooms or spaces:

1. Occupied exclusively during the daylight hours between one hour after sunrise and one hour before sunset, and which are provided with natural light meeting the requirements of 1205.2; or
2. With less than 40 square feet (3.7 m²) of floor area if they are used exclusively for storage purposes or for mechanical facilities containing no rotating or moving parts, no combustion equipment, or no other hazardous equipment.

1205.2 Natural light. Every opening providing required natural light shall be so located so as to properly light all portions of the room. Openings providing required natural light shall be windows and/or glazed doors.

Exceptions: R-3 occupancies. Skylights, opening directly to the outer air, transparent or translucent panels, or other light-transmitting media, may be substituted for window openings in R-3 occupancies provided that they meet the minimum dimensional requirements of Section 1205.2.2.

1205.2.1 Minimum opening. The minimum net glazed area shall not be less than 10 percent of the floor area of the room served. Every opening providing required natural light shall be at least 12 square feet (1.1 m²) of glazed area.

1205.2.2 Adjoining spaces. An alcove or room opening off another room or space shall be considered as a separate room in determining its requirements for natural lighting.

Exceptions:

1. Alcoves within R-3 dwelling units. In R-3 occupancies, where an opening between the alcove and the room or space is at least 80 percent of the area of the common wall and the floor area of the alcove does not exceed twice the area of the opening, the alcove and the room opening into the alcove may be considered as a single space.

2. Balconies, partially enclosed. Exterior openings required for natural light shall be permitted to open upon a partially enclosed balcony or space above a setback when:

2.1. Such balcony or space faces upon a public street, space, alley, park, highway, or right of way; or upon a yard, court, plaza, or space above a setback where such yard, court, plaza, or space above a setback complies with Section 1206;

2.2. The maximum depth of any habitable room is 30 feet (9144 mm) measured from the outer face of the exterior wall forming the partial or full enclosure of the balcony or space;

2.3. The enclosure of the balcony or space is not more than one story in height; and

2.4. The front of a partially enclosed balcony or space above a setback shall be open to the outer air with an open area equal to at least 75 percent of the floor surface area of such balcony or space.

3. Balconies, fully enclosed. Exterior openings required for natural lighting shall be permitted to open upon a fully enclosed balcony or space above a setback, including thermally isolated sunroom additions and covered patios, when:

3.1. Such balcony or space faces upon a public street, space, alley, park, highway, or right of way; or upon a yard, court, plaza, or space above a setback where such yard, court, plaza, or space above a setback complies with Section 1206;

3.2. The maximum depth of any habitable room is 30 feet (9144 mm) measured from the outer face of the wall forming the partial or full enclosure of the balcony or space;

3.3. The enclosure of the balcony or space is not more than one story in height;

3.4. The building is Type I or II construction;

3.5. The outer enclosing walls of the balcony or space are glazed with an area at least 50 percent of the area of the interior enclosing walls of such balcony or space; the glazing may be clear plate glass or slow burning plastic;

3.6. At least 50 percent of the glazed area required by Exception 3.5 of this section is openable; and

3.7. No window from any bathroom, toilet room, kitchen or kitchenette shall open on such balcony or space.

4. Mezzanines and split-level rooms. Where a habitable mezzanine or portion of a split-level room or space is not directly served by an opening providing natural lighting in accordance with Section 1205.2, such space shall be open for its full width with no obstruction, except for railings, to an adjoining habitable room which is provided with such window or other opening. The floor area of the such mezzanine or portion of the split level room or space shall be added to the floor area of the adjoining room to compute the required lighting in accordance with Section 1205.2.1. The combined space shall also comply with Sections 1205.2.4 and 1205.2.7.

1205.2.3 Basements and cellars.

1205.2.3.1 Adequate adjacent space for multiple dwellings. Where rooms within a dwelling unit in a multiple dwelling are located in a cellar or a basement, such rooms shall have at least 1/2 of their height and all of their required

window surfaces above every part of an "adequate adjacent space". Such "adequate adjacent space" shall be open to the sky and shall be a continuous surface area not less than 30 feet (9144 mm) in its least dimension abutting at same level or directly below the exterior walls of every part of the basement and cellar portions of such dwelling unit. Such "adequate adjacent space" shall be spaces that are located on the same tax lot or plot as the building or a public street, space, alley, park, highway or right of way and the level of such areas which abut or adjoin the habitable room shall be at least 6 inches (152 mm) below the window sills of any windows.

1205.2.3.2 Other applicable laws. Where openings provide natural lighting to habitable spaces located in basements or cellars, such opening shall comply with the applicable provisions of Sections 27-2081 through 27-2087 of the New York City Housing Maintenance Code and Sections 26(8) and 34 of the New York State Multiple Dwelling Law.

1205.2.4 Maximum depth of room. No part of any room shall be more than 30 feet (9144 mm) from a window opening on a street or yard unless such room also opens onto a legal court.

Exception: In dwelling units containing more than 3 habitable rooms in R-1 or R-2 occupancies in buildings of Type I or II construction, rooms may be greater than 30 feet (9144 mm) in depth provided that all other requirements of Section 1205.2 are met and that the required windows are located so as to properly light all portions of the room.

1205.2.5 Openings on yards or courts. Exterior glazed openings shall open directly onto a public street, space, alley, park, highway, or right of way; or upon a yard, court, plaza, or space above a setback where such yard, court, plaza, or space above a setback complies with Section 1206. No such opening shall be on a recess of less than 6 feet (1829 mm) in width.

Exception: Spaces located in basements or cellars shall also comply with Section 1205.2.3.

1205.2.6 Measurement of glazed areas. Window dimensions shall always be taken between stop beads or, if there are no stop beads, between the sides, head, and sill of the sash opening.

1205.2.7 Height of glazed areas.

1205.2.7.1 Only that portion of glazed areas higher than 30 inches (914 mm) above the floor shall be considered as providing the required natural lighting.

1205.2.7.2 The top of at least one window or other opening providing required natural lighting to a habitable room shall be a minimum of 7 feet (2134 mm) above the floor of the room or space served by the window or opening.

Exception: Mezzanines. Where the required natural lighting for a habitable mezzanine level is provided by a window(s) on the lower level in accordance with Section 1205.2.2 Exception 4, and where compliance with Section 1205.2.7.2 is not feasible on the mezzanine floor, Section 1205.2.7.2 shall not apply to such mezzanine floor provided that either:

1. Such window(s) is on the opposite wall from the mezzanine, and the top of such window is at least 12 inches (305 mm) above the floor of the mezzanine; or

2. Mechanical ventilation is provided to the mezzanine level in accordance with the New York City Mechanical Code capable of providing 2 cubic feet per minute (0.00094 m³/s) of fresh air per square foot (0.09 m²) of floor area of mezzanine.

1205.3 Artificial light.

1205.3.1 General. Artificial light shall meet the minimum illumination standards set forth in Section 1205.3. Artificial light shall not exceed maximum energy consumption requirements, if applicable, as required by Section

1301.1.1.

1205.3.2Rooms and spaces. Artificial light shall be adequate to provide an average illumination of 10 foot-candles (107 lux) over the area of the room at a height of 30 inches (762 mm) above the floor level.

1205.3.3Stairways. Stairways within dwelling units and exterior stairways serving a dwelling unit shall have an illumination level on tread runs of not less than 1 foot-candle (11 lux). Stairs in other occupancies shall be governed by Chapter 10.

1205.3.4Means of egress. The means of egress shall be illuminated in accordance with Section 1006.1. Exterior lights near entranceways to multiple dwellings shall also comply with Section 27-2040 of the New York City Housing Maintenance Code.

1205.3.5Places of assembly. Places of assembly shall be illuminated in accordance with Chapter 10.

1205.4Reserved.

1205.5Reserved.



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Chapter 12: INTERIOR ENVIRONMENT
SECTION BC 1206: YARDS AND COURTS

NYC Administrative Code § 28-BC 1206

1206.1 General.

This section shall apply to yards and courts adjacent to exterior openings that provide required natural light or required natural ventilation. Such yards and courts shall be on the same zoning lot as the building. Where such yard or court is wholly or partially on a different tax lot from the exterior opening which the yard or court serves, a light and air easement or restrictive declaration acceptable to the commissioner shall be recorded against the tax lot or lots where such yard or court is located.

1206.2Yards.Yards shall not be less than the dimensions prescribed by the Zoning Resolution of the City of New York and other applicable laws, rules, and regulations.

1206.2.1Rear yard access for multiple dwellings.For multiple dwellings, there shall be direct access from the street to every rear yard through a noncombustible 2-hour fire-resistance-rated passage either in a direct line or through a court, except that the passage may be 1-hour fire-resistance-rated for dwellings not exceeding three stories in height and occupied by not more than 2 families on any story. Such passage shall be at least 36 inches (914 mm) in clear width and 7 feet (2134 mm) in height.

Exceptions. No such passage shall be required for:

1. Buildings of Type IA or IB construction.
2. Buildings not exceeding three stories in height, and occupied by not more than one family on any story nor more than three families in all.
3. Buildings not exceeding two stories in height, and occupied by not more than two families on any story nor more than four families in all.

1206.3Courts.Courts shall not be less than the dimensions prescribed by the Zoning Resolution of the City of New

York and other applicable laws, rules and regulations.

1206.3.1 Court access. Access shall be provided to the bottom of courts for cleaning purposes.

1206.3.2 Air intake. Courts more than two stories in height shall be provided with a horizontal air intake at the bottom not less than 10 square feet (0.93 m²) in area and leading to the exterior of the building unless abutting a yard or public way.

Exception: For multiple dwellings more than two stories in height, an air intake with a vertical cross-sectional area of 21 square feet (1.95 m²) and a least minimum dimension of 3 feet (914 mm) shall be provided at or near the lowest level of any court, in accordance with Section 26(7)(a) of the New York State Multiple Dwelling Law.

1206.3.3 Court drainage. The bottom of every court shall be properly graded and drained to a public sewer or other approved disposal system complying with the New York City Plumbing Code. For group R and I-1 occupancies, such grading and drainage shall also comply with Section 27-2027 of the New York City Housing Maintenance Code. For R-1, R-2 and I-1 occupancies, such grading and drainage shall also comply with Section 77 of the New York State Multiple Dwelling Law.

1206.3.4 Court walls for multiple dwellings. All walls enclosing courts of multiple dwellings shall be of light colored materials or shall be painted a light color.

Exceptions:

1. Outer courts that open to a street
2. Courts that exceed the minimum dimension set forth in the Zoning Resolution of the City of New York by at least 50 percent.

1206.4 Lighting in courts and yards. In Groups I-1, R-1 or R-2 occupancies, all yards and courts shall be artificially illuminated with a minimum intensity of not less than 1-foot-candle (11 lux) measured 30 inches (762 mm) above the floor of the lowest level of such yards or courts.



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SECTION BC 1207: SOUND TRANSMISSION

NYC Administrative Code § 28-BC 1207

1207.1 Scope.

This section shall apply to common interior walls, partitions and floor/ceiling assemblies between adjacent dwelling units, between dwelling units and adjacent mechanical equipment spaces, or between dwelling units and adjacent public areas such as halls, corridors, stairs or service areas.

1207.2Air-borne sound.Walls, partitions and floor/ceiling assemblies separating dwelling units from each other, from public or service areas, from stairs or from mechanical equipment spaces, including boiler rooms, or elevator or other shafts shall have a sound transmission class (STC) for air-borne noise of not less than 50 based upon laboratory measurements made in accordance with ASTM E 90, or not less than 45 if field tested in accordance with ASTM E 336. Dwelling unit entrance doors shall be installed of assemblies having an STC of not less than 35 based upon laboratory measurements made in accordance with ASTM E 1408. Penetrations or openings in construction assemblies for piping; electrical devices; recessed cabinets; bathtubs; soffits; or heating, ventilating or exhaust ducts shall be sealed, lined, insulated or otherwise treated to maintain the required ratings.

1207.2.1Machine and equipment rooms.Elevator machine rooms and machinery spaces containing equipment totaling more than 75 rated h.p. shall not be located vertically or horizontally adjacent to dwelling units unless the total sound power level output of all the equipment in the machine room or space is certified not to exceed the maximum sound power levels of table 1207.2.1 in any octave band.Table 1207.2.1 Maximum Sound Power Level Outputs for Machine Rooms Adjacent to Dwelling Units Octave Bands, Hz Mid-Frequency Max. Sound Power Level dba db re 10-12 Watts 63 88 125 87 250 90 1000 87 2000 86 4000 83 8000 81 a. The maximum sound power levels shall be reduced five db in any octave band where the equipment data indicate pure tone generation. The presence of pure tones may be determined by means of one-third octave band analysis. The criterion for a significant pure tone component shall be an audible pure-tone sound together with an increase of the sound pressure level in the corresponding one-third octave band above the mean of the two adjacent one-third of at least:Center frequency of one-third octave band:40/125 160/250 215/500 630/1,000 1,000/10,000 Increase in sound pressure level (db):6 4 3 2 11/2

1207.3 Structure-borne sound. Floor/ceiling assemblies between dwelling units or between a dwelling unit and a public or service area stair, exterior mechanical equipment, or other mechanical equipment space, including boiler rooms, shall be constructed of assemblies having an impact insulation class (IIC) rating of not less than 50 based upon laboratory measurements made in accordance with ASTM E 492, or not less than 45 if field tested in accordance with ASTM E 1007 in completed construction. See Chapter 30 for additional sound control requirements for elevator machinery.

1207.3.1 Refuse chutes. Metal refuse chutes, metal chute supports, and/or metal chute bracing shall be free of direct contact with the shaft enclosure and the openings provided in the floor construction. Metal chutes shall be resiliently supported at each structural support location. Isolators shall provide a minimum static deflection of 0.3 inches (7.62 mm). All chutes shall be plumb.

1207.4 Field testing. Where conditions indicate that the installed construction or equipment does not meet the noise control prescribed in Section 1207, measurements shall be taken to determine conformance or non-conformance.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1207.2 amended L.L. 8/2008 § 114, eff. July 1, 2008.



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SECTION BC 1208: INTERIOR SPACE DIMENSIONS

NYC Administrative Code § 28-BC 1208

1208.1 Minimum room widths.

Habitable spaces, other than a kitchen, shall not be less than 8 feet (2438 mm) in any plan dimension. Kitchens and kitchenettes shall have a clear passageway of not less than 3 feet (914 mm) between counter fronts and appliances or counter fronts and walls.

Exceptions:

1. A room that complies with the requirements for natural light and natural ventilation and in addition has an unobstructed opening of not less than 60 square feet (5.6 m²) into an immediately adjoining room shall not be less than 7 feet (2134 mm) in any plan dimension.
2. A habitable dining space that complies with the requirements for natural light and natural ventilation may be less than 8 feet (2438 mm) in any plan dimension.
3. One-half the number of bedrooms in a dwelling unit containing 3 or more bedrooms shall not be less than 7 feet (2134 mm) in any plan dimension.
4. A room in a group R-1 dwelling or sleeping unit shall not be less than 6 feet (1829 mm) in any plan dimension.

1208.2 Minimum ceiling heights. Habitable rooms and spaces shall have a ceiling height of not less than 8 feet (2438 mm). Occupiable spaces and corridors shall have a ceiling height of not less than 7 feet 6 inches (2286 mm). Bathrooms, toilet rooms, kitchens in other than I-1 and R occupancies, kitchenettes in I-1 or R occupancies, storage rooms and laundry rooms shall be permitted to have a ceiling height of not less than 7 feet (2134 mm). All measurements shall be taken from the finished floor to the finished underside of the ceiling or ceiling beams.

Exceptions:

1. In one- and two-family dwellings, beams or girders spaced not less than 4 feet (1219 mm) on center may project not more than 6 inches (152 mm) below the required ceiling height, provided that a clear height of 7 feet (2134 mm) is maintained.

2. Habitable rooms in basements of one-family dwellings, including any projecting beams, shall have a ceiling height of not less than 7 feet (2134 mm).

3. Habitable rooms in basements of multiple dwellings may have as many as four beams crossing the ceiling if none of the beams exceeds 12 inches (305 mm) in width or extends below the ceiling more than 6 inches (152 mm).

4. Spaces above and below a mezzanine, other than habitable spaces, shall have a ceiling height of not less than 7 feet (2134 mm).

1208.2.1 Furred ceiling. Any room with a furred ceiling shall be required to have the minimum ceiling height in two-thirds of the area thereof, but in no case shall the height of the furred ceiling be less than 7 feet (2134 mm).

Exception: Minimum ceiling heights of habitable rooms and spaces shall not be less than established in Section 1208.2.

1208.3 Room area. Minimum net floor areas of rooms shall be in accordance with Sections 1208.3.1 and 1208.3.2

1208.3.1 Habitable rooms and spaces. Every habitable room or space shall have not less than 80 square feet (7.4 m²) in net floor area.

Exceptions:

1. A room that complies with the requirements for natural light and natural ventilation and in addition has an unobstructed opening of not less than 60 square feet (5.6 m²) into an immediately adjoining room shall have not less than 70 square feet (6.5 m²) of net floor area.

2. A habitable dining space, as defined by the New York City Housing Maintenance Code, that complies with the requirements for natural light and natural ventilation may have less than 80 square feet (7.4 m²) of net floor area.

3. A room in a group R-1 dwelling unit shall have not less than 60 square feet (5.6 m²) of net floor area.

1208.3.2 Dwelling units. In a dwelling unit, at least one habitable room shall have not less than 150 square feet (13.9 m²) of net floor area.

Exception: Group R-1 dwelling or sleeping units.

1208.3.2.1 Single room occupancy of a single room. Where a single room within a dwelling unit is used for single room occupancy, as such term is used in Section 27-2074(e) of the New York City Housing Maintenance Code, such room shall have not less than 150 square feet (13.9 m²) of net floor area.

1208.3.2.2 Single room occupancy of a suite of rooms. Where two or more rooms, joined together and separated from all other rooms within a dwelling unit, are used for single room occupancy, as such term is used in Section 27-2074(e) of the New York City Housing Maintenance Code, at least one of such separated rooms shall have not less than 150 square feet (13.9 m²) of net floor area.

1208.4 Reserved.



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Chapter 12: INTERIOR ENVIRONMENT
SECTION BC 1209: ACCESS TO UNOCCUPIED SPACES

NYC Administrative Code § 28-BC 1209

1209.1 Crawl spaces.

Crawl spaces shall be provided with a minimum of one access opening not less than 18 inches by 24 inches (457 mm by 610 mm). All crawl spaces shall have a minimum clear height of 18 inches (457 mm).

1209.2Attic spaces.An opening not less than 20 inches by 30 inches (508 mm by 762 mm) shall be provided to any attic area having a clear height of over 30 inches (762 mm). A 30-inch (762 mm) minimum clear headroom in the attic space shall be provided at or above the access opening.

1209.3Mechanical appliances.Access to mechanical appliances installed in under-floor areas, in attic spaces and on roofs or elevated structures shall be in accordance with the New York City Mechanical Code.



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SECTION BC 1210: SURROUNDING MATERIALS

NYC Administrative Code § 28-BC 1210

1210.1 Floors.

Toilet and bathing room floors shall have a smooth, hard, nonabsorbent surface that extends upward onto the walls at least 6 inches (152 mm).

1210.2Walls.Walls within 2 feet (610 mm) of urinals and water closets shall have a smooth, hard, nonabsorbent surface, to a height of 4 feet (1219 mm) above the floor, and except for structural elements, the materials used in such walls shall be of a type that is not adversely affected by moisture.

Exceptions:

1. Dwelling units.
2. Toilet rooms that are not accessible to the public and which have not more than one water closet.

Accessories such as grab bars, towel bars, paper dispensers and soap dishes, provided on or within walls, shall be installed and sealed to protect structural elements from moisture.

1210.3Showers.Shower compartments and walls above bathtubs with installed shower heads shall be finished with a smooth, nonabsorbent surface to a height not less than 70 inches (1778 mm) above the drain inlet.

1210.4Waterproof joints.Built-in tubs with showers shall have waterproof joints between the tub and adjacent wall.

1210.5Toilet rooms.Toilet rooms shall not open directly into a room used for the preparation of food for service to the public. In multiple dwellings no toilet room or bathroom shall open onto any kitchen or kitchenette.



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SECTION BC 1211: KITCHENS AND KITCHENETTES

NYC Administrative Code § 28-BC 1211

1211.1 Sleeping.

No kitchen or kitchenette shall be occupied for sleeping purposes.

1211.2 Kitchenettes in multiple dwellings. Except at entrances thereto, every kitchenette in a multiple dwelling shall be surrounded by partitions extending from floor to ceiling, and/or by a soffit dropped 1 foot (305 mm) from the ceiling.



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SECTION BC 1212: RODENT PROOFING

NYC Administrative Code § 28-BC 1212

1212.1 General.

Rodent proofing shall be in accordance with Appendix F.



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SECTION BC 1213: REFUSE AND RECYCLABLE STORAGE

NYC Administrative Code § 28-BC 1213

1213.1 General.

Multiple dwellings shall comply with Section 81 of the New York State Multiple Dwelling Law and Section 27-2021 of the New York City Housing Maintenance Code. Where a room is provided for the storage of refuse and recyclables in a building, such room shall be completely enclosed by construction that has a fire-resistance rating of not less than 2 hours, with self-closing opening protectives having a fire protection rating of not less than 1 1/2 hour. The location of such refuse storage room shall be identified on the construction documents.

1213.2 Compactor. A refuse compacting system shall be provided in multiple dwellings in Groups I-1 or R-2 occupancy that are four or more stories in height and contain 12 or more dwelling units, and in buildings of any size occupied as a Group R-1 multiple dwelling. Such system shall be located within a refuse storage room constructed in accordance with Section 1213.1 or in a refuse chute termination room constructed in accordance with Section 707.13.4. The floor within such room shall be constructed of concrete and shall be sloped to a floor drain connected to the building sewer. A hose connection shall be provided within such room.

1213.3 Refuse chute. A multiple dwelling that is five or more stories in height and that contains more than 12 dwelling units shall be provided with a refuse chute, refuse chute access rooms, and refuse chute termination room constructed in accordance with Section 707.13.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.
1213.2 amended L.L. 8/2008 § 115, eff. July 1, 2008.



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Chapter 13: ENERGY EFFICIENCY
SECTION BC 1301: GENERAL

NYC Administrative Code § 28-BC 1301

1301.1 Scope.

This chapter governs the design and construction of buildings for energy efficiency.

1301.1.1 Criteria. Buildings shall be designed and constructed in accordance with the Energy Conservation Construction Code of New York State.



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Chapter 14: EXTERIOR WALLS
SECTION BC 1401: GENERAL

NYC Administrative Code § 28-BC 1401

1401.1 Scope.

The provisions of this chapter shall establish the minimum requirements for exterior walls, exterior wall coverings, exterior wall openings, exterior windows and doors, architectural trim, exterior balconies, bay windows, and other exterior appendages subject to this chapter.



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SECTION BC 1402: DEFINITIONS

NYC Administrative Code § 28-BC 1402

1402.1 General.

The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

ADHERED MASONRY VENEER. Veneer secured and supported through the adhesion of an approved bonding material applied to an approved backing.

ANCHORED MASONRY VENEER. Veneer secured with approved mechanical fasteners to an approved backing.

BACKING. The wall or surface to which the veneer is secured.

CURTAIN WALL. A curtain wall or panel wall system is a non-load bearing building wall, in skeleton frame construction attached and supported to the structure at every floor or other periodic locations. Assemblies may include glass, metal, precast concrete or masonry elements arranged so as not to exert common action underload and to move independently of each other and the supporting structure.

EXTERIOR INSULATION FINISH SYSTEM (EIFS). Non-load bearing, barrier wall, exterior cladding systems, generally consisting of the following components:

1. Insulation board.
2. Adhesive and/or mechanical fasteners that attach the insulation board to the substrate.
3. Fiberglass reinforcing mesh.
4. Base coat on the face of the insulation board.

5. A textured protective finish coat.

6. Joint and seam treatments.

EXTERIOR WALL. A wall, bearing or nonbearing, that is used as an enclosing wall for a building, other than a fire wall, and that has a slope of 60 degrees (1.05 rad) or greater with the horizontal plane.

EXTERIOR WALL COVERING. A material or assembly of materials applied on the exterior side of exterior walls for the purpose of providing a weather-resisting barrier, insulation or for aesthetics, including but not limited to, veneers, siding, exterior insulation and finish systems, architectural trim and embellishments such as cornices, soffits, facias, gutters and leaders.

EXTERIOR WALL ENVELOPE. A system or assembly of exterior wall components, including exterior wall finish materials, that provides protection of the building structural members, including framing and sheathing materials, and conditioned interior space, from the detrimental effects of the exterior environment.

FIBER CEMENT SIDING. A manufactured, fiber-reinforcing product made with an inorganic hydraulic or calcium silicate binder formed by chemical reaction and reinforced with organic or inorganic nonasbestos fibers, or both. Additives that enhance manufacturing or product performance are permitted. Fiber cement siding products have either smooth or textured faces and are intended for exterior wall and related applications.

METAL COMPOSITE MATERIAL (MCM). A factory-manufactured panel consisting of metal skins bonded to both faces of a plastic core.

METAL COMPOSITE MATERIAL (MCM) SYSTEM. An exterior wall finish system fabricated using MCM in a specific assembly including joints, seams, attachments, substrate, framing and other details as appropriate to a particular design.

veneer. A facing attached to a wall for the purpose of providing ornamentation, protection or insulation, but not counted as adding strength to the wall. Veneers are nonstructural in that they do not carry any load other than their own weight.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

EXTERIOR WALL COVERING amended L.L. 8/2008 § 116, eff. July 1, 2008.



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SECTION BC 1403: PERFORMANCE REQUIREMENTS

NYC Administrative Code § 28-BC 1403

1403.1 General.

The provisions of this section shall apply to exterior walls, exterior wall coverings and components thereof.

1403.2 Weather protection. Exterior walls shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing, as described in Section 1405.3. The exterior wall envelope and its drainage system shall be designed and constructed in such a manner as to prevent the accumulation of water within the wall assembly by providing a water-resistive barrier behind the exterior veneer, as described in Section 1404.2 and a means for draining water that enters the assembly to the exterior of the veneer, unless it is determined that penetration of water behind the veneer shall not be detrimental to the building performance. Protection against condensation in the exterior wall assembly shall be provided in accordance with the New York State Energy Conservation Construction Code.

Exceptions:

1. A weather-resistant exterior wall envelope shall not be required over concrete and masonry walls, designed to resist water penetration and detrimental effects from freeze/thaw cycling and in accordance with Chapters 19 and 21, as applicable.

2. Compliance with the requirements for a means of drainage, and the requirements of Sections 1405.2 and 1405.3, shall not be required for an exterior wall envelope that has been demonstrated through testing to resist wind-driven rain, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM E 331 under the following conditions:

2.1. Exterior wall envelope test assemblies shall include at least one opening, one control joint, and where required one wall/eave interface and one wall sill. All tested openings and penetrations shall be representative of the intended end-use configuration.

2.2. Exterior wall envelope test assemblies shall be at least 4 feet by 8 feet (1219 mm by 2438 mm) in size.

2.3. Exterior wall envelope assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (psf) (0.297 kN/m²).

2.4. Exterior wall envelope assemblies shall be subjected to a minimum test exposure duration of 2 hours. The exterior wall envelope design shall be considered to resist wind-driven rain where the results of testing indicate that water did not penetrate control joints in the exterior wall envelope, joints at the perimeter of openings, or intersections of terminations with dissimilar materials.

1403.3 Vapor retarder. An approved vapor retarder shall be provided.

Exceptions:

1. Where other approved means to avoid condensation and leakage of moisture are provided.

2. Plain and reinforced concrete or masonry exterior walls designed and constructed in accordance with Chapter 19 or 21, as applicable.

1403.4 Structural. Exterior walls, and the associated openings, shall be designed and constructed to resist safely the superimposed loads required by Chapter 16.

1403.5 Fire resistance. Exterior walls shall be fire-resistance rated as required by other sections of this code with opening protection as required by Chapter 7.

1403.6 Flood resistance. For buildings in areas of special flood hazard, exterior walls extending below the design flood elevation shall be resistant to water damage and shall comply with Appendix G.

1403.7 Reserved.



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SECTION BC 1404: MATERIALS

NYC Administrative Code § 28-BC 1404

1404.1 General.

Materials used for the construction of exterior walls shall comply with the provisions of this section. Materials not prescribed herein shall be permitted, provided that any such alternative has been approved.

1404.2 Water-resistive barrier. Where required by Section 1403.2, an approved continuous water-resistive barrier shall be provided behind the exterior wall covering, or a secondary drainage system shall be provided to divert water out of the wall system to the building exterior. Where asphaltic felt is used, it shall be a minimum of one layer of No. 15 asphalt felt, complying with ASTM D 226 for Type 1 felt, and shall be attached to the sheathing, with flashing as described in Section 1405.3, in such a manner as to provide a continuous water-resistive barrier behind the exterior wall veneer.

1404.3 Wood. Exterior walls of wood construction shall be designed and constructed in accordance with Chapter 23.

1404.3.1 Basic hardboard. Basic hardboard shall conform to the requirements of AHA A135.4.

1404.3.2 Hardboard siding. Hardboard siding shall conform to the requirements of AHA A135.6 and, where used structurally, shall be so identified by the label of an approved agency.

1404.4 Masonry. Exterior walls of masonry construction shall be designed and constructed in accordance with this chapter and Chapter 21. Masonry units, mortar and metal accessories used in anchored and adhered veneer shall meet the physical requirements of Chapter 21. The backing of anchored and adhered veneer shall be of concrete, masonry, steel framing or wood framing.

1404.5 Metal. Exterior walls of formed steel construction, structural steel or lightweight metal alloys shall be designed in accordance with Chapters 22 and 20, as applicable.

1404.5.1 Aluminum siding. Aluminum siding shall conform to the requirements of AAMA 1402.

1404.6Concrete.Exterior walls of concrete construction shall be designed and constructed in accordance with Chapter 19.

1404.7Glass-unit masonry.Exterior walls of glass-unit masonry shall be designed and constructed in accordance with Chapter 21.

1404.8Plastics.Plastic panel, apron or spandrel walls as defined in this code shall not be limited in thickness, provided that such plastics and their assemblies conform to the requirements of Chapter 26 and are constructed of approved weather-resistant materials of adequate strength to resist the wind loads for cladding specified in Chapter 16.

1404.9Vinyl siding.Vinyl siding shall conform to the requirements of ASTM D 3679.

1404.10Fiber cement siding.Fiber cement siding shall conform to the requirements of ASTM C 1186 and shall be so identified on labeling listing an approved quality control agency.

1404.11Exterior Insulation Finish System (EIFS).EIFS shall be designed and constructed in accordance with Chapter 25, Section 1405.8 and Section 2603. EIFS shall conform to the requirements of ANSI/EIMA 99A and shall be so labeled. Such label shall indicate the approved quality control agency.



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SECTION BC 1405: INSTALLATION OF WALL COVERINGS

NYC Administrative Code § 28-BC 1405

1405.1 General.

Exterior wall coverings shall be designed and constructed in accordance with the applicable provisions of this section. Installations of exterior wall coverings shall comply with the special inspection requirements of Chapter 17.

1405.2 Weather protection. Exterior walls shall provide weather protection for the building. The materials of the minimum nominal thickness specified in Table 1405.2 shall be acceptable as approved weather coverings.

Covering Type	Minimum Thickness (inches)
Adhered masonry veneer	0.25
Anchored masonry veneer	2.625
Aluminum siding	0.019
Cold-rolled copper	0.0216 nominal
Copper shingles	0.0162 nominal
Exterior plywood (with sheathing)	0.313
Exterior plywood (without sheathing)	See Section 2304.6
Fiberboard siding	0.5
Fiber cement lap siding	0.25c
Fiber cement panel siding	0.25c
Glass-fiber reinforced concrete panels	0.375
Hardboard siding	0.25
High-yield copper	0.0162 nominal
Lead-coated copper	0.0216 nominal
Lead-coated high-yield copper	0.0162 nominal
Marble slabs	1
Particleboard (with sheathing)	See Section 2304.6
Particleboard (without sheathing)	See Section 2304.6
Precast stone facing	0.625
Steel (approved corrosion resistant)	0.0149
Stone (cast artificial)	1.5
Stone (natural)	2
Structural glass	0.344
Stucco or exterior portland cement plaster	Three-coat work over: Metal plaster base 0.875b
Unit masonry	0.625b
Cast-in-place or precast concrete	0.625b
Two-coat work over: Unit masonry	0.5b
Cast-in-place or precast concrete	0.375b
Terra cotta (anchored)	1
Terra cotta (adhered)	0.25
Vinyl siding	0.035
Wood shingles	0.375
Wood siding (without sheathing)	a0.5

4] For SI: 1 inch = 25.4 mm. a. Wood siding of thicknesses less than 0.5 inch shall be placed over sheathing that conforms to Section 2304.6.b. Exclusive of texture. c. As measured at the bottom of decorative grooves. d. 16 ounces per square foot for cold-rolled copper and lead-coated copper, 12 ounces per square foot for copper shingles, high-yield copper and lead-coated high-yield copper. *| Veneer units in this group shall be approved type and not be greater than 2 inches in thickness.

1405.3 Flashing. Flashing shall be installed in such a manner so as to prevent moisture from entering the wall or to redirect it to the exterior. Flashing shall be installed at the perimeters of exterior door and window assemblies, penetrations and terminations of exterior wall assemblies, exterior wall intersections with roofs, chimneys, porches,

decks, balconies and similar projections and at built-in gutters and similar locations where moisture could enter the wall. Flashing with projecting flanges shall be installed on both sides and the ends of copings, under sills and continuously above projecting trim.

1405.3.1Exterior wall pockets.In exterior walls of buildings or structures, wall pockets or crevices in which moisture can accumulate shall be avoided or protected with caps or drips, or other approved means shall be provided to prevent water damage.

1405.3.2Masonry.Flashings and weepholes shall be located in the first course of masonry above finished ground level above the foundation wall or slab, and other points of support, including structural floors, shelf angles and lintels where anchored veneers are designed in accordance with Section 1405.5.

1405.4Wood veneers.Wood veneers on exterior walls of buildings of Type I, II, III and IV construction shall be not less than 1-inch (25 mm) nominal thickness, 0.438-inch (11.1 mm) exterior hardboard siding or 0.375-inch (9.5 mm) exterior-type wood structural panels or particleboard and shall conform to the following:

1. The veneer does not exceed three stories in height, measured from grade, except where fire-retardant-treated wood is used, the height shall not exceed four stories.

2. The veneer is attached to or furred from a noncombustible backing that is fire-resistance rated as required by other provisions of this code.

3. Where open or spaced wood veneers (without concealed spaces) are used, they shall not project more than 24 inches (610 mm) from the building wall.

1405.5Anchored masonry veneer.Anchored masonry veneer shall comply with the provisions of Sections 1405.5, 1405.6, 1405.7 and 1405.8 and Sections 6.1 and 6.2 of ACI 530/ASCE 5/TMS 402.

1405.5.1Tolerances.Anchored masonry veneers in accordance with Chapter 14 are not required to meet the tolerances in Article 3.3 G1 of ACI 530.1/ASCE 6/TMS 602.

1405.5.2Seismic requirements.Anchored masonry veneer located in Seismic Design Category C, D, E or F shall conform to the requirements of Section 6.2.2.10 of ACI 530/ASCE 5/TMS 402.

1405.6Stone veneer.Stone veneer units not exceeding 10 inches (254 mm) in thickness shall be anchored directly to masonry, concrete or to stud construction by one of the following methods:

1. With concrete or masonry backing, anchor ties shall be not less than 0.1055-inch (2.55 mm) corrosion-resistant wire, or approved equal, formed beyond the base of the backing. The legs of the loops shall be not less than 6 inches (152 mm) in length bent at right angles and laid in the mortar joint, and spaced so that the eyes or loops are 12 inches (305 mm) maximum on center (o.c.) in both directions. There shall be provided not less than a 0.1055-inch (2.55 mm) corrosion-resistant wire tie, or approved equal, threaded through the exposed loops for every 2 square feet (0.2 m²) of stone veneer. This tie shall be a loop having legs not less than 15 inches (381 mm) in length bent so that it will lie in the stone veneer mortar joint. The last 2 inches (51 mm) of each wire leg shall have a right-angle bend. One-inch (25 mm) minimum thickness of cement grout shall be placed between the backing and the stone veneer.

2. With stud backing, a 2-inch by 2-inch (51 by 51 mm) 0.0625-inch (1.59 mm) corrosion-resistant wire mesh with two layers of waterproofed paper backing in accordance with Section 1403.3 shall be applied directly to wood studs spaced a maximum of 16 inches (406 mm) o.c. On studs, the mesh shall be attached with 2-inch-long (51 mm) corrosion-resistant steel wire furring nails at 4 inches (102 mm) o.c. providing a minimum 1.125-inch (29 mm) penetration into each stud and with 8d common nails at 8 inches (203 mm) o.c. into top and bottom plates or with equivalent wire ties. There shall be not less than a 0.1055-inch (2.68 mm) corrosion-resistant wire, or approved equal,

looped through the mesh for every 2 square feet (0.2 m²) of stone veneer. This tie shall be a loop having legs not less than 15 inches (381 mm) in length, so bent that it will lie in the stone veneer mortar joint. The last 2 inches (51 mm) of each wire leg shall have a right-angle bend. One-inch (25 mm) minimum thickness of cement grout shall be placed between the backing and the stone veneer.

1405.7Slab-type veneer.Slab-type veneer units not exceeding 2 inches (51 mm) in thickness shall be anchored directly to masonry, concrete or stud construction. For veneer units of marble, travertine, granite or other stone units of slab form ties of corrosion-resistant dowels in drilled holes located in the middle third of the edge of the units spaced a maximum of 24 inches (610 mm) apart around the periphery of each unit with not less than four ties per veneer unit. Units shall not exceed 20 square feet (1.9 m²) in area. If the dowels are not tight fitting, the holes shall be drilled not more than 0.063 inch (1.6 mm) larger in diameter than the dowel, with the hole countersunk to a diameter and depth equal to twice the diameter of the dowel in order to provide a tight-fitting key of cement mortar at the dowel locations when the mortar in the joint has set. Veneer ties shall be corrosion-resistant metal capable of resisting, in tension or compression, a force equal to two times the weight of the attached veneer. If made of sheet metal, veneer ties shall be not smaller in area than 0.0336 by 1 inch (0.853 by 25 mm) or, if made of wire, not smaller in diameter than 0.1483-inch (3.76 mm) wire.

1405.8Terra cotta.Anchored terra cotta or ceramic units not less than 1.625 inches (41 mm) thick shall be anchored directly to masonry, concrete or stud construction. Tied terra cotta or ceramic veneer units shall be not less than 1.625 inches (41 mm) thick with projecting dovetail webs on the back surface spaced approximately 8 inches (203 mm) o.c. The facing shall be tied to the backing wall with corrosion-resistant metal anchors of not less than No. 8 gage wire installed at the top of each piece in horizontal bed joints not less than 12 inches (305 mm) nor more than 18 inches (457 mm) o.c.; these anchors shall be secured to 0.25-inch (6.4 mm) corrosion-resistant pencil rods that pass through the vertical aligned loop anchors in the backing wall. The veneer ties shall have sufficient strength to support the full weight of the veneer in tension. The facing shall be set with not less than a 2-inch (51 mm) space from the backing wall and the space shall be filled solidly with portland cement grout and pea gravel. Immediately prior to setting, the backing wall and the facing shall be drenched with clean water and shall be distinctly damp when the grout is poured.

1405.9Adhered masonry veneer.Adhered masonry veneer shall comply with the applicable requirements in Section 1405.9.1 and Sections 6.1 and 6.3 of ACI 530/ASCE 5/TMS 402.

1405.9.1Interior adhered masonry veneers.Interior adhered masonry veneers shall have a maximum weight of 20 psf (0.958 kg/m²) and shall be installed in accordance with Section 1405.9. Where the interior adhered masonry veneer is supported by wood construction, the supporting members shall be designed to limit deflection to 1/600 of the span of the supporting members.

1405.10Metal veneers.Veneers of metal shall be fabricated from approved corrosion-resistant materials or shall be protected front and back with porcelain enamel, or otherwise be treated to render the metal resistant to corrosion. Such veneers shall not be less than 0.0149-inch (0.378 mm) nominal thickness sheet steel mounted on wood or metal furring strips or approved sheathing on the wood construction.

1405.10.1Attachment.Exterior metal veneer shall be securely attached to the supporting masonry or framing members with corrosion-resistant fastenings, metal ties or by other approved devices or methods. The spacing of the fastenings or ties shall not exceed 24 inches (610 mm) either vertically or horizontally, but where units exceed 4 square feet (0.4 m²) in area there shall be not less than four attachments per unit. The metal attachments shall have a cross-sectional area not less than provided by W 1.7 wire. Such attachments and their supports shall be capable of resisting a horizontal force in accordance with the wind loads specified in Section 1609, but in no case less than 20 psf (0.958 kg/m²).

1405.10.2Weather protection.Metal supports for exterior metal veneer shall be protected by painting, galvanizing or by other equivalent coating or treatment. Wood studs, furring strips or other wood supports for exterior metal veneer

shall be approved pressure-treated wood or protected as required in Section 1403.2. Joints and edges exposed to the weather shall be caulked with approved durable waterproofing material or by other approved means to prevent penetration of moisture.

1405.10.3Backup. Masonry backup shall not be required for metal veneer except as is necessary to meet the fire-resistance requirements of this code.

1405.10.4Grounding. Grounding of metal veneers on buildings shall comply with the requirements of Chapter 27 and the New York City Electrical Code.

1405.11Glass veneer. The area of a single section of thin exterior structural glass veneer shall not exceed 10 square feet (0.93 m²) where it is not more than 15 feet (4572 mm) above the level of the sidewalk or grade level directly below, and shall not exceed 6 square feet (0.56 m²) where it is more than 15 feet (4572 mm) above that level. In no event shall thin exterior structural glass veneer be installed more than 35 feet (10 668 mm) above the level of the sidewalk or grade level directly below.

1405.11.1Length and height. The length or height of any section of thin exterior structural glass veneer shall not exceed 48 inches (1219 mm).

1405.11.2Thickness. The thickness of thin exterior structural glass veneer shall be not less than 0.344 inch (8.7 mm).

1405.11.3Application. Thin exterior structural glass veneer shall be set only after backing is thoroughly dry and after application of an approved bond coat uniformly over the entire surface of the backing so as to effectively seal the surface. Glass shall be set in place with an approved mastic cement in sufficient quantity so that at least 50 percent of the area of each glass unit is directly bonded to the backing by mastic not less than 0.25 inch (6.4 mm) thick and not more than 0.625 inch (15.9 mm) thick. The bond coat and mastic shall be evaluated for compatibility and shall bond firmly together.

1405.11.4Installation at sidewalk level. Where glass extends to a sidewalk surface, each section shall rest in an approved metal molding, and be set at least 0.25 inch (6.4 mm) above the highest point of the sidewalk. The space between the molding and the sidewalk shall be thoroughly caulked and made water tight.

1405.11.4.1Installation above sidewalk level. Where thin exterior structural glass veneer is installed above the level of the top of a bulkhead facing, or at a level more than 36 inches (914 mm) above the sidewalk level, the mastic cement binding shall be supplemented with approved nonferrous metal shelf angles located in the horizontal joints in every course. Such shelf angles shall be not less than 0.0478-inch (1.21 mm) thick and not less than 2 inches (51 mm) long and shall be spaced at approved intervals, with not less than two angles for each glass unit. Shelf angles shall be secured to the wall or backing with expansion bolts, toggle bolts or by other approved methods.

1405.11.5Joints. Unless otherwise specifically approved by the commissioner, abutting edges of thin exterior structural glass veneer shall be ground square. Mitered joints shall not be used except where specifically approved for wide angles. Joints shall be uniformly buttered with an approved jointing compound and horizontal joints shall be held to not less than 0.063 inch (1.6 mm) by an approved nonrigid substance or device. Where thin exterior structural glass veneer abuts nonresilient material at sides or top, expansion joints not less than 0.25 inch (6.4 mm) wide shall be provided.

1405.11.6Mechanical fastenings. Thin exterior structural glass veneer installed above the level of the heads of show windows and veneer installed more than 12 feet (3658 mm) above sidewalk level shall, in addition to the mastic cement and shelf angles, be held in place by the use of fastenings at each vertical or horizontal edge, or at the four corners of each glass unit. Fastenings shall be secured to the wall or backing with expansion bolts, toggle bolts or by other methods. Fastenings shall be so designed as to hold the glass veneer in a vertical plane independent of the mastic

cement. Shelf angles providing both support and fastenings shall be permitted.

1405.11.7 Flashing. Exposed edges of thin exterior structural glass veneer shall be flashed with overlapping corrosion-resistant metal flashing or equivalent and caulked with a waterproof compound in a manner to effectively prevent the entrance of moisture between the glass veneer and the backing.

1405.12 Exterior windows and doors. Windows and doors installed in exterior walls shall conform to the testing and performance requirements of Section 1714.5.

1405.12.1 Installation. Windows and doors shall be installed in accordance with approved manufacturer's instructions. Fastener size and spacing shall be provided in such instructions and shall be calculated based on maximum loads and spacing used in the tests.

1405.13 Vinyl siding. Vinyl siding conforming to the requirements of this section and complying with ASTM D 3679 shall be permitted on exterior walls of buildings of Type V construction located in areas where the basic wind speed specified in Chapter 16 does not exceed 100 miles per hour (161 km/h) and the building height is less than 40 feet (12 192 mm) in Exposure C. Where construction is located in areas where the basic wind speed exceeds 100 miles per hour (161 km/h), or building heights are in excess of 40 feet (12 192 mm), tests or calculations indicating compliance with Chapter 16 shall be submitted. Vinyl siding shall be secured to the building so as to provide weather protection for the exterior walls of the building.

1405.13.1 Application. The siding shall be applied over sheathing or materials listed in Section 2304.6. Siding shall be applied to conform with the weather-resistant barrier requirements in Section 1403. Siding and accessories shall be installed in accordance with approved manufacturer's instructions. Unless otherwise specified in the approved manufacturer's instructions, nails used to fasten the siding and accessories shall have a minimum 0.313-inch (7.9 mm) head diameter and 0.125-inch (3.18 mm) shank diameter. The nails shall be corrosion resistant and shall be long enough to penetrate the studs or nailing strip at least 0.75 inch (19 mm). Where the siding is installed horizontally, the fastener spacing shall not exceed 16 inches (406 mm) horizontally and 12 inches (305 mm) vertically. Where the siding is installed vertically, the fastener spacing shall not exceed 12 inches (305 mm) horizontally and 12 inches (305 mm) vertically.

1405.14 Cement plaster. Cement plaster applied to exterior walls shall conform to the requirements specified in Chapter 25.

1405.15 Fiber cement siding. Fiber cement siding complying with Section 1404.10 shall be permitted on exterior walls of Type I, II, III, IV and V construction for wind pressure resistance or wind speed exposures as indicated in the manufacturer's compliance report and approved installation instructions. Where specified, the siding shall be installed over sheathing or materials listed in Section 2304.6 and shall be installed to conform to the weather-resistant barrier requirements in Section 1403. Siding and accessories shall be installed in accordance with approved manufacturer's instructions. Unless otherwise specified in the approved manufacturer's instructions, nails used to fasten the siding to wood studs shall be corrosion-resistant round head smooth shank and shall be long enough to penetrate the studs at least 1 inch (25 mm). For metal framing, all-weather screws shall be used and shall penetrate the metal framing at least three full threads.

1405.15.1 Panel siding. Panels shall be installed with the long dimension parallel to framing. Vertical joints shall occur over framing members and shall be sealed with caulking or covered with battens. Horizontal joints shall be flashed with Z-flashing and blocked with solid wood framing.

1405.15.2 Horizontal lap siding. Lap siding shall be lapped a minimum of 1 1/4 inches (32 mm) and shall have the ends sealed with caulking, covered with an H-section joint cover or located over a strip of flashing. Lap siding courses shall be permitted to be installed with the fastener heads exposed or concealed, according to approved manufacturers' instructions.

1405.16Fastening.Weather boarding and wall coverings shall be securely fastened with aluminum, copper, zinc, zinc-coated or other approved corrosion-resistant fasteners in accordance with the nailing schedule in Table 2304.9.1 or the approved manufacturer's installation instructions. Shingles and other weather covering shall be attached with appropriate standard shingle nails to furring strips securely nailed to studs, or with approved mechanically bonding nails, except where sheathing is of wood not less than 1-inch (25 mm) nominal thickness or of wood structural panels as specified in Table 2308.9.3(3).

1405.17Reserved.

1405.18Exterior Insulation Finish System (EIFS).EIFS cladding conforming to the requirements of this section and tested in accordance with ASTM E 330 shall be permitted on exterior walls of buildings provided that the foam plastic insulation meets the requirements of Chapter 26, the substrate assembly is constructed of approved weather-resistant materials of adequate strength to resist the wind loads for cladding specified in Chapter 16, and the building height is 40 feet (12 192 mm) or less. EIFS may be permitted on the exterior walls of heights in excess of 40 feet (12 192 mm), provided that tests or calculations indicating compliance with Chapter 16 are submitted to the commissioner. EIFS installations on buildings of any height shall comply with the special inspection requirements of Chapter 17.

1405.18.1Application.The EIFS cladding shall be applied over a substrate that is constructed in accordance with the appropriate section of this code depending on its type of construction. EIFS cladding shall be applied in accordance with ANSI/EIMA 99 A.

1405.18.2Installation at grade level.Where EIFS cladding is within 10 feet (3048 mm) of grade the installation must conform to the requirements of ANSI/EIMA 99 A impact resistance LEVEL 4.

1405.18.3Installation on Type I, II, III, or IV construction.EIFS cladding on the exterior walls of buildings of Type I, II, III and IV construction shall comply with the appropriate provisions of Chapter 26 and Sections 1405.18.3.1 through 1405.18.3.8.

1405.18.3.1Separation from lot lines.Reserved.

1405.18.3.2Expansion joints.Expansion joints shall be provided in EIFS in the following locations:

1. Where EIFS adjoin dissimilar construction.
2. Where building expansion joints occur.
3. Where prefabricated panels abut one another.
4. Where the substrate changes.
5. Where significant structural movement occurs, as determined by the design professional.

1405.18.3.3EIFS approval.EIFS systems shall be approved based on test data.

1405.18.3.4Fire-rated assembly.The inclusion of an EIFS over a listed fire-rated assembly shall not be deemed to reduce the tested or listed rating.

1405.18.3.5Flame spread.The EIFS insulation shall comply with the requirements of Chapter 26. The assembly of fiberglass reinforcing mesh, base coat and textured protective finish coat shall be tested in accordance with ASTM E 84, and shall have a flame spread rating of 25 or less and a smoke-developed rating of 50 or less. Materials shall be tested in the thickness intended to be used.

1405.18.3.6Labeling.Foam insulation shall be listed by an approved testing laboratory and shall be labeled with all

of the following information:

1. Inspection agency name.
2. Specific manufacturer's product for which the insulation is listed.
3. Identification of the insulation manufacturer.
4. Flame spread and smoke-developed classifications.

1405.18.3.7Contractor. The installing contractor shall have a certificate of instruction from the respective EIFS manufacturer's applicator training program.

1405.18.3.8Fastening for multistory buildings. The system materials shall be fastened to each other and the overall assembly shall be attached to the building frame so as to prevent failure due to elevated temperatures that occur in a building fire, wind loads, wetting or other environmental conditions. Installations over two stories shall be secured with either full bed of adhesive or corrosion-resistant mechanical fasteners.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1405.18.3.5 amended L.L. 8/2008 § 117, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 14: EXTERIOR WALLS

SECTION BC 1406: COMBUSTIBLE MATERIALS ON THE EXTERIOR SIDE OF EXTERIOR WALLS

NYC Administrative Code § 28-BC 1406

1406.1 General.

This section shall apply to exterior wall coverings, exterior balconies and similar appendages, bay and oriel windows, decks, porches, porticos, entranceways, and storm enclosures constructed of combustible materials.

1406.2 Combustible exterior wall coverings. Combustible exterior wall coverings, including architectural trim, shall comply with this section.

Exceptions:

1. Plastics complying with Chapter 26.
2. EIFS complying with Section 1405.18.

1406.2.1 Ignition resistance. Combustible exterior wall coverings shall be tested in accordance with NFPA 268.

Exceptions: The following materials are not required to be tested in accordance with NFPA 268. However, such materials shall comply with all other provisions of Section 1406.

1. Wood or wood-based products.
2. Other combustible materials covered with an exterior covering other than vinyl sidings listed in Table 1405.2.
3. Aluminum having a minimum thickness of 0.019 inch (0.48 mm).
4. Exterior wall coverings on exterior walls of Type V construction.

1406.2.1.1 Fire separation 5 feet or less. Where installed on exterior walls having a fire separation distance of 5 feet

(1524 mm) or less, combustible exterior wall coverings shall not exhibit sustained flaming as defined in NFPA 268.

1406.2.1.2 Fire separation greater than 5 feet. For fire separation distances greater than 5 feet (1524 mm), an assembly shall be permitted that has been exposed to a reduced level of incident radiant heat flux in accordance with the NFPA 268 test method without exhibiting sustained flaming. The minimum fire separation distance required for the assembly shall be determined from Table 1406.2.1.2 based on the maximum tolerable level of incident radiant heat flux that does not cause sustained flaming of the assembly.

Table 1406.2.1.2 Minimum Fire Separation for Combustible Veneers

Fire Separation Distance (feet)	Tolerable Level Incident Radiant Heat Energy (kW/m ²)
5	12.5
6	5.9
7	5.5
8	5.2
9	4.9
10	4.6
11	4.4
12	4.1
13	3.9
14	3.7
15	3.5
16	3.3
17	3.1
18	2.9
19	2.7
20	2.5
21	2.3
22	2.1
23	1.9
24	1.7
25	1.5

For SI: 1 foot = 304.8 mm, 1 Btu/H² x (degrees)F = .0057 kW/m² x K.

1406.2.2 Area limitations. In buildings of Type I, II, III and IV construction, exterior wall coverings shall be permitted to be constructed of combustible materials in accordance with Section 1406.2.1. Combustible exterior wall coverings shall not exceed 10 percent of an exterior wall surface area on any given story nor exceed 40 feet (12 192 mm) in height above grade plane. Such combustible exterior wall coverings shall not be permitted on exterior walls where the fire separation distance is 5 feet (1524 mm) or less. Exterior wall coverings that exceed 40 feet (12 192 mm) in height above grade plane shall be constructed of approved noncombustible materials and shall be secured to the wall with metal or other approved noncombustible brackets.

1406.2.3 Location. Where combustible exterior wall covering is located along the top of exterior walls, such trim shall be completely backed up by the exterior wall and shall not extend over or above the top of exterior walls.

1406.2.4 Fireblocking. Where the combustible exterior wall covering is furred from the wall and forms a solid surface, the distance between the back of the covering and the wall shall not exceed 1.625 inches (41 mm) and the space thereby created shall be fireblocked in accordance with Section 717 so that there will be no open space exceeding 100 square feet (9.3 m²). Where wood furring strips are used, they shall be of approved wood of natural decay resistance or preservative-treated wood.

Exceptions:

1. Fireblocking of cornices is not required in single-family dwellings.
2. Fireblocking shall not be required where installed on noncombustible framing and the face of the exterior wall finish exposed to the concealed space is covered by one of the following materials:
 - 2.1. Aluminum having a minimum thickness of 0.019 inch (0.5 mm);
 - 2.2. Corrosion-resistant steel having a base metal thickness not less than 0.016 inch (0.4 mm) at any point; or
 - 2.3. Other approved noncombustible materials.

1406.3 Exterior balconies and similar projections. Exterior balconies and similar projections shall be permitted to be constructed of combustible materials provided that the exterior balcony or similar projection affords the fire-resistance rating required by Table 601 for floor construction.

Exceptions:

1. Balconies or similar projections serving as a required exit shall not be constructed of combustible materials.
2. Balconies or similar projections on the exterior of buildings of Type I or II construction shall not be constructed of combustible materials.

1406.4 Bay and oriel windows, decks, porches, porticos, entranceways, and storm enclosures. Bay and oriel windows, decks, porches, porticos, entranceways, and storm enclosures shall conform to the type of construction required for the building to which they are attached, including required fire-rating, unless otherwise modified by the requirements of this Section. For the purposes of this Section, such structures shall be referred to as, "appendages".

Exception: Plastic complying with Chapter 26.

1406.4.1 Appendages on Type I and II construction. Appendages on buildings of Type I or II construction shall be constructed of non-combustible materials. However, on buildings not more than three stories or 40 feet (12 192 mm) in height, whichever is less, fire-retardant-treated wood shall be permitted.

1406.4.2 Appendages on Type III, IV and VA construction. Appendages on buildings of Type III, IV, and VA construction may be constructed of combustible materials, provided that all the following conditions are met:

1. Such building does not exceed 3 stories or 40 feet (12 192 mm) in height, whichever is less.
2. The main use or dominant occupancy of such building is classified in Occupancy Group R-2 or R-3.
3. The appendage has an exterior separation on all exposed sides of at least 15 feet (4572 mm), measured from the outermost surface of the appendage, except that appendages with exposed sides protected by minimum 1-hour fire-rated construction extending at least 36 inches (914 mm) above the highest combustible horizontal surface may be located up to a minimum distance of 36 inches (914 mm) from any property line.
4. The appendage is so constructed that its removal or destruction will not reduce the structural stability or fire resistive integrity of the building.
5. The appendage has a superficial area not exceeding 150 square feet (13.9 m²) when viewed from directly above and is included in the area limitations of Table 503 for the entire building.
6. The appendage is not higher than the sills of the second story windows.
7. The vertical surface area of the combustible portions of the appendage does not exceed 10 percent of the total wall area (windows excluded) of the building.
8. For enclosed appendages, the roof of the appendage has a class A roof covering, and the soffit or ceiling covering the combustible roof framing shall have a minimum 1-hour fire-resistance rating.

Exception: Appendages constructed of fire-retardant-treated wood, on buildings not exceeding 3 stories or 40 feet (12 192 mm) in height, whichever is less, need not comply with Items 2 through 8.

1406.4.3 Appendages on Type VB construction. Appendages may be constructed of combustible materials on buildings of construction Type VB.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 14: EXTERIOR WALLS
SECTION BC 1407: METAL COMPOSITE MATERIALS (MCM)

NYC Administrative Code § 28-BC 1407

1407.1 General.

The provisions of this section shall govern the materials, construction and quality of metal composite materials (MCM) for use as exterior wall coverings in addition to other applicable requirements of Chapters 14 and 16.

1407.2Exterior wall finish.MCM used as exterior wall finish or as elements of balconies and similar appendages and bay and oriel windows to provide cladding or weather resistance shall comply with Sections 1407.4 through 1407.13.

1407.3Architectural trim and embellishments.MCM used as architectural trim or embellishments shall comply with Sections 1407.7 through 1407.13.

1407.4Structural design.MCM systems shall be designed and constructed to resist wind loads as required by Chapter 16 for components and cladding.

1407.5Approval.Results of approved tests or an engineering analysis shall be submitted to the commissioner to verify compliance with the requirements of Chapter 16 for wind loads.

1407.6Weather resistance.MCM systems shall comply with Section 1403 and shall be designed and constructed to resist wind and rain in accordance with this section and the manufacturer's installation instructions.

1407.7Durability.MCM systems shall be constructed of approved materials that maintain the performance characteristics required in Section 1407 for the duration of use.

1407.8Fire-resistance rating.Where MCM systems are used on exterior walls required to have a fire-resistance rating in accordance with Section 704, evidence shall be submitted to the commissioner that the required fire-resistance rating is maintained.

1407.9 Surface-burning characteristics. Unless otherwise specified, MCM shall have a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested as an assembly in the maximum thickness intended for use in accordance with ASTM E 84.

1407.10 Type I, II, III and IV construction. Where installed on buildings of Type I, II, III and IV construction, MCM systems shall comply with Sections 1407.10.1 through 1407.10.4, or 1407.11.

1407.10.1 Surface-burning characteristics. MCM shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 450 when tested as an assembly in the maximum thickness intended for use in accordance with ASTM E 84.

1407.10.2 Thermal barriers. MCM shall be separated from the interior of a building by an approved thermal barrier consisting of 0.5-inch (12.7 mm) gypsum wallboard or equivalent thermal barrier material that will limit the average temperature rise of the unexposed surface to not more than 250(degrees)F (121(degrees)C) after 15 minutes of fire exposure in accordance with the standard time-temperature curve of ASTM E 119. The thermal barrier shall be installed in such a manner that it will remain in place for not less than 15 minutes based on a test conducted in accordance with UL 1715.

Exceptions:

1. The thermal barrier is not required where the MCM system is specifically approved based on tests conducted in accordance with UL 1040 or UL 1715. Such testing shall be performed with the MCM in the maximum thickness intended for use. The MCM system shall include seams, joints and other typical details used in the installation and shall be tested in the manner intended for use.

2. The thermal barrier is not required where the MCM is used as elements of balconies and similar appendages, architectural trim or embellishments.

1407.10.3 Full-scale tests. The MCM exterior wall assembly shall be tested in accordance with, and comply with, the acceptance criteria of NFPA 285. Such testing shall be performed on the MCM system with the MCM in the maximum thickness intended for use.

1407.11 Alternate conditions. MCM and MCM systems shall not be required to comply with Sections 1407.10.1 through 1407.10.4 provided such systems comply with Section 1407.11.1 or 1407.11.2.

1407.11.1 Installations up to 40 feet in height. MCM shall not be installed more than 40 feet (12 190 mm) in height above the grade plane where installed in accordance with Sections 1407.11.1.1 and 1407.11.1.2.

1407.11.1.1 Fire separation distance of 5 feet or less. Where the fire separation distance is 5 feet (1524 mm) or less, the area of MCM shall not exceed 10 percent of the exterior wall surface.

1407.11.1.2 Fire separation distance greater than 5 feet. Where the fire separation distance is greater than 5 feet (1524 mm), there shall be no limit on the area of exterior wall surface coverage using MCM.

1407.11.2 Installations up to 50 feet in height. MCM shall not be installed more than 50 feet (15 240 mm) in height above the grade plane where installed in accordance with Sections 1407.11.2.1 and 1407.11.2.2.

1407.11.2.1 Self ignition temperature. MCM shall have a self-ignition temperature of 650(degrees)F (343(degrees)C) or greater when tested in accordance with ASTM D 1929.

1407.11.2.2 Limitations. Sections of MCM shall not exceed 300 square feet (27.9 m2) in area and shall be separated by a minimum of 4 feet (1219 mm) vertically.

1407.12Type V construction.MCM shall be permitted to be installed on buildings of Type V construction.

1407.13Labeling.MCM shall be labeled in accordance with Chapter 17.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 15: ROOF ASSEMBLIES AND ROOFTOP STRUCTURES
SECTION BC 1501: GENERAL

NYC Administrative Code § 28-BC 1501

1501.1 Scope.

The provisions of this chapter shall govern the design, materials, construction and quality of roof assemblies, and rooftop structures.



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Chapter 15: ROOF ASSEMBLIES AND ROOFTOP STRUCTURES
SECTION BC 1502: DEFINITIONS

NYC Administrative Code § 28-BC 1502

1502.1 General.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

BULKHEAD. An enclosed rooftop structure enclosing a shaft, stairway, tank or service equipment, or other space not designed or used for human occupancy.

BUILT-UP ROOF COVERING. Two or more layers of felt cemented together and surfaced with a cap sheet, mineral aggregate, smooth coating or similar surfacing material.

GREEN ROOF. A roofing assembly consisting of a roof covering and additional landscape material components, including growing media, filter fabric, drainage, and roof surface.

INTERLAYMENT. A layer of felt or nonbituminous saturated felt not less than 18 inches (457 mm) wide, shingled between each course of a wood-shake roof covering.

MECHANICAL EQUIPMENT SCREEN. A partially enclosed rooftop structure used to aesthetically conceal heating, ventilating and air conditioning (HVAC) electrical or mechanical equipment from view.

METAL ROOF PANEL. An interlocking metal sheet having a minimum installed weather exposure of 3 square feet (.279 m²) per sheet.

METAL ROOF SHINGLE. An interlocking metal sheet having an installed weather exposure less than 3 square feet (.279 m²) per sheet.

MODIFIED BITUMEN ROOF COVERING. One or more layers of polymer-modified asphalt sheets. The sheet materials shall be fully adhered or mechanically attached to the substrate or held in place with an approved ballast layer.

PENTHOUSE. An enclosed rooftop structure which is designed or used for human occupancy.

POSITIVE ROOF DRAINAGE. The drainage condition in which consideration has been made for all loading deflections of the roof deck, including ponding instability, and additional slope has been provided to ensure drainage of the roof within 48 hours of precipitation.

REROOFING. The process of recovering or replacing an existing roof covering. See "Roof recover" and "Roof replacement."

ROOF ASSEMBLY. A system designed to provide weather protection and resistance to design loads. The system consists of a roof covering and roof deck or a single component serving as both the roof covering and the roof deck. A roof assembly includes the roof deck, vapor retarder, substrate or thermal barrier, insulation, vapor retarder and roof covering.

ROOF COVERING. The covering applied to the roof deck for weather resistance, fire classification or appearance.

ROOF COVERING SYSTEM. See "Roof assembly."

ROOF DECK. The flat or sloped surface not including its supporting members or vertical supports.

ROOF RECOVER. The process of installing an additional roof covering over a prepared existing roof covering without removing the existing roof covering.

ROOF REPLACEMENT. The process of removing the existing roof covering, repairing any damaged substrate and installing a new roof covering.

ROOF VENTILATION. The natural or mechanical process of supplying conditioned or unconditioned air to, or removing such air from, attics, cathedral ceilings or other enclosed spaces over which a roof assembly is installed.

ROOFTOP STRUCTURE. An enclosed or unenclosed structure on or above the roof of any part of a building.

SINGLE-PLY MEMBRANE. A roofing membrane that is field applied using one layer of membrane material (either homogeneous or composite) rather than multiple layers.

UNDERLAYMENT. One or more layers of felt, sheathing paper, nonbituminous saturated felt or other approved material over which a steep-slope roof covering is applied.



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SECTION BC 1503:

WEATHER PROTECTION

NYC Administrative Code § 28-BC 1503

1503.1 General.

Roof decks shall be covered with approved roof coverings secured to the building or structure in accordance with the provisions of this chapter. Roof coverings shall be designed, installed and maintained in accordance with this code and the approved manufacturer's instructions such that the roof covering shall serve to protect the building or structure.

1503.2 Flashing. Flashing shall be installed in such a manner so as to prevent moisture entering the wall and roof through joints in copings, through moisture-permeable materials and at intersections with parapet walls and other penetrations through the roof plane.

1503.2.1 Locations. Flashing shall be installed at wall and roof intersections, at gutters, wherever there is a change in roof slope or direction and around roof openings. Where flashing is of metal, the metal shall be corrosion resistant with a thickness of not less than 0.019 inch (.483 mm) (No. 26 galvanized sheet).

1503.3 Coping. Parapet walls shall be properly coped with noncombustible, weatherproof materials of a width no less than the thickness of the parapet wall.

1503.4 Roof drainage. Design and installation of roof drainage systems shall comply with the New York City Plumbing Code.

1503.4.1 Gutters. Gutters and leaders placed on the outside of buildings shall be of noncombustible, corrosion-resistant material, or a minimum of Schedule 40 plastic pipe.

1503.4.1.1 Height limitations. Vertical sections of exterior leaders made from galvanized steel, galvanized wrought iron, cast iron, brass, or similar heavy material shall be permitted only for the first 15 feet (4572 mm) of leader extending up from grade, provided that the leader is securely anchored with offset clamps to the face of the building at

no fewer than 2 points along the vertical section of the leader. Horizontal sections of exterior gutter made from such heavy materials shall not be permitted higher than 15 feet (4572 mm) above grade.

1503.5Roof ventilation.Intake and exhaust vents shall be provided in accordance with Section 1203.2 and the manufacturer's installation instructions.



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SECTION BC 1504: PERFORMANCE REQUIREMENTS

NYC Administrative Code § 28-BC 1504

1504.1 Wind resistance of roofs.

Roof decks and roof coverings shall be designed for wind loads in accordance with Chapter 16 and Sections 1504.2, 1504.3 and 1504.4.

1504.1.1 Wind resistance of asphalt shingles. Asphalt shingles shall be designed for wind speeds in accordance with Section 1507.2.7.

1504.2 Wind resistance of clay and concrete tile. Clay and concrete tile roof coverings shall be connected to the roof deck in accordance with Chapter 16.

1504.3 Wind resistance of nonballasted roofs. Roof coverings installed on roofs in accordance with Section 1507 that are mechanically attached or adhered to the roof deck shall be designed to resist the design wind load pressures for cladding in Chapter 16.

1504.3.1 Other roof systems. Roof systems with built-up, modified bitumen, fully adhered or mechanically attached single-ply through fastened metal panel roof systems, and other types of membrane roof coverings shall also be tested in accordance with FM 4450, FM 4470, UL 580 or UL 1897.

1504.3.2 Metal panel roof systems. Metal panel roof systems through fastened or standing seam shall be tested in accordance with UL 580 or ASTM E 1592.

1504.4 Ballasted low-slope roof systems. Ballasted low-slope (roof slope $\leq$ 2:12) single-ply roof system coverings installed in accordance with Section 1507 shall be designed in accordance with ANSI/SPRI RP-4.

1504.5 Edge securement for low-slope roofs. Low-slope membrane roof systems metal edge securement, except gutters, installed in accordance with Section 1507, shall be designed in accordance with ANSI/SPRI ES-1, except the basic wind speed shall be determined in accordance with Chapter 16.

1504.6Physical properties.Roof coverings installed on low-slope roofs (roof slope ;lt 2:12) in accordance with Section 1507 shall demonstrate physical integrity over the working life of the roof based upon 2,000 hours of exposure to accelerated weathering tests conducted in accordance with ASTM G 152, ASTM G 155 or ASTM G 154. Those roof coverings that are subject to cyclical flexural response due to wind loads shall not demonstrate any significant loss of tensile strength for unreinforced membranes or breaking strength for reinforced membranes when tested as herein required.

1504.7Impact resistance.Roof coverings installed on low-slope roofs (roof slope ;lt 2:12) in accordance with Section 1507 shall resist impact damage based on the results of tests conducted in accordance with ASTM D 3746, ASTM D 4272, CGSB 37-GP-52M or FM 4470.

1504.8Reflectance.Roof coverings on roofs or setbacks with slope less than three units vertical in 12 units horizontal (25 percent) shall be white in color or EnergyStar rated as highly reflective for at least 75 percent of the area of the roof or setback surface.

Exceptions:

1. Terraces on setbacks comprising less than 25 percent of the area of the largest floor plate in the building.
2. Green roofs in compliance with Section 1507.16 shall be permitted to comprise part or all of the 75 percent required area coverage.
3. Roofs used as outdoor recreation space by the occupants of the building shall be permitted to be either landscaped or covered with a walking surface or other protective surface with an albedo of 30 percent or greater.



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 Title 28: NEW YORK CITY CONSTRUCTION CODES**
 CHAPTER 7: THE NEW YORK CITY BUILDING CODE
 Chapter 15: ROOF ASSEMBLIES AND ROOFTOP STRUCTURES
 SECTION BC 1505: FIRE CLASSIFICATION

NYC Administrative Code § 28-BC 1505

1505.1 General.

Roof assemblies shall be divided into the classes defined below. Class A, B and C roof assemblies and roof coverings required to be listed by this section shall be tested in accordance with ASTM E 108 or UL 790. In addition, fire-retardant-treated wood roof coverings shall be tested in accordance with ASTM D 2898. The minimum roof coverings installed on buildings shall comply with Table 1505.1 based on the type of construction of the building. Table 1505.1a, b Minimum Roof Covering Classification for Types of Construction IA IB IIA IIB IIIA IIIB IV VA VB B B B B B B B Cb For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m²a. Unless otherwise required due to the location of the building within a fire district in accordance with Section D102.2.3 in Appendix D.b. Buildings that are not more than two stories in height and having not more than 6,000 square feet of projected roof area and where there is a minimum 10-foot fire-separation distance from the leading edge of the roof to a lot line on all sides of the building, except for street fronts or public ways, shall be permitted to have roofs of No. 1 cedar or redwood shakes and No. 1 shingles in accordance with Section 1505.6.

1505.2 Class A roof assemblies. Class A roof assemblies are those that are effective against severe fire test exposure. Class A roof assemblies and roof coverings shall be listed and identified as Class A by an approved testing agency. Class A roof assemblies shall be permitted for use in buildings or structures of all types of construction.

Exception: Class A roof assemblies include those with coverings of brick, masonry, slate, clay or concrete roof tile, exposed concrete roof deck, ferrous or copper shingles or sheets.

1505.3 Class B roof assemblies. Class B roof assemblies are those that are effective against moderate fire-test exposure. Class B roof assemblies and roof coverings shall be listed and identified as Class B by an approved testing agency.

Exception: Class B roof assemblies include those with coverings of metal sheets and shingles.

1505.4Class C roof assemblies.Class C roof assemblies are those that are effective against light fire-test exposure. Class C roof assemblies and roof coverings shall be listed and identified as Class C by an approved testing agency.

1505.5Construction of sloping roofs.Roofs having a slope of more than 60 degrees (1.05 rad) to the horizontal shall be constructed of material having the same fire-resistance-rating as required for an exterior non-bearing wall of the building of which it is a part. When the slope is 60 degrees (1.05 rad) or less to the horizontal, the sloping roof shall be constructed as required for the roof of the building. Where the back of a false mansard is exposed to the outdoors, the back shall be covered with noncombustible material or with roof covering as required for the roof of the building.

1505.6Fire-retardant-treated wood shingles and shakes.Fire-retardant-treated wood shakes and shingles shall be treated by impregnation with chemicals by the full-cell vacuum-pressure process, in accordance with AWWPA C1. Each bundle shall be marked to identify the manufactured unit and the manufacturer, and shall also be labeled to identify the classification of the material in accordance with the testing required in Section 1505.1, the treating company and the quality control agency.

1505.7Special purpose roofs.Special purpose wood shingle or wood shake roofing shall conform with the grading and application requirements of Section 1507.8 or Section 1507.9. In addition, an underlayment of 0.625 inch (15.9 mm) Type X water-resistant gypsum backing board or gypsum sheathing shall be placed under minimum nominal 0.5-inch-thick (12.7 mm) wood structural panel solid sheathing or 1-inch (25 mm) nominal spaced sheathing.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 15: ROOF ASSEMBLIES AND ROOFTOP STRUCTURES
SECTION BC 1506: MATERIALS

NYC Administrative Code § 28-BC 1506

1506.1 Scope.

The requirements set forth in this section shall apply to the application of roof-covering materials specified herein. Roof coverings shall be applied in accordance with this chapter and the manufacturer's installation instructions. Installation of roof coverings shall comply with the applicable provisions of Section 1507.

1506.2 Compatibility of materials. Roofs and roof coverings shall be of materials that are compatible with each other and with the building or structure to which the materials are applied.

1506.3 Material specifications and physical characteristics. Roof-covering materials shall conform to the applicable standards listed in this chapter. In the absence of applicable standards or where materials are of questionable suitability, testing by an approved agency shall be required by the commissioner to determine the character, quality and limitations of application of the materials.

1506.4 Product identification. Roof-covering materials shall be delivered in packages bearing the manufacturer's identifying marks and approved testing agency labels required in accordance with Section 1505. Bulk shipments of materials shall be accompanied with the same information issued in the form of a certificate or on a bill of lading by the manufacturer.



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 CHAPTER 7: THE NEW YORK CITY BUILDING CODE
 Chapter 15: ROOF ASSEMBLIES AND ROOFTOP STRUCTURES
 SECTION BC 1507: REQUIREMENTS FOR ROOF COVERINGS

NYC Administrative Code § 28-BC 1507

1507.1 Scope.

Roof coverings shall be applied in accordance with the applicable provisions of this section and the manufacturer's installation instructions.

1507.2 Asphalt shingles. The installation of asphalt shingles shall comply with the provisions of this section and Table 1507.2.3.] Table 1507.2 Asphalt Shingle Application Component Installation Requirement 1.] Component Installation Requirement 2.] 1. Roof slope Asphalt shingles shall only be used on roof slopes of two units vertical in 12 units horizontal (2:12) or greater. For roof slopes from two units vertical in 12 units horizontal (2:12) up to four units vertical in 12 units horizontal (4:12), double underlayment application is required in accordance with Section 1507.2.8.2. Deck requirement Asphalt shingles shall be fastened to solidly sheathed roofs. 3. Underlayment Underlayment shall conform with ASTM D 226, Type 1, or ASTM D 4869, Type 1. For roof slopes from two units vertical in 12 units horizontal (2:12), up to four units vertical in 12 units horizontal (4:12) Underlayment shall be two layers applied in the following manner. Apply a minimum 19-inch strip or underlayment felt parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 35-inch-wide sheets of underlayment overlapping successive sheets 19 inches and fastened sufficiently to hold in place. For roof slopes from four units vertical in 12 units horizontal (4:12) or greater Underlayment shall be one layer applied in the following manner. Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches, fastened only as necessary to hold in place. In areas where the average daily temperature in January is 25(degrees)F or less or where there is a possibility of ice forming along the eaves causing a backup of water A membrane that consists of at least two layers of underlayment cemented together or of a self-adhering polymer-modified bitumen sheet shall be used in lieu of normal underlayment and extend from the eave's edge to a point at least 24 inches inside the exterior wall line of the building. 4. Attachment Asphalt shingles shall have the minimum number of fasteners required by the manufacturer and Section 1504.1. Asphalt shingles shall be secured to the roof with not less than four fasteners per strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 20 units vertical in 12 units horizontal (20:12), special methods of fastening are required. 4. Fasteners Galvanized, stainless steel, aluminum or

copper roofing nails, minimum 12-gage (0.015 inch) shank with a minimum 3/8-inch diameter head. Fasteners shall be long enough to penetrate into the sheathing 3/4 inch or through the thickness of the sheathing.4. FlashingsIn accordance with Section 1507.2.9.4]For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, (degrees)C = [((degrees)F) ;ms 32]/1.8, 1 mile per hour = 1.609 km/h.

1507.2.1Deck requirements.Asphalt shingles shall be fastened to solidly sheathed decks.

1507.2.2Slope.Asphalt shingles shall only be used on roof slopes of two units vertical in 12 units horizontal (17-percent slope) or greater. For roof slopes from two units vertical in 12 units horizontal (17-percent slope) up to four units vertical in 12 units horizontal (33-percent slope), double underlayment application is required in accordance with Section 1507.2.8.

1507.2.3Underlayment.Unless otherwise noted, required underlayment shall conform to ASTM D 226, Type I, or ASTM D 4869, Type I.

1507.2.4Self-adhering polymer modified bitumen sheet.Self-adhering polymer modified bitumen sheet shall comply with ASTM D 1970.

1507.2.5Asphalt shingles.Asphalt shingles shall have self-seal strips or be interlocking, and comply with ASTM D 225 or ASTM D 3462.

1507.2.6Fasteners.Fasteners for asphalt shingles shall be galvanized, stainless steel, aluminum or copper roofing nails, minimum 12 gage shank with a minimum 0.375 inch-diameter (9.5 mm) head, of a length to penetrate through the roofing materials and a minimum of 0.75 inch (19.1 mm) into the roof sheathing. Where the roof sheathing is less than 0.75 inch (19.1 mm) thick, the nails shall penetrate through the sheathing. Fasteners shall comply with ASTM F 1667.

1507.2.7Attachment.Asphalt shingles shall have the minimum number of fasteners required by the manufacturer and Section 1504.1. Asphalt shingles shall be secured to the roof with not less than four fasteners per strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 20 units vertical in 12 units horizontal (166 percent slope), special methods of fastening are required. For roofs located where the basic wind speed in accordance with Figure 1609 is 110 mph or greater, special methods of fastening are required. Special fastening methods shall be tested in accordance with ASTM D 3161, modified to use a wind speed of 110 mph.

1507.2.8Underlayment application.For roof slopes from two units vertical in 12 units horizontal (17-percent slope), up to four units vertical in 12 units horizontal (33-percent slope), underlayment shall be two layers applied in the following manner. Apply a minimum 19-inch-wide (483 mm) strip of underlayment felt parallel with and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inch-wide (914 mm) sheets of underlayment overlapping successive sheets 19 inches (483 mm) and fastened sufficiently to hold in place. For roof slopes of four units vertical in 12 units horizontal (33-percent slope) or greater, underlayment shall be one layer applied in the following manner. Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches (51 mm), fastened only as necessary to hold in place.

1507.2.8.1Ice dam membrane.Where there is a possibility of ice forming along the eaves causing a backup of water, a membrane that consists of at least two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet shall be used in lieu of normal underlayment and extend from the eave's edge to a point at least 24 inches (610 mm) inside the exterior wall line of the building.

Exception: Detached accessory structures that contain no conditioned floor area.

1507.2.9Flashings.Flashings for asphalt shingles shall comply with this section. Flashing shall be applied in accordance with this section and the asphalt shingle manufacturer's printed instructions.

1507.2.9.1 Base and cap flashing. Base and cap flashing shall be installed in accordance with the manufacturer's instructions. Base flashing shall be of either corrosion-resistant metal of minimum nominal 0.019-inch (0.483 mm) thickness or mineral-surfaced roll roofing weighing a minimum of 77 pounds per 100 square feet (3.76 kg/m²). Cap flashing shall be corrosion-resistant metal of minimum nominal 0.019-inch (0.483 mm) thickness.

1507.2.9.2 Valleys. Valley linings shall be installed in accordance with the manufacturer's instructions before applying shingles. Valley linings of the following types shall be permitted:

1. For open valleys (valley lining exposed) lined with metal, the valley lining shall be at least 16 inches (406 mm) wide and of any of the corrosion-resistant metals in Table 1507.2.9.2.

2. For open valleys, valley lining of two plies of mineral-surfaced roll roofing shall be permitted. The bottom layer shall be 18 inches (457 mm) and the top layer a minimum of 36 inches (914 mm) wide.

3. For closed valleys (valleys covered with shingles), valley lining of one ply of smooth roll roofing complying with ASTM D 224 and at least 36 inches (914 mm) wide or types as described in Items 1 and 2 above shall be permitted. Specialty underlayment shall comply with ASTM D 1970. Table 1507.2.9.2 Valley Lining Material Minimum Thickness Gage Weight Copper - 16 oz Aluminum 0.024 in. - - Stainless steel - 28 - Galvanized steel 0.0179 in. 26 (zinc-coated G90) - Zinc alloy 0.027 in. - - Lead - 2.5 pounds Painted terne - 20 pounds For SI: 1 inch = 25.4 mm, 1 pound = 0.454 kg, 1 ounce = 28.35 g.

1507.2.9.3 Drip edge. Provide drip edge at eaves and gables of shingle roofs. Overlap to be a minimum of 2 inches (51 mm). Eave drip edges shall extend 0.25 inch (6.4 mm) below sheathing and extend back on the roof a minimum of 2 inches (51 mm). Drip edge shall be mechanically fastened a maximum of 12 inches (305 mm) o.c. A cricket or saddle shall be installed on the ridge side of any chimney greater than 30 inches (762 mm) wide. Cricket or saddle coverings shall be sheet metal or of the same material as the roof covering.

1507.3 Clay and concrete tile. The installation of clay and concrete tile shall comply with the provisions of this section.

1507.3.1 Deck requirements. Concrete and clay tile shall be installed only over solid sheathing or spaced structural sheathing boards.

1507.3.2 Deck slope. Clay and concrete roof tile shall be installed on roof slopes of 21/2 units vertical in 12 units horizontal (21-percent slope) or greater. For roof slopes from 21/2 units vertical in 12 units horizontal (21-percent slope) to four units vertical in 12 units horizontal (33-percent slope), double underlayment application is required in accordance with Section 1507.3.3.

1507.3.3 Underlayment. Unless otherwise noted, required underlayment shall conform to: ASTM D 226, Type II; ASTM D 2626 or ASTM D 249 Type I mineral-surfaced roll roofing.

1507.3.3.1 Low-slope roofs. For roof slopes from 21/2 units vertical in 12 units horizontal (21-percent slope), up to four units vertical in 12 units horizontal (33-percent slope), underlayment shall be a minimum of two layers applied as follows:

1. Starting at the eave, a 19-inch (483 mm) strip of underlayment shall be applied parallel with the eave and fastened sufficiently in place.

2. Starting at the eave, 36-inch-wide (914 mm) strips of underlayment felt shall be applied overlapping successive sheets 19 inches (483 mm) and fastened sufficiently in place.

1507.3.3.2 High-slope roofs. For roof slopes of four units vertical in 12 units horizontal (33-percent slope) or greater,

underlayment shall be a minimum of one layer of underlayment felt applied shingle fashion, parallel to, and starting from the eaves and lapped 2 inches (51 mm), fastened only as necessary to hold in place.

1507.3.4 Clay tile. Clay roof tile shall comply with ASTM C 1167.

1507.3.5 Concrete tile. Concrete roof tiles shall be in accordance with the physical test requirements as follows:

1. The transverse strength of tiles shall be determined according to Section 6.3 of ASTM C 1167 and in accordance with Table 1507.3.5.

2. The absorption of concrete roof tiles shall be according to Section 8 of ASTM C 140. Roof tiles shall absorb not more than 15 percent of the dry weight of the tile during a 24-hour immersion test.

3. Roof tiles shall be tested for freeze/thaw resistance according to Section 8 of ASTM C 67. Roof tiles shall show no breakage and not have more than 1 percent loss in dry weight of any individual concrete roof tile. Table 1507.3.5 Transverse Breaking Strength of Concrete Roof Tile (lbs.) Tile Profile Dry Average of five tiles Individual tile High profile 400 350 Medium profile 300 250 Flat profile 300 250 For SI: 1 pound = 4.45 N.

1507.3.6 Fasteners. Tile fasteners shall be corrosion resistant and not less than 11 gage, 5/16-inch (8.0 mm) head, and of sufficient length to penetrate the deck a minimum of 0.75 inch (19.1 mm) or through the thickness of the deck, whichever is less. Attaching wire for clay or concrete tile shall not be smaller than 0.083 inch (2.1 mm). Perimeter fastening areas include three tile courses but not less than 36 inches (914 mm) from either side of hips or ridges and edges of eaves and gable rakes.

1507.3.7 Attachment. Clay and concrete roof tiles shall be fastened in accordance with Table 1507.3.7.
[SEE graphical material in printed version]

[SEE graphical material in printed version]

1507.3.8 Application. Tile shall be applied according to the manufacturer's installation instructions, based on the following:

1. Climatic conditions.
2. Roof slope.
3. Underlayment system.
4. Type of tile being installed.

1507.3.9 Flashing. At the juncture of the roof vertical surfaces, flashing and counterflashing shall be provided in accordance with the manufacturer's installation instructions, and where of metal, shall not be less than 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant. The valley flashing shall extend at least 11 inches (279 mm) from the centerline each way and have a splash diverter rib not less than 1 inch (25 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). For roof slopes of three units vertical in 12 units horizontal (25-percent slope) and over, the valley flashing shall have a 36-inch-wide (914 mm) underlayment of one layer of Type I underlayment running the full length of the valley, in addition to other required underlayment. Where there is a possibility of ice forming along the eaves causing a backup of water, the metal valley flashing underlayment shall be solid cemented to the roofing underlayment for slopes under seven units vertical in 12 units horizontal (58-percent slope) or of self-adhering polymer modified bitumen sheet.

1507.4 Metal roof panels. The installation of metal roof panels shall comply with the provisions of this section.

1507.4.1Deck requirements.Metal roof panel roof coverings shall be applied to a solid or closely fitted deck, except where the roof covering is specifically designed to be applied to spaced supports.

1507.4.2Deck slope.The minimum slope for lapped, nonsoldered seam metal roofs without applied lap sealant shall be three units vertical in 12 units horizontal (25-percent slope). The minimum slope for lapped, nonsoldered seam metal roofs with applied lap sealant shall be one-half vertical unit in 12 units horizontal (4-percent slope). The minimum slope for standing seam of roof systems shall be one-quarter unit vertical in 12 units horizontal (2-percent slope).

1507.4.3Material standards.Metal-sheet roof covering systems that incorporate supporting structural members shall be designed in accordance with Chapter 22. Metal-sheet roof coverings installed over structural decking shall comply with Table 1507.4.3.3]Table 1507.4.3 Metal Roof Coverings Roof Covering Type Standard Application Rate/Thickness
1]Roof Covering Type Standard Application Rate/Thickness 2]AluminumASTM B 209, 0.024 inch minimum thickness for roll-formed panels and 0.019 inch minimum thickness for press-formed shingles.Aluminum-zinc alloy coated steelASTM A 792 AZ 50Copper16 oz./sq. ft. for metal-sheet roof-covering systems; 12 oz/sq. ft. for preformed metal shingle systems.Galvanized steelASTM A 653 G-90 zinc-coated, 0.013-inch-thick minimumLead-coated copperASTM B 101Hard lead2 lbs./sq. ft.Soft lead3 lbs./sq. ft.Preainted steelASTM A 755Terne (tin) and terne-coated stainlessTerne coating of 40 lbs. per double base box, field painted where applicable in accordance with manufacturer's installation instructions.4]For SI: 1 ounce per square foot = 0.0026 kg/m², 1 pound per square foot = 4.882 kg/m², 1 inch = 25.4 mm, 1 pound = 0.454 kg.

1507.4.4Attachment.Metal roofing fastened directly to steel framing shall be attached by approved manufacturers' fasteners. In the absence of manufacturer recommendations, all of the following fasteners shall be used:

1. Galvanized fasteners shall be used for galvanized roofs.
2. 300 series stainless-steel fasteners shall be used for copper roofs.
3. Stainless-steel fasteners are acceptable for all types of metal roofs.

1507.5Metal roof shingles.The installation of metal roof shingles shall comply with the provisions of this section.

1507.5.1Deck requirements.Metal roof shingles shall be applied to a solid or closely fitted deck, except where the roof covering is specifically designed to be applied to spaced sheathing.

1507.5.2Deck slope.Metal roof shingles shall not be installed on roof slopes below three units vertical in 12 units horizontal (25-percent slope).

1507.5.3Underlayment.Underlayment shall conform to ASTM D 226, Type I. Where there is a possibility of ice forming along the eaves causing a backup of water, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer-modified bitumen sheet, shall be used in lieu of normal underlayment and extend from the eave's edge to a point at least 24 inches (610 mm) inside the exterior wall line of the building.

Exception: Detached accessory structures that contain no conditioned floor area.

1507.5.4Material standards.Metal roof shingle roof coverings shall comply with Table 1507.4.3.

1507.5.5Attachment.Metal roof shingles shall be secured to the roof in accordance with the approved manufacturer's installation instructions.

1507.5.6Flashing.Roof valley flashing shall be of corrosion-resistant metal of the same material as the roof covering or shall comply with the standards in Table 1507.4.3. The valley flashing shall extend at least 8 inches (203 mm) from the centerline each way and shall have a splash diverter rib not less than 0.75 inch (19.1 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). Where

there is a possibility of ice forming along the eaves causing a backup of water, the metal valley flashing shall have a 36-inch-wide (914 mm) underlayment directly under it consisting of one layer of underlayment running the full length of the valley, in addition to underlayment required for metal roof shingles. The metal valley flashing underlayment shall be solid cemented to the roofing underlayment for roof slopes under seven units vertical in 12 units horizontal (58-percent slope) or of self-adhering polymer-modified bitumen sheet.

1507.6 Mineral-surfaced roll roofing. The installation of mineral-surfaced roll roofing shall comply with this section.

1507.6.1 Deck requirements. Mineral-surfaced roll roofing shall be fastened to solidly sheathed roofs.

1507.6.2 Deck slope. Mineral-surfaced roll roofing shall not be applied on roof slopes below one unit vertical in 12 units horizontal (8-percent slope).

1507.6.3 Underlayment. Underlayment shall conform to ASTM D 226, Type I. Where there is a possibility of ice forming along the eaves causing a backup of water, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer-modified bitumen sheet, shall extend from the eave's edge to a point at least 24 inches (610 mm) inside the exterior wall line of the building.

Exception: Detached accessory structures that contain no conditioned floor area.

1507.6.4 Material standards. Mineral-surfaced roll roofing shall conform to ASTM D 224, ASTM D 249, ASTM D 371 or ASTM D 3909.

1507.7 Slate shingles. The installation of slate shingles shall comply with the provisions of this section.

1507.7.1 Deck requirements. Slate shingles shall be fastened to solidly sheathed roofs.

1507.7.2 Deck slope. Slate shingles shall only be used on slopes of four units vertical in 12 units horizontal (4:12) or greater.

1507.7.3 Underlayment. Underlayment shall comply with ASTM D 226, Type II. Where there is a possibility of ice forming along the eaves causing a backup of water, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer-modified bitumen sheet, shall extend from the eave's edge to a point at least 24 inches (610 mm) inside the exterior wall line of the building.

Exception: Detached accessory structures that contain no conditioned floor area.

1507.7.4 Material standards. Slate shingles shall comply with ASTM C 406.

1507.7.5 Application. Minimum headlap for slate shingles shall be in accordance with Table 1507.7.5. Slate shingles shall be secured to the roof with two fasteners per slate.

Slope	Headlap (inches)
4:12 ;lt slope	8
8:12	4
12:12	3
16:12	2
20:12	2

For SI: 1 inch = 25.4 mm.

1507.7.6 Flashing. Flashing and counterflashing shall be made with sheet metal. Valley flashing shall be a minimum of 15 inches (381 mm) wide. Valley and flashing metal shall be a minimum uncoated thickness of 0.0179-inch (0.455 mm) zinc-coated G90. Chimneys, stucco or brick walls shall have a minimum of two plies of felt for a cap flashing consisting of a 4-inch-wide (102 mm) strip of felt set in plastic cement and extending 1 inch (25 mm) above the first felt and a top coating of plastic cement. The felt shall extend over the base flashing 2 inches (51 mm).

1507.8 Wood shingles. The installation of wood shingles shall comply with the provisions of this section and Table 1507.8.3.]

Roof slope	Installation
Wood shingles	shall be installed on slopes of three units vertical in 12 units horizontal (3:12) or greater.
Wood shakes	shall be installed on slopes of four units vertical in 12 units horizontal

(4:12) or greater.2. Deck requirement- - Temperate climateShingles shall be applied to roofs with solid or spaced sheathing. Where spaced sheathing is used, sheathing boards shall not be less than 1" x 4" nominal dimensions and shall be spaced on center equal to the weather exposure to coincide with the placement of fasteners.Shakes shall be applied to roofs with solid or spaced sheathing. Where spaced sheathing is used, sheathing boards shall not be less than 1" x 4" nominal dimensions and shall be spaced on center equal to the weather exposure to coincide with the placement of fasteners. When 1" x 4" spaced sheathing is installed at 10 inches, boards must be installed between the sheathing boards.In areas where the average daily temperature in January is 25(degrees)F or less or where there is a possibility of ice forming along the eaves causing a backup of water.Solid sheathing required.Solid sheathing is required.3. InterlayermentNo requirements.Interlayerment shall comply with ASTM D 226, Type 1.4. Underlayerment- - Temperate climateUnderlayerment shall comply with ASTM D 226, Type 1.Underlayerment shall comply with ASTM D 226, Type 1.In areas where the average daily temperature in January is 25(degrees)F or less or where there is a possibility of ice forming along the eaves causing a backup of water.An ice shield that consists of at least two layers of underlayerment cemented together or of a self-adhering polymer-modified bitumen sheet shall extend from the eave's edge to a point at least 24 inches inside the exterior wall line of the building.An ice shield that consists of at least two layers of underlayerment cemented together or of a self-adhering polymer-modified bitumen sheet shall extend from the eave's edge to a point at least 24 inches inside the exterior wall line of the building.5. Application- - AttachmentFasteners for wood shingles shall be corrosion resistant with a minimum penetration of 0.75 inch into the sheathing. For sheathing less than 0.5 inch thick, the fasteners shall extend through the sheathing.Fasteners for wood shakes shall be corrosion resistant with a minimum penetration of 0.75 inch into the sheathing. For sheathing less than 0.5 inch thick, the fasteners shall extend through the sheathing.No. of fastenersTwo per shingle.Two per shake.ExposureWeather exposures shall not exceed those set forth in Table 1507.8.6Weather exposures shall not exceed those set forth in Table 1507.9.7MethodShingles shall be laid with a side lap of not less than 1.5 inches between joints in courses, and no two joints in any three adjacent courses shall be in direct alignment. Spacing between shingles shall be 0.25 to 0.375 inch.Shakes shall be laid with a side lap of not less than 1.5 inches between joints in adjacent courses. Spacing between shakes shall not be less than 0.375 inch or more than 0.625 inch for shakes and tapered sawn shakes of naturally durable wood and shall be 0.25 to 0.375 inch for preservative tapered sawn shakes.FlashingIn accordance with Section 1507.8.7.In accordance with Section 1507.9.8.For SI: 1 inch = 25.4 mm, (degrees)C = [(degrees)F - 32]/1.8.

1507.8.1Deck requirements.Wood shingles shall be installed on solid or spaced sheathing. Where spaced sheathing is used, sheathing boards shall not be less than 1-inch by 4-inch (25 mm by 102 mm) nominal dimensions and shall be spaced on centers equal to the weather exposure to coincide with the placement of fasteners.

1507.8.1.1Solid sheathing required.Solid sheathing is required where there is a possibility of ice forming along the eaves causing a backup of water.

1507.8.2Deck slope.Wood shingles shall be installed on slopes of three units vertical in 12 units horizontal (25-percent slope) or greater.

1507.8.3Underlayerment.Underlayerment shall comply with ASTM D 226, Type I. Where there is a possibility of ice forming along the eaves causing a backup of water, an ice barrier that consists of at least two layers of underlayerment cemented together or of a self-adhering polymer-modified bitumen sheet shall extend from the eave's edge to a point at least 24 inches (610 mm) inside the exterior wall line of the building.

Exception: Detached accessory structures that contain no conditioned floor area.

1507.8.4Material standards.Wood shingles shall be of naturally durable wood and comply with the requirements of Table 1507.8.4.Table 1507.8.4 Wood Shingle Material Requirements Material Applicable Minimum Grades Grading Rules Wood shingles of naturally durable wood1, 2 or 3 CSSB CSSB = Cedar Shake and Shingle Bureau

1507.8.5Attachment.Fasteners for wood shingles shall be corrosion resistant with a minimum penetration of 0.75 inch (19.1 mm) into the sheathing. For sheathing less than 0.5 inch (12.7 mm) in thickness, the fasteners shall extend

through the sheathing. Each shingle shall be attached with a minimum of two fasteners.

1507.8.6Application. Wood shingles shall be laid with a side lap not less than 1.5 inches (38 mm) between joints in adjacent courses, and not be in direct alignment in alternate courses. Spacing between shingles shall be 0.25 to 0.375 inches (6.4 to 9.5 mm). Weather exposure for wood shingles shall not exceed that set in Table 1507.8.6. Table 1507.8.6 Wood Shingle Weather Exposure and Roof Slope Roofing Material Length (inches) Grade Exposure (inches) 3:12 pitch to ;lt 4:12 4:12 pitch or steeper

16

No. 1 No. 2 No. 3 3.75 3.5 3 5 4 3.5 Shingles of naturally durable wood

18

No. 1 No. 2 No. 3 4.25 4 3.5 5.5 4.5 4

24

No. 1 No. 2 No. 3 5.75 5.5 5 7.5 6.5 5.5 For SI: 1 inch = 25.4 mm.

1507.8.7Flashing. At the juncture of the roof and vertical surfaces, flashing and counterflashing shall be provided in accordance with the manufacturer's installation instructions, and where of metal, shall not be less than 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal. The valley flashing shall extend at least 11 inches (279 mm) from the centerline each way and have a splash diverter rib not less than 1 inch (25 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). For roof slopes of three units vertical in 12 units horizontal (25-percent slope) and over, the valley flashing shall have a 36-inch-wide (914 mm) underlayment of one layer of Type I underlayment running the full length of the valley, in addition to other required underlayment. Where there is a possibility of ice forming along the eaves causing a backup of water, the metal valley flashing underlayment shall be solid cemented to the roofing underlayment for slopes under seven units vertical in 12 units horizontal (58-percent slope).

1507.9Wood shakes. The installation of wood shakes shall comply with the provisions of this section and Table 1507.8.

1507.9.1Deck requirements. Wood shakes shall only be used on solid or spaced sheathing. Where spaced sheathing is used, sheathing boards shall not be less than 1-inch by 4-inch (25 mm by 102 mm) nominal dimensions and shall be spaced on centers equal to the weather exposure to coincide with the placement of fasteners. Where 1-inch by 4-inch (25 mm by 102 mm) spaced sheathing is installed at 10 inches (254 mm) o.c., additional 1-inch by 4-inch (25 mm by 102 mm) boards shall be installed between the sheathing boards.

1507.9.1.1Solid sheathing required. Solid sheathing is required in areas where the average daily temperature in January is 25(degrees)F (-4(degrees)C) or less or where there is a possibility of ice forming along the eaves causing a backup of water.

1507.9.2Deck slope. Wood shakes shall only be used on slopes of four units vertical in 12 units horizontal (33-percent slope) or greater.

1507.9.3Underlayment. Underlayment shall comply with ASTM D 226, Type I. Where there is a possibility of ice forming along the eaves causing a backup of water, an ice barrier that consists of at least two layers of underlayment cemented together or a self-adhering polymer-modified bitumen sheet shall extend from the edge of the eave to a point at least 24 inches (610 mm) inside the exterior wall line of the building.

Exception: Detached accessory structures that contain no conditioned floor area.

1507.9.4 Interlayment. Interlayment shall comply with ASTM D 226, Type I.

1507.9.5 Material standards. Wood shakes shall comply with the requirements of Table 1507.9.5.3] Table 1507.9.5 Wood Shake Material Requirements Material Minimum Grades Applicable Grading Rules 1] Material Minimum Grades Applicable Grading Rules 2] Wood shakes of naturally durable wood 1 CSSB Taper sawn shakes of naturally durable wood 1 or 2 CSSB Preservative-treated shakes and shingles of naturally durable wood 1 CSSB Fire-retardant-treated shakes and shingles of naturally durable wood 1 CSSB Preservative-treated taper sawn shakes of Southern yellow pine treated in accordance with AWP Standard C21 or 2 TFS CSSB = Cedar Shake and Shingle Bureau. TFS = Forest Products Laboratory of the Texas Forest Services.

1507.9.6 Attachment. Fasteners for wood shakes shall be corrosion resistant with a minimum penetration of 0.75 inch (19.1 mm) into the sheathing. For sheathing less than 0.5 inch (12.7 mm) in thickness, the fasteners shall extend through the sheathing. Each shake shall be attached with a minimum of two fasteners.

1507.9.7 Application. Wood shakes shall be laid with a side lap not less than 1.5 inches (38 mm) between joints in adjacent courses. Spacing between shakes in the same course shall be 0.375 to 0.625 inches (9.5 to 15.9 mm) for shakes and taper sawn shakes of naturally durable wood and shall be 0.25 to 0.375 inch (6.4 to 9.5 mm) for preservative taper sawn shakes. Weather exposure for wood shakes shall not exceed those set in Table 1507.9.7. Table 1507.9.7 Wood Shake Weather Exposure and Roof Slope Roofing Material Length (inches) Grade Exposure (inches) 4:12 Pitch or Steeper Shakes of naturally durable wood 18 24 No. 1 No. 1 7.5 10a Preservative-treated taper sawn shakes of Southern yellow pine 18 24 18 24 No. 1 No. 1 No. 2 No. 2 7.5 10 5.5 7.5 Taper sawn shakes of naturally durable wood 18 24 18 24 No. 1 No. 1 No. 2 No. 2 7.5 10 5.5 7.5 For SI: 1 inch = 25.4 mm. a. For 24-inch by 0.375-inch handsplit shakes, the maximum exposure is 7.5 inches.

1507.9.8 Flashing. At the juncture of the roof and vertical surfaces, flashing and counter-flashing shall be provided in accordance with the manufacturer's installation instructions, and where of metal, shall not be less than 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal. The valley flashing shall extend at least 11 inches (279 mm) from the centerline each way and have a splash diverter rib not less than 1 inch (25 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). For roof slopes of 3 units vertical in 12 units horizontal (25-percent slope) and over, the valley flashing shall have a 36-inch-wide (914 mm) underlayment of one layer of Type I underlayment running the full length of the valley, in addition to other required underlayment. Where there is a possibility of ice forming along the eaves causing a backup of water, the metal valley flashing underlayment shall be solid cemented to the roofing underlayment for slopes under seven units vertical in 12 units horizontal (58-percent slope).

1507.10 Built-up roofs. The installation of built-up roofs shall comply with the provisions of this section.

1507.10.1 Slope. Built-up roofs shall have a slope designed and built to provide positive roof drainage.

1507.10.2 Material standards. Built-up roof covering materials shall comply with the standards in Table 1507.10.2. Table 1507.10.2 Built-Up Roofing Material Standards Material Standard Standard Acrylic coating used in roofing ASTM D 6083 Aggregate surfacing ASTM D 1863 Asphalt adhesive used in roofing ASTM D 3747 Asphalt cements used in roofing ASTM D 3019; D 2822; D 4586 Asphalt-coated glass fiber base sheet ASTM D 4601 Asphalt coatings used in roofing ASTM D 1227; D 2823; D 4479 Asphalt glass felt ASTM D 2178 Asphalt primer used in roofing ASTM D 41 Asphalt-saturated and asphalt-coated organic felt base sheet ASTM D 2626 Asphalt-saturated organic felt (perforated) ASTM D 226 Asphalt used in roofing ASTM D 312 Coal-tar cements used in roofing ASTM D 4022; D 5643 Coal-tar saturated organic felt ASTM D 227 Coal-tar pitch used in roofing ASTM D 450; Type I or II Coal-tar primer used in roofing, damproofing and waterproofing ASTM D 43 Glass mat, coal tar ASTM D 4990 Glass mat, venting type ASTM D 4897 Mineral-surfaced inorganic cap sheet ASTM D 3909 Thermoplastic fabrics used in roofing ASTM D 5665, D 5726

1507.11 Modified bitumen roofing. The installation of modified bitumen roofing shall comply with the provisions of this section.

1507.11.1 Slope. Modified bitumen membrane roofs shall have a slope designed and built to provide positive roof drainage.

1507.11.2 Material standards. Modified bitumen roof coverings shall comply with CGSB 37-GP-56M, ASTM D 6162, ASTM D 6163, ASTM D 6164, ASTM D 6222, ASTM D 6223 and ASTM D 6298.

1507.12 Thermoset single-ply roofing. The installation of thermoset single-ply roofing shall comply with the provisions of this section.

1507.12.1 Slope. Thermoset single-ply membrane roofs shall have a slope designed and built to provide positive roof drainage.

1507.12.2 Material standards. Thermoset single-ply roof coverings shall comply with RMA RP-1, RP-2 or RP-3, or ASTM D 4637, ASTM D 5019 or CGSB 37-GP-52M.

1507.13 Thermoplastic single-ply roofing. The installation of thermoplastic single-ply roofing shall comply with the provisions of this section.

1507.13.1 Slope. Thermoplastic single-ply membrane roofs shall have a slope designed and built to provide positive roof drainage.

1507.13.2 Material standards. Thermoplastic single-ply roof coverings shall comply with ASTM D 4434 or CGSB 37-GP-54M.

1507.14 Sprayed polyurethane foam roofing. The installation of sprayed polyurethane foam roofing shall comply with the provisions of this section.

1507.14.1 Slope. Sprayed polyurethane foam roofs shall have a slope designed and built to provide positive roof drainage.

1507.14.2 Material standards. Spray-applied polyurethane foam insulation shall comply with ASTM C 1029.

1507.14.3 Application. Foamed-in-place roof insulation shall be installed in accordance with the manufacturer's instructions. A liquid-applied protective coating that complies with Section 1507.15 shall be applied no less than 2 hours nor more than 72 hours following the application of the foam.

1507.14.4 Foamplastics. Foam plastic materials and installation shall comply with Chapter 26.

1507.15 Liquid-applied coatings. The installation of liquid-applied coatings shall comply with the provisions of this section.

1507.15.1 Slope. Liquid-applied roofs shall have a slope designed and built to provide positive roof drainage.

1507.15.2 Material standards. Liquid-applied roof coatings shall comply with ASTM C 836, ASTM C 957, ASTM D 6083, ASTM D 1227 or ASTM D 3468.

1507.16 Green roof System. The installation of a green roof system shall comply with this section.

1507.16.1 Roof covering. Roof covering shall conform with Sections 1507.10, 1507.11, 1507.12, 1507.13, or 1507.15.

1507.16.2Slope.Green roof systems shall have a design slope in accordance with the roof covering utilized.

1507.16.3Material Standards.Green roof systems shall comply with required standards for the roof covering and good practice standards for the landscape material components. Either an affidavit from the roof covering manufacturer, stating review and acceptance of the final work, shall be provided prior to sign-off of construction or a special inspection by the professional architect or engineer shall be performed.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1507.2 table repealed and added L.L. 8/2008 § 118, eff. July 1, 2008.

1507.16.3 amended L.L. 8/2008 § 119, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 15: ROOF ASSEMBLIES AND ROOFTOP STRUCTURES
SECTION BC 1508: ROOF INSULATION

NYC Administrative Code § 28-BC 1508

1508.1 General.

The use of above-deck thermal insulation shall be permitted provided such insulation is covered with an approved roof covering and passes the tests of FM 4450 or UL 1256 when tested as an assembly.

Exception: Foam plastic roof insulation shall conform to the material and installation requirements of Chapter 26.

1508.1.1 Cellulosic fiberboard. Cellulosic fiberboard roof insulation shall conform to the material and installation requirements of Chapter 23.



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Chapter 15: ROOF ASSEMBLIES AND ROOFTOP STRUCTURES
SECTION BC 1509: ROOFTOP STRUCTURES

NYC Administrative Code § 28-BC 1509

1509.1 General.

The provisions of this section shall govern the construction of rooftop structures. All rooftop structures shall be subject to the roof area coverage limitations and building height requirements of Chapter 5. Rooftop structures shall be constructed with materials as required for the building, except as provided for in this section.

1509.2 Bulkheads and Penthouses. Bulkheads and penthouses shall comply with the construction requirements of Section 1509.2.

1509.2.1 Type of construction. Bulkheads and penthouses shall be constructed with walls, floors and roof as required for the building.

Exceptions: Where the total aggregate area of all rooftop structures does not exceed 33 1/3 percent of the area of the roof of the building upon which they are erected; the following shall apply:

1. Bulkheads on buildings of Type I and II construction. The exterior walls and roofs of such bulkheads with a fire separation distance of more than 5 feet (1524 mm) and less than 20 feet (6096 mm) shall be of at least 1-hour fire-resistance-rated noncombustible construction. Walls and roofs with a fire separation distance of 20 feet (6096 mm) or greater shall be of noncombustible construction. Interior framing and walls shall be of noncombustible construction.

2. Bulkheads on buildings of Type III, IV and V construction. The exterior walls of such bulkheads with a fire separation distance of more than 5 feet (1524 mm) and less than 20 feet (6096 mm) shall be at least 1-hour fire-resistance-rated construction. Walls with a fire separation distance of 20 feet (6096 mm) or greater from a common property line shall be of Type IV or noncombustible construction. Roofs shall be constructed of materials and fire-resistance rated as required in Table 601. Interior framing and walls shall be Type IV or noncombustible construction.

3. Unprotected noncombustible enclosures housing only mechanical equipment and located with a minimum fire separation distance of 20 feet (6096 mm) shall be permitted.

4. On one-story buildings, combustible unroofed mechanical equipment screens, fences or similar enclosures are permitted where located with a fire separation distance of at least 20 feet (6096 mm) from adjacent property lines and where not exceeding 4 feet (1219 mm) in height above the roof surface.

1509.2.2Penthouses.Enclosed walls of penthouses shall comply with the requirements for exterior walls as per Table 601 and 602 for the construction class of the building on which they are erected. Roofs of penthouses shall comply with the requirements for roof construction of Table 601 and Chapter 15 of this code.

1509.2.3Bulkheads.An enclosed rooftop structure not intended for human occupancy shall not be used for purposes other than shelter of mechanical equipment or shelter of vertical shaft openings in the roof. Provisions such as louvers, louver blades or flashing shall be made to protect the mechanical equipment and the building interior from the elements.

1509.3Tank supports.Tanks having a capacity of more than 500 gallons (2 m³) placed in or on a building shall be supported on masonry, reinforced concrete, steel or Type IV construction provided that, where such supports are located in the building above the lowest story, the support shall be fire-resistance rated as required for Type IA construction.

1509.3.1Valve.Such tanks shall have in the bottom or on the side near the bottom, a pipe or outlet, fitted with a suitable quick opening valve for discharging the contents in an emergency through an adequate drain.

1509.3.2Location.Such tanks shall not be placed over or near a line of stairs or an elevator shaft, unless there is a solid roof or floor underneath the tank.

1509.3.3Tank cover.Unenclosed roof tanks shall have covers sloping toward the outer edges.

1509.4Cooling towers.Cooling towers in excess of 250 square feet (23.2 m²) in base area or in excess of 15 feet (4572 mm) high where located on buildings more than 50 feet (15 240 mm) high shall be of noncombustible construction.

Exceptions:

1. Drip boards and the enclosing construction of wood not less than 1 inch (25 mm) nominal thickness, provided the wood is covered on the exterior of the tower with noncombustible material.

2. Filling and drift eliminators may be of combustible material if the towers are provided with automatic sprinkler protection complying with Section 903 of this code.

1509.5Steeple, minarets, spires, domes and cupolas.Any steeple, minaret, spire, dome or cupola shall be of a type of construction not less in fire-resistance rating than required for the building to which it is attached except that any such steeple, minaret, spire, dome or cupola that exceeds 85 feet (25 908 mm) in height above grade, or exceeds 200 square feet (18.6 m²) in horizontal area or is used for any purpose other than a belfry or an architectural embellishment shall be constructed of and supported on Type I or II construction.

1509.5.1Noncombustible construction required.Any steeple, minaret, spire, dome or cupola that exceeds 60 feet (18 288 mm) in height above the highest point at which it comes in contact with the roof, or that exceeds 200 square feet (18.6 m²) in area at any horizontal section, or which is intended to be used for any purpose other than a belfry or architectural embellishment, shall be entirely constructed of and supported by noncombustible materials. Such structures shall be separated from the building below by construction having a fire-resistance rating of not less than 1.5 hours with openings protected with a minimum 1.5-hour fire-protection rating. Such structures placed above the roof of any building more than 50 feet (15 240 mm) in height, shall be of noncombustible material and shall be supported by

construction of noncombustible material.

1509.5.2 Steeples, minarets and spires. Steeples, minarets, and spires where enclosed shall have exterior walls as required for the building to which they are attached. The roof covering of spires shall be of a class of roof covering as required for the main roof of the rest of the structure.

1509.6 Dormers. Dormers shall have exterior walls as required for the building to which they are attached. The roof covering of dormers shall be of a class of roof covering as required for the main roof of the rest of the structure.

1509.7 Greenhouses. Greenhouses used for the cultivation of plants, on the roofs of buildings other than buildings of Type V construction, shall be constructed of noncombustible framework and shall be glazed with plain or wire glass, or light transmitting plastic glazing complying with the requirements of Section 2606. The floors of greenhouses shall be constructed to be at least equal to the requirements for roof construction on Table 601 for the construction class of the building on which it is located.

1509.8 Protective guards. Buildings greater than 22 feet (6706 mm) in height with roof slopes less than 2.4 units vertical in 12 units horizontal (20 percent slope) shall be provided with a parapet, railing, fence, or combination thereof, not less than 42 inches (1067 mm) in height. Railings or fences may be located inward from the face of the exterior wall a distance not exceeding 6 feet (1829 mm). Railings or fences shall be of noncombustible material, except on buildings of Type V construction. Railings shall be constructed to comply with the requirements of Sections 1012 and 1607.7.

1509.8.1 Fences on roofs used for recreational purposes. Rooftops used for recreational purposes shall be provided with wire fencing at least 10 feet (3048 mm) in height. Openings in the fence shall not permit the passage of a 4-inch diameter (102 mm) sphere. Where ball games are played on rooftops the wire fencing shall be extended to provide an overhead closure.

1509.9 Miscellaneous combustible roof structures. The following roof structures may be constructed of combustible material if less than 12 feet (3658 mm) high above the roof: antenna supports; flagpoles; clothes drying frames; duckboarding, decking or platforms that do not cover more than 20 percent of the contiguous roof area at that level.



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Chapter 15: ROOF ASSEMBLIES AND ROOFTOP STRUCTURES
SECTION BC 1510: REROOFING

NYC Administrative Code § 28-BC 1510

1510.1 General.

Materials and methods of application used for recovering or replacing an existing roof covering shall comply with the requirements of Chapter 15.

1510.2 Structural and construction loads. Structural roof components shall be capable of supporting the roof-covering system and the material and equipment loads that will be encountered during installation of the system.

1510.3 Recovering versus replacement. New roof coverings shall not be installed without first removing all existing layers of roof coverings where any of the following conditions occur:

1. Where the existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.
2. Where the existing roof covering is wood shake, slate, clay, cement or asbestos-cement tile.
3. Where the existing roof has two or more applications of any type of roof covering.

Exceptions:

1. Complete and separate roofing systems, such as standing-seam metal roof systems, that are designed to transmit the roof loads directly to the building's structural system and that do not rely on existing roofs and roof coverings for support, shall not require the removal of existing roof coverings.

2. Metal panel, metal shingle, and concrete and clay tile roof coverings shall be permitted to be installed over existing wood shake roofs when applied in accordance with Section 1510.4.

1510.4 Roof recovering. Where the application of a new roof covering over wood shingle or shake roofs creates a

combustible concealed space, the entire existing surface shall be covered with gypsum board, mineral fiber, glass fiber or other approved materials securely fastened in place.

1510.5 Reinstallation of materials. Existing slate, clay or cement tile shall be permitted for reinstallation, except that damaged, cracked or broken slate or tile shall not be reinstalled. Existing vent flashing, metal edgings, drain outlets, collars and metal counterflashings shall not be reinstalled where rusted, damaged or deteriorated. Aggregate surfacing materials shall not be reinstalled.

1510.6 Flashings. Flashings shall be reconstructed in accordance with approved manufacturer's installation instructions. Metal flashing to which bituminous materials are to be adhered shall be primed prior to installation.



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Chapter 16: STRUCTURAL DESIGN

SECTION BC 1601: GENERAL

NYC Administrative Code § 28-BC 1601

1601.1 Scope.

The provisions of this chapter shall govern the structural design of buildings, structures and portions thereof regulated by this code.



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Chapter 16: STRUCTURAL DESIGN
SECTION BC 1602: DEFINITIONS

NYC Administrative Code § 28-BC 1602

1602.1 Definitions.

The following words and terms shall, for the purposes of this code, have the meanings shown herein.

ALLOWABLE STRESS DESIGN. A method of proportioning structural members, such that elastically computed stresses produced in the members by nominal loads do not exceed specified allowable stresses (also called "working stress design").

BALCONY, EXTERIOR. An exterior floor projecting from and supported by a structure without additional independent supports.

BASE SHEAR. Total design lateral force or shear at the base.

BASIC SEISMIC-FORCE-RESISTING SYSTEMS.

Bearing wall system. A structural system without a complete vertical load-carrying space frame. Bearing walls or bracing elements provide support for substantial vertical loads. Seismic lateral force resistance is provided by shear walls or braced frames.

Building frame system. A structural system with an essentially complete space frame providing support for vertical loads. Seismic lateral force resistance is provided by shear walls or braced frames.

Dual system. A structural system with an essentially complete space frame providing support for vertical loads. Seismic lateral force resistance is provided by a moment frame and shear walls or braced frames.

Inverted pendulum system. A structure with a large portion of its mass concentrated at the top; therefore, having essentially one degree of freedom in horizontal translation. Seismic lateral force resistance is provided by the columns acting as cantilevers.

Moment-resisting frame system. A structural system with an essentially complete space frame providing support for vertical loads. Seismic lateral force resistance is provided by moment frames.

Shear wall-frame interactive system. A structural system which uses combinations of shear walls and frames designed to resist seismic lateral forces in proportion to their rigidities, considering interaction between shear walls and frames on all levels. Support of vertical loads is provided by the same shear walls and frames.

BOUNDARY MEMBERS. Strengthened portions along shear wall and diaphragm edges (also called "boundary elements").

Boundary element. In light-frame construction, diaphragms and shear wall boundary members to which sheathing transfers forces. Boundary elements include chords and drag struts at diaphragm and shear wall perimeters, interior openings, discontinuities and reentrant corners.

CANTILEVERED COLUMN SYSTEM. A structural system relying on column elements that cantilever from a fixed base and have minimal rotational resistance capacity at the top with lateral forces applied essentially at the top and are used for lateral resistance.

COLLECTOR ELEMENTS. Members that serve to transfer forces between floor diaphragms and members of the lateral-force-resisting system.

CONFINED REGION. The portion of a reinforced concrete component in which the concrete is confined by closely spaced special transverse reinforcement restraining the concrete in directions perpendicular to the applied stress.

DEAD LOADS. The weight of materials of construction incorporated into the building, including but not limited to walls, floors, roofs, ceilings, stairways, built-in partitions, finishes, cladding and other similarly incorporated architectural and structural items, and fixed service equipment, including the weight of cranes. All dead loads are considered permanent loads.

DECK. An exterior floor supported on at least two opposing sides by an adjacent structure, and/or posts, piers or other independent supports.

DEFORMABILITY. The ratio of the ultimate deformation to the limit deformation.

High deformability element. An element whose deformability is not less than 3.5 when subjected to four fully reversed cycles at the limit deformation.

Limited deformability element. An element that is neither a low deformability or a high deformability element.

Low deformability element. An element whose deformability is 1.5 or less.

DEFORMATION.

Limited deformation. Two times the initial deformation that occurs at a load equal to 40 percent of the maximum strength.

Ultimate deformation. The deformation at which failure occurs and which shall be deemed to occur if the sustainable load reduces to 80 percent or less of the maximum strength.

DESIGN STRENGTH. The product of the nominal strength and a resistance factor (or strength reduction factor).

DIAPHRAGM. A horizontal or sloped system acting to transmit lateral forces to the vertical-resisting elements. When the term "diaphragm" is used, it shall include horizontal bracing systems.

Diaphragm, blocked. In light-frame construction, a diaphragm in which all sheathing edges not occurring on a framing member are supported on and fastened to blocking.

Diaphragm boundary. In light-frame construction, a location where shear is transferred into or out of the diaphragm sheathing. Transfer is either to a boundary element or to another force-resisting element.

Diaphragm chord. A diaphragm boundary element perpendicular to the applied load that is assumed to take axial stresses due to the diaphragm moment.

Diaphragm, flexible. A diaphragm is flexible for the purpose of distribution of story shear and torsional moment when the computed maximum in-plane deflection of the diaphragm itself under lateral load is more than two times the average drift of adjoining vertical elements of the lateral-force-resisting system of the associated story under equivalent tributary lateral load (see Section 1617.5.3).

Diaphragm, rigid. A diaphragm is rigid for the purpose of distribution of story shear and torsional moment when the lateral deformation of the diaphragm is less than or equal to two times the average story drift.

DURATION OF LOAD. The period of continuous application of a given load, or the aggregate of periods of intermittent applications of the same load.

ELEMENT.

Ductile element. An element capable of sustaining large cyclic deformations beyond the attainment of its nominal strength without any significant loss of strength.

Limited ductile element. An element that is capable of sustaining moderate cyclic deformations beyond the attainment of nominal strength without significant loss of strength.

Nonductile element. An element having a mode of failure that results in an abrupt loss of resistance when the element is deformed beyond the deformation corresponding to the development of its nominal strength. Nonductile elements cannot reliably sustain significant deformation beyond that attained at their nominal strength.

EQUIPMENT SUPPORT. Those structural members or assemblies of members or manufactured elements, including braces, frames, lugs, snuggers, hangers or saddles, that transmit gravity load and operating load between the equipment and the structure.

ESSENTIAL FACILITIES. Buildings and other structures that are intended to remain operational in the event of extreme environmental loading from flood, wind, snow or earthquakes.

FACTORED LOAD. The product of a nominal load and a load factor.

FLEXIBLE EQUIPMENT CONNECTIONS. Those connections between equipment components that permit rotational and/or translational movement without degradation of performance.

FRAME.

Braced frame. An essentially vertical truss, or its equivalent, of the concentric or eccentric type that is provided in a building frame system or dual system to resist lateral forces.

Concentrically braced frame (CBF). A braced frame in which the members are subjected primarily to axial forces.

Eccentrically braced frame (EBF). A diagonally braced frame in which at least one end of each brace frames into a beam a short distance from a beam-column or from another diagonal brace.

Ordinary concentrically braced frame (OCBF). A steel concentrically braced frame in which members and connections are designed in accordance with the provisions of AISC Seismic without modification.

Special concentrically braced frame (SCBF). A steel or composite steel and concrete concentrically braced frame in which members and connections are designed for ductile behavior.

Moment frame. A frame in which members and joints resist lateral forces by flexure as well as along the axis of the members. Moment frames are categorized as "intermediate moment frames" (IMF), "ordinary moment frames" (OMF), and "special moment frames" (SMF).

GUARD. See Section 1002.1.

IMPACT LOAD. The load resulting from moving machinery, elevators, craneways, vehicles and other similar forces and kinetic loads, pressure and possible surcharge from fixed or moving loads.

JOINT. A portion of a column bounded by the highest and lowest surfaces of the other members framing into it.

LIMIT STATE. A condition beyond which a structure or member becomes unfit for service and is judged to be no longer useful for its intended function (serviceability limit state) or to be unsafe (strength limit state).

LIVE LOADS. Those loads produced by the use and occupancy of the building or other structure and do not include construction or environmental loads such as wind load, snow load, rain load, earthquake load, flood load or dead load.

LIVE LOADS (ROOF). Those loads produced (1) during maintenance by workers, equipment and materials; and (2) during the life of the structure by movable objects such as planters and by people.

LOAD AND RESISTANCE FACTOR DESIGN (LRFD). A method of proportioning structural members and their connections using load and resistance factors such that no applicable limit state is reached when the structure is subjected to appropriate load combinations. The term "LRFD" is used in the design of steel and wood structures.

LOAD FACTOR. A factor that accounts for deviations of the actual load from the nominal load, for uncertainties in the analysis that transforms the load into a load effect, and for the probability that more than one extreme load will occur simultaneously.

LOADS. Forces or other actions that result from the weight of building materials, occupants and their possessions, environmental effects, differential movement and restrained dimensional changes. Permanent loads are those loads in which variations over time are rare or of small magnitude, such as dead loads. All other loads are variable loads (see also "Nominal loads").

LOADS EFFECTS. Forces and deformations produced in structural members by the applied loads.

NOMINAL LOADS. The magnitudes of the loads specified in this chapter (dead, live, soil, wind, snow, rain, flood and earthquake).

NOTATIONS. D=Dead load. E=Combined effect of horizontal and vertical earthquake-induced forces as defined in Section 1617.1. Em=Maximum seismic load effect of horizontal and vertical seismic forces as set forth in Section 1617.1. F=Load due to fluids. Fa=Flood load. H=Load due to lateral pressure of soil and water in soil. L=Live load, except roof live load, including any permitted live load reduction. Lr=Roof live load including any permitted live load reduction. P=Ponding load. R=Rain load. S=Snow load. T=Self-straining force arising from contraction or expansion resulting from temperature change, shrinkage, moisture change, creep in component materials, movement due to differential settlement or combinations thereof. W=Load due to wind pressure.

OTHER STRUCTURES. Structures, other than buildings, for which loads are specified in this chapter.

P-DELTA EFFECT. The second order effect on shears, axial forces and moments of frame members induced by axial loads on a laterally displaced building frame.

PANEL (PART OF A STRUCTURE). The section of a floor, wall or roof comprised between the supporting frame of two adjacent rows of columns and girders or column bands of floor or roof construction.

RESISTANCE FACTOR. A factor that accounts for deviations of the actual strength from the nominal strength and the manner and consequences of failure (also called "strength reduction factor").

SHEAR PANEL. A floor, roof or wall component sheathed to act as a shear wall or diaphragm.

SHEAR WALL. A wall designed to resist lateral forces parallel to the plane of the wall.

SPACE FRAME. A structure composed of interconnected members, other than bearing walls, that is capable of supporting vertical loads and that also may provide resistance to seismic lateral forces.

SPECIAL TRANSVERSE REINFORCEMENT. Reinforcement composed of spirals, closed stirrups or hoops and supplementary cross ties provided to restrain the concrete and qualify the portion of the component, where used, as a confined region.

STRENGTH, NOMINAL. The capacity of a structure or member to resist the effects of loads, as determined by computations using specified material strengths and dimensions and equations derived from accepted principles of structural mechanics or by field tests or laboratory tests of scaled models, allowing for modeling effects and differences between laboratory and field conditions.

STRENGTH, REQUIRED. Strength of a member, cross section or connection required to resist factored loads or related internal moments and forces in such combinations as stipulated by these provisions.

STRENGTH DESIGN. A method of proportioning structural members such that the computed forces produced in the members by factored loads do not exceed the member design strength. The term "strength design" is used in the design of concrete and masonry structural elements.

WALL, LOAD BEARING. Any wall meeting either of the following classifications:

1. Any metal or wood stud wall that supports more than 100 pounds per linear foot (plf) (1459 N/m) of vertical load in addition to its own weight.
2. Any masonry or concrete wall that supports more than 200 plf (2919 N/m) of vertical load in addition to its own weight.

WALL, NONLOAD BEARING. Any wall that is not a load-bearing wall.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 16: STRUCTURAL DESIGN
SECTION BC 1603: CONSTRUCTION DOCUMENTS

NYC Administrative Code § 28-BC 1603

1603.1 General.

Construction documents shall show the size, section and relative locations of structural members with floor levels, column centers and offsets fully dimensioned. The design loads and other information pertinent to the structural design required by Sections 1603.1.1 through 1603.1.7 shall be clearly indicated on the construction documents for parts of the building or structure.

Exception: Construction documents for buildings constructed in accordance with the conventional light-frame construction provisions of Section 2308 shall indicate the following structural design information:

1. Floor and roof live loads.
2. Ground snow load, P_g .
3. Basic wind speed (3-second gust), miles per hour (mph) (km/hr) and wind exposure.
4. Seismic design category and site class.

1603.1.1 Floor live load. The uniformly distributed, concentrated and impact floor live load used in the design shall be indicated for floor areas. Live load reduction of the uniformly distributed floor live loads, if used in the design, shall be indicated.

1603.1.2 Roof live load. The roof live load used in the design shall be indicated for roof areas (Section 1607.11).

1603.1.3 Roof snow load. The ground snow load, P_g , shall be indicated. The following additional information shall also be provided, regardless of whether snow loads govern the design of the roof:

1. Flat-roof snow load, P_f .

2. Snow exposure factor, C_e .
3. Snow load importance factor, I_s .
4. Thermal factor, C_t .

1603.1.4 Wind design data. The following information related to wind loads shall be shown, regardless of whether wind loads govern the design of the lateral-force-resisting system of the building:

1. Basic wind speed (3-second gust), miles per hour (km/hr).
2. Wind importance factor, I_W , and Structural Occupancy Category.
3. Wind exposure, if more than one wind exposure is utilized, the wind exposure and applicable wind direction shall be indicated.
4. The applicable internal pressure coefficient.
5. Components and cladding. The design wind pressures in terms of psf (kN/ m²) to be used for the design of exterior component and cladding materials not specifically designed by the registered design professional.

1603.1.5 Earthquake design data. The following information related to seismic loads shall be shown, regardless of whether seismic loads govern the design of the lateral-force-resisting system of the building:

1. Seismic importance factor, I_E , and seismic use group.
2. Mapped spectral response accelerations S_S and S_1 .
3. Site class.
4. Spectral response coefficients S_{DS} and S_{D1} .
5. Seismic design category.
6. Basic seismic-force-resisting system(s).
7. Design base shear.
8. Seismic response coefficient(s), C_S .
9. Response modification factor(s), R .
10. Analysis procedure used.

1603.1.6 Flood load. For buildings located in areas of special flood hazard, construction documents shall comply with Appendix G.

1603.1.7 Special loads. Special loads that are applicable to the design of the building, structure or portions thereof shall be indicated along with the specified section of this code that addresses the special loading condition.

1603.2 Restrictions on loading. It shall be unlawful to place, or cause or permit to be placed, on any floor or roof of a building, structure or portion thereof, a load greater than is permitted by these requirements.

1603.3 Live loads posted. Where the live loads for which each floor or portion thereof of a building are or have been

designed to exceed 50 psf (2.40 kN/m²), such design live loads shall be conspicuously posted by the owner in that part of each story in which they apply, using durable signs. It shall be unlawful to remove or deface such notices.

Exceptions: Residential occupancies.

1603.3.1 Data required. The following floor load data shall be shown on drawings:

1. The uniform distributed design live load for each floor or part thereof.
2. The weight of any piece of machinery or equipment weighing more than 1,000 pounds (4,400 N), and its identifying description and location. When this equipment includes oscillating or rotating components the description shall indicate the frequency of such movement.
3. The maximum design wheel load and total maximum weight of any vehicle that may be brought into the building.
4. The equivalent uniform partition loads or, in lieu of these, a statement to the effect that the design was predicated on actual partition loads.

1603.4 Occupancy permits for changed loads. Construction documents for other than residential buildings filed with the commissioner with applications for permits shall show on each drawing the live loads per square foot (m²) of area covered for which the building is designed. Occupancy permits for buildings hereafter erected shall not be issued until the floor load signs, required by Section 1603.3, have been installed.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1603.1.4 item 2 amended L.L. 8/2008 § 120, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 16: STRUCTURAL DESIGN
SECTION 1604: GENERAL DESIGN REQUIREMENTS

NYC Administrative Code § 28-BC 1604

1604.1 General.

Building, structures and parts thereof shall be designed and constructed in accordance with strength design, load and resistance factor design, allowable stress design, empirical design or conventional construction methods, as permitted by the applicable material chapters.

1604.2Strength. Buildings and other structures, and parts thereof, shall be designed and constructed to support safely the factored loads in load combinations defined in this code without exceeding the appropriate strength limit states for the materials of construction. Alternatively, buildings and other structures, and parts thereof, shall be designed and constructed to support safely the nominal loads in load combinations defined in this code without exceeding the appropriate specified allowable stresses for the materials of construction. Loads and forces for occupancies or uses not covered in this chapter shall be subject to the approval of the commissioner.

1604.3Serviceability. Structural systems and members thereof shall be designed to have adequate stiffness to limit deflections and lateral drift. See Section 1617.3 for drift limits applicable to earthquake loading.

1604.3.1Deflections. The deflections of structural members shall not exceed the more restrictive of the limitations of Sections 1604.3.2 through 1604.3.5 or that permitted by Table 1604.3.

1604.3.2Reinforced concrete. The deflection of reinforced concrete structural members shall not exceed that permitted by ACI 318.

1604.3.3Steel. The deflection of steel structural members shall not exceed that permitted by AISC LRFD, AISC HSS, AISC 335, AISI-NASPEC, AISI-General, AISI-Truss, ASCE 3, ASCE 8-SSD-LRFD/ASD, and the standard specifications of SJI Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders as applicable.

1604.3.4Masonry.The deflection of masonry structural members shall not exceed that permitted by ACI 530/ASCE 5/TMS 402.

1604.3.5Aluminum.The deflection of aluminum structural members shall not exceed that permitted by AA-94.

1604.3.6Limits.For limits on the deflection of structural members, refer to the relevant material design standards. Should a design standard not provide for deflection limits, deflection of structural members over span, l , shall not exceed that permitted by Table 1604.3. Table 1604.3 Deflection Limits

	a	b	c	h	i
Construction	L	S	or	Wt	D
Roof members:	$\frac{1}{360}$ $\frac{1}{360}$ $\frac{1}{240}$ $\frac{1}{240}$ $\frac{1}{180}$				
Supporting plaster ceiling	$\frac{1}{360}$	$\frac{1}{360}$	$\frac{1}{240}$	$\frac{1}{240}$	$\frac{1}{180}$
Supporting nonplaster ceiling	$\frac{1}{240}$	$\frac{1}{240}$	$\frac{1}{180}$	$\frac{1}{180}$	$\frac{1}{120}$
Floor members	$\frac{1}{360}$	$\frac{1}{360}$	$\frac{1}{240}$	$\frac{1}{240}$	$\frac{1}{180}$
Exterior walls and interior partitions:	$\frac{1}{360}$	$\frac{1}{360}$	$\frac{1}{240}$	$\frac{1}{240}$	$\frac{1}{180}$

With brittle finishes- $\frac{1}{240}$ -

With flexible finishes- $\frac{1}{120}$ - Farm buildings- - $\frac{1}{180}$ Greenhouses- - $\frac{1}{120}$ For SI: 1 foot = 304.8 mm.a. For structural roofing and siding made of formed metal sheets, the total load deflection shall not exceed $\frac{1}{60}$. For secondary roof structural members supporting formed metal roofing, the live load deflection shall not exceed $\frac{1}{150}$. For secondary wall members supporting formed metal siding, the design wind load deflection shall not exceed $\frac{1}{90}$. For roofs, this exception only applies when the metal sheets have no roof covering.b. Interior partitions not exceeding 6 feet in height and flexible, folding and portable partitions are not governed by the provisions of this section. The deflection criterion for interior partitions is based on the horizontal load defined in Section 1607.13.c. See Section 2403 for glass supports.d. For wood structural members having a moisture content of less than 16 percent at time of installation and used under dry conditions, the deflection resulting from L ;pl $0.5D$ is permitted to be substituted for the deflection resulting from L ;pl D .e. The above deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to assure adequate drainage shall be investigated for ponding. See Section 1611 for rain and ponding requirements and Section 1503.4 for roof drainage requirements.f. The wind load is permitted to be taken as 0.7 times the "component and cladding" loads for the purpose of determining deflection limits herein.g. For steel structural members, the dead load shall be taken as zero.h. For aluminum structural members or aluminum panels used in roofs or walls of sunroom additions or patio covers, not supporting edge of glass or aluminum sandwich panels, the total load deflection shall not exceed $\frac{1}{60}$. For aluminum sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed $\frac{1}{120}$.i. For cantilever members, l shall be taken as twice the length of the cantilever.

1604.4Analysis.Load effects on structural members and their connections shall be determined by methods of structural analysis that take into account equilibrium, general stability, geometric compatibility and both short- and long-term material properties.

Members that tend to accumulate residual deformations under repeated service loads shall have included in their analysis the added eccentricities expected to occur during their service life. Secondary stresses in trusses shall be considered and, where of significant magnitude, their effects shall be provided for in the design.

Any system or method of construction to be used shall be based on a rational analysis in accordance with well-established principles of mechanics. Such analysis shall result in a system that provides a complete load path capable of transferring loads from their point of origin to the load-resisting elements.

The total lateral force shall be distributed to the various vertical elements of the lateral-force-resisting system in proportion to their rigidities considering the rigidity of the horizontal bracing system or diaphragm. Rigid elements that are assumed not to be a part of the lateral-force-resisting system shall be permitted to be incorporated into buildings provided that their effect on the action of the system is considered and provided for in design. Provisions shall be made for the increased forces induced on resisting elements of the structural system resulting from torsion due to eccentricity between the center of application of the lateral forces and the center of rigidity of the lateral-force-resisting system.

Every structure shall be designed to resist the overturning effects caused by the lateral forces specified in this

chapter. See Section 1609 for wind, Section 1610 for lateral soil loads and Sections 1613 through 1623 for earthquake.

1604.5 Structural Occupancy Category and Importance Factors. All buildings and other structures shall be assigned a Structural Occupancy Category, as determined by Table 1604.5. The value for snow load, wind load and seismic load importance factors shall be determined in accordance with Table 1604.5.3.] Table 1604.5 Structural Occupancy Category and Importance Factors

Structural Occupancy Category	Nature of Occupancy	Seismic Factor	IE	Snow Factor	IS	Wind Factor	IW
1	I] Buildings and other structures that represent a low hazard to human life in the event of failure including, but not limited to:;tb Agricultural facilities;tb Certain temporary facilities;tb Minor storage facilities	1.00	0.8	0.87	II	Buildings and other structures except those listed in Structural Occupancy Categories I, III and IV	1.00
1.00	1.0	1.00	III	Buildings and other structures that represent a substantial hazard to human life in the event of failure including, but not limited to:;tb Buildings and other structures where more than 300 people congregate in one area;tb Buildings and other structures with elementary school, secondary school or day care facilities with an occupant load greater than 250;tb Buildings and other structures with an occupant load greater than 500 for colleges or adult education facilities	III (Continued)	;tb Health care facilities with an occupant load of 50 or more resident patients but not having surgery or emergency treatment facilities;tb Jails and detention facilities;tb Power-generating stations, water treatment for potable water, waste water treatment facilities and other public utility facilities not included in Structural Occupancy Category IV;tb Buildings and other structures not included in Structural Occupancy Category IV containing sufficient quantities of toxic or explosive substances to be dangerous to the public if released	1.25
1.1	1.15	IV	Buildings and other structures designed as essential facilities including, but not limited to:;tb Hospitals and other health care facilities having surgery or emergency treatment facilities;tb Fire, rescue and police stations and emergency vehicle garages;tb Designated earthquake, hurricane or other emergency shelters;tb Designated emergency preparedness, communication, and operation centers and other facilities required for emergency response;tb Power-generating stations and other public utility facilities required as emergency backup facilities for Structural Occupancy Category IV structures;tb Structures containing highly toxic materials as defined by Section 307 where the quantity of the material exceeds the maximum allowable quantities of Table 307.7(2);tb Aviation control towers, air traffic control centers and emergency aircraft hangars;tb Buildings and other structures having critical national defense functions;tb Water treatment facilities required to maintain water pressure for fire suppression	1.50	1.2	1.15	4]a. For the purpose of Section 1616.2, Structural Occupancy Categories I and II are considered Seismic Use Group I, Structural Occupancy Category III is considered Seismic Use Group II and Structural Occupancy Category IV is equivalent to Seismic Use Group III.

1604.5.1 Multiple occupancies. Where a structure is used for two or more occupancies not included in the same category of Table 1604.5, the structure shall be assigned the classification of the highest structural occupancy category corresponding to the various occupancies, except as provided for in ASCE 7 section 1.5.1.

1604.6 In-situ load tests. The commissioner is authorized to require an engineering analysis or a load test, or both, of any construction whenever there is reason to question the safety of the construction for the intended occupancy. Engineering analysis and load tests shall be conducted in accordance with Section 1713.

1604.7 Preconstruction load tests. Materials and methods of construction that are not capable of being designed by recognized engineering analysis or that do not comply with the applicable material design standards listed in Chapter 35, or alternative test procedures in accordance with Section 1711, shall be load tested in accordance with Section 1714.3.

1604.8 Anchorage.

1604.8.1 General. Anchorage of the roof to walls and columns, and of walls and columns to foundations, shall be provided to resist the uplift and sliding forces that result from the application of the prescribed loads.

1604.8.2 Concrete and masonry walls. Concrete and masonry walls shall be anchored to floors, roofs and other structural elements that provide lateral support for the wall. Such anchorage shall provide a positive direct connection

capable of resisting the horizontal forces specified in this chapter but not less than a minimum strength design horizontal force of 280 plf (4.10 kN/m) of wall, substituted for "E" in the load combinations of Section 1605.2 or 1605.3. Walls shall be designed to resist bending between anchors where the anchor spacing exceeds 4 feet (1219 mm). Required anchors in masonry walls of hollow units or cavity walls shall be embedded in a reinforced grouted structural element of the wall. See Sections 1609.6.2.2 and 1620 for wind and earthquake design requirements.

1604.8.3 Decks. Where supported by attachment to an exterior wall, decks shall be positively anchored to the primary structure and designed for both vertical and lateral loads as applicable. Such attachment shall not be accomplished by the use of toenails or nails subject to withdrawal. Where positive connection to the primary building structure cannot be verified during inspection, decks shall be self-supporting. For decks with cantilevered framing members, connections to exterior walls or other framing members shall be designed and constructed to resist uplift resulting from the full live load specified in Table 1607.1 acting on the cantilevered portion of the deck.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1604.5 amended L.L. 8/2008 § 121, eff. July 1, 2008.

1604.5 table amended L.L. 8/2008 § 121, eff. July 1, 2008.

1604.5.1 added L.L. 8/2008 § 121, eff. July 1, 2008.



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 CHAPTER 7: THE NEW YORK CITY BUILDING CODE
 Chapter 16: STRUCTURAL DESIGN
 SECTION BC 1605: LOAD COMBINATIONS

NYC Administrative Code § 28-BC 1605

1605.1 General.

Buildings and other structures and portions thereof shall be designed to resist the load combinations specified in Section 1605.2 or 1605.3 and Chapters 18 through 23, and the special seismic load combinations of Section 1605.4. Applicable loads shall be considered, including both earthquake and wind, in accordance with the specified load combinations. Each load combination shall also be investigated with one or more of the variable loads set to zero.

1605.2 Load combinations using strength design or load and resistance factor design.

1605.2.1 Basic load combinations. Where strength design or load and resistance factor design is used, structures and portions thereof shall resist the most critical effects from the following combinations of factored loads:

1.4D (Equation 16-1)

1.2D ;pl 1.6L ;pl 0.5 (Lr or S or R) (Equation 16-2)

1.2D ;pl 1.6(Lr or S or R) ;pl (f₁L or 0.8W) (Equation 16-3)

1.2D ;pl 1.6W ;pl f_rL ;pl 0.5 (Lr or S or R) (Equation 16-4)

1.2D ;pl 1.0E ;pl f₁L ;pl f₂S (Equation 16-5)

0.9D ;pl (1.0E or 1.6W) (Equation 16-6) where: f₁=1.0 for floors in places of public assembly, for live loads in excess of 100 pounds per square foot (4.79 kN/m²), and for parking garage live load. f₁=0.5 for other live loads. f₂=0.7 for roof configurations (such as saw tooth) that do not shed snow off the structure. f₂=0.2 for other roof configurations.

Exception: Where other factored load combinations are specifically required by the provisions of this code, such combinations shall take precedence.

1605.2.2 Other loads. Where F, H, P or T is to be considered in design, each applicable load shall be added to the above combinations in accordance with Section 2.3.2 of ASCE 7. Where F_a is to be considered in design, the load combinations of Section 2.3.3 of ASCE 7 shall be used. Where ice loads are to be considered in design, the load combinations of Section 2.3.4 of ASCE 7 shall be used. Refer to the following sections for other loads:

Soil lateral loads Section 1610

Rain loads Section 1611

Flood loads Appendix G

Snow and Thermal loads Section 1608

1605.3 Load combinations using allowable stress design.

1605.3.1 Basic load combinations. Where allowable stress design (working stress design), as permitted by this code, is used, structures and portions thereof shall resist the most critical effects resulting from the following combinations of loads:

D (Equation 16-7)

$D ; pl L$ (Equation 16-8)

$D ; pl L ; pl (L_r \text{ or } S \text{ or } R)$ (Equation 16-9)

$D ; pl (W \text{ or } 0.7E) ; pl L ; pl (L_r \text{ or } S \text{ or } R)$ (Equation 16-10)

$0.6D ; pl W$ (Equation 16-11)

$0.6D ; pl 0.7E$ (Equation 16-12)

Exceptions:

1. Crane hook loads need not be combined with roof live load or with more than three-fourths of the snow load or one-half of the wind load.

2. Flat roof snow loads of 30 psf (1.44 kN/m²) or less need not be combined with seismic loads. Where flat roof snow loads exceed 30 psf (1.44 kN/m²), 20 percent shall be combined with seismic loads.

3. Where allowable stress design is used to design foundations, refer to Chapter 18 of this code for combinations of load effects.

1605.3.1.1 Load reduction. It is permitted to multiply the combined effect of two or more variable loads by 0.75 and add to the effect of dead load. The combined load used in design shall not be less than the sum of the effects of dead load and any one of the variable loads. The 0.7 factor on E does not apply for this provision. Increases in allowable stresses specified in the appropriate materials section of this code or referenced standard shall not be used with the load combinations of Section 1605.3.1 except that a duration of load increase shall be permitted in accordance with Chapter 23.

1605.3.1.2 Other loads. Where F, H, P or T are to be considered in design, the load combinations of Section 2.4.1 of ASCE 7 shall be used. Where F_a is to be considered in design, the load combinations of Section 2.4.2 of ASCE 7 shall be used. Where ice loads are to be considered in design, the load combinations of Section 2.4.3 of ASCE 7 shall be used. Refer to the following sections for other loads:

Soil lateral loadsSection 1610

Rain loadsSection 1611

Flood loadsAppendix G

Snow and Thermal loadsSection 1608

1605.4Special seismic load combinations.For both allowable stress design and strength design methods, where specifically required by Sections 1613 through 1622 or by Chapters 18 through 23, elements and components shall be designed to resist the forces calculated using Equation 16-19 when the effects of the seismic ground motion are additive to gravity forces and those calculated using Equation 16-20 when the effects of the seismic ground motion counteract gravity forces.

$$1.2D + f_1L + E_m \text{ (Equation 16-19)}$$

$$0.9D + E_m \text{ (Equation 16-20)}$$

where: E_m =The maximum effect of horizontal and vertical forces as set forth in Section 1617.1. $f_1=1.0$ for floors in places of public assembly, for live loads in excess of 100 psf (4.79 kN/m²) and for parking garage live load. $f_1=0.5$ for other live loads.

1605.5Heliports and helistops.Heliport and helistop landing or touchdown areas shall be designed for the following loads, combined in accordance with Section 1605:

1. Dead load, D, plus the gross weight of the helicopter, D_h , plus snow load, S.
2. Dead load, D, plus two single concentrated impact loads, L, approximately 8 feet (2438 mm) apart applied anywhere on the touchdown pad (representing each of the helicopter's two main landing gear, whether skid type or wheeled type), having a magnitude of 0.75 times the gross weight of the helicopter. Both loads acting together total 1.5 times the gross weight of the helicopter.
3. Dead load, D, plus a uniform live load, L, of 100 psf (4.79 kN/ m²).

1605.6Structural integrity load combinations-alternate load path method.Where specifically required by Sections 1624 through 1629, elements and components shall be designed to resist the forces calculated using the following combination of factored loads:

$$D + f_1L + f_2W \text{ (Equation 16-65)}$$

Where: $f_1=0.25$ for buildings in Structural Occupancy Category II. $f_1=0.5$ for buildings in Structural Occupancy Category III or IV. $f_2=0$ for buildings in Structural Occupancy Category II. $f_2=0.33$ for buildings in Structural Occupancy Category III or IV.

The live load component f_1L need not be greater than the reduced live load.

1605.7Structural integrity load combinations-vehicular impact and gas explosions.Where specifically required by Sections 1625.5 and 1625.6, elements and components shall be designed to resist the forces calculated using the following combination of factored loads:

$$1.2D + Ak + (0.5L \text{ or } 0.2S) \text{ (Equation 16-66)}$$

$$0.9D + Ak + 0.2W \text{ (Equation 16-67)}$$

Where A_k is the load effect of the vehicular impact or gas explosion.

1605.8 Structural integrity load combinations - specific local resistance method. Where the specific local resistance method is used in a key element analysis, the specified local loads shall be used as specified in Section 1626.7.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1605.6 amended L.L. 8/2008 § 122, eff. July 1, 2008.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 16: STRUCTURAL DESIGN
SECTION BC 1606: DEAD LOADS

NYC Administrative Code § 28-BC 1606

1606.1 Weights of materials and construction.

In determining dead loads for purposes of design, the actual weights of materials and construction shall be used. In the absence of definite information, values used shall be subject to the approval of the commissioner.

1606.2Weights of fixed service equipment.In determining dead loads for purposes of design, the weight of fixed service equipment, such as plumbing stacks and risers, electrical feeders, heating, ventilating and air-conditioning systems (HVAC) and fire sprinkler systems, shall be included.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 16: STRUCTURAL DESIGN
SECTION BC 1607: LIVE LOADS

NYC Administrative Code § 28-BC 1607

1607.1 General.

Live loads are those defined in Section 1602.13]Table 1607.1 Minimum Uniformly Distributed Live Loads and Minimum Concentrated Live Loadsg, i Occupancy or Use Uniform (psf) Concentrated (lbs.) 1]Occupancy or Use Uniform (psf) Concentrated (lbs.) 2]1. Apartments (see residential)- - 2. Access floor systems2. Office use50 2,000 2. Computer use100 2,000 3. Armories and drill rooms150 - 4. Assembly areas and theaters4. Fixed seats (fastened to floor)60 4. Lobbies100 4. Movable seats100 4. Private assembly spaces, including conference4. rooms and card rooms50 - 4. Stages and platforms125 4. Follow spot, projections and control rooms50 4. Catwalks40 4. Other assembly spacesNote i 5. Balconies (exterior)100 - 5. On one- and two-family residences only, and not exceeding 100 ft.260 6. DecksSame as occupancy servedh - 7. Bowling alleys75 - 8. Cornices60 - 9. Corridors, except as otherwise indicated100 - 10. Dance halls and ballrooms100 - 11. Dining rooms and restaurants100 - 12. Dwellings (see residential)- - 13. Elevator machine room grating (on area of 4 in.2)- 300 13. Equipment rooms, including pump rooms, generator rooms, transformer vaults, and areas for switch gear, ventilating, air conditioning, and similar electrical and mechanical equipment75 - 14. Finish light floor plate construction (on area of 1 in.2)- 200 15. Fire escapes (Exterior)15. Single -and multiple family dwellings100 40 - 16. Garages (passenger vehicles only)40 Note a 16. Trucks and busesSee Section 1607.6 17. Grandstands (see stadium and arena bleachers)- - 18. Gymnasiums, main floors and balconies100 - 19. Handrails, guards and grab barsSee Section 1607.7 20. Hospitals20. Operating rooms, laboratories60 1,000 20. Private rooms40 1,000 20. Wards40 1,000 20. Corridors above first floor80 1,000 21. Hotels (see residential)- - 22. Libraries22. Reading rooms60 1,000 22. Stack rooms150b 1,000 22. Corridors above first floor80 1,000 23. Manufacturing23. Light125 2,000 23. Heavy250 3,000 24. Marquees75 - 25. Office buildings25. File and computer rooms shall be designed for heavier loads based on anticipated occupancy25. Lobbies and first-floor corridors100 2,000 25. Offices50 2,000 25. Corridors above first floor80 2,000 26. Penal Institutions26. Cell blocks40 - 26. Corridors100 27. Residential27. One- and two-family dwellings27. Uninhabitable attics without storage10 27. Uninhabitable attics with storage20 27. Habitable attics and sleeping areas30 27. All other areas except balconies and decks40 - 27. Hotels and multifamily dwellings27. Private rooms and corridors serving them40 27. Public rooms and corridors serving them100 28. Reviewing stands, grandstands and bleachersNote c - 29. RoofsSee Section 1607.11 30. Schools30.

Classrooms 40 1,000 30. Corridors above first floor 80 1,000 30. First-floor corridors 100 1,000 31. Scuttles, skylight ribs and accessible ceilings- 200 32. Sidewalks, vehicular driveways and yards, 600d 8,000e 32. subject to trucking 32. Plaza areas (open) accessible to the public (including landscaped portions) 100 33. Skating rinks 100 - 34. Stadiums and arenas 34. Bleachers 100c - 34. Fixed seats (fastened to floor) 60c 35. Stairs and exits 100 Note f 35. One- and two-family dwellings 40 35. All other 100 36. Storage warehouses (shall be designed for heavier loads if required for anticipated storage) 36. Light 125 36. Heavy 250 37. Stores 37. Retail 37. Basement and First floor 100 1,000 37. Upper floors 75 1,000 37. Wholesale, all floors 100 1,000 38. Vehicle barriers See Section 1607.7 39. Walkways and elevated platforms (other than exitways) 60 - 40. Yards and terraces, pedestrians 100 - 4] For SI: 1 inch = 25.4 mm, 1 square inch = 645.16 mm², 1 pound per square foot = 0.0479 kN/m², 1 pound = 0.004448 kN. 1 pound per cubic foot = 16 kg/m³a. Floors in garages or portions of buildings used for the storage of motor vehicles shall be designed for the uniformly distributed live loads of Table 1607.1 or the following concentrated loads: (1) for garages restricted to vehicles accommodating not more than nine passengers, 3,000 pounds acting on an area of 4.5 inches by 4.5 inches; (2) for mechanical parking structures without slab or deck which are used for storing passenger vehicles only, 2,250 pounds per wheel.b. The loading applies to stack room floors that support nonmobile, double-faced library bookstacks, subject to the following limitations: 1. The nominal bookstack unit height shall not exceed 90 inches; 2. The nominal shelf depth shall not exceed 12 inches for each face; and 3. Parallel rows of double-faced bookstacks shall be separated by aisles not less than 36 inches wide.c. Design in accordance with the ICC Standard on Bleachers, Folding and Telescopic Seating and Grandstands .d. Other uniform loads in accordance with a recognized method acceptable to the commissioner which contains provisions for truck loadings shall also be considered where appropriate.e. The concentrated wheel load shall be applied on an area of 20 square inches.f. Minimum concentrated load on stair treads (on area of 4 square inches) is 300 pounds.g. Where snow loads occur that are in excess of the design conditions, the structure shall be designed to support the loads due to the increased loads caused by drift buildup or a greater snow design determined by the commissioner (see Section 1608). For special-purpose roofs, see Section 1607.11.2.2.h. See Section 1604.8.3 for decks attached to exterior walls.i. Live loads for assembly spaces other than those described in this table shall be determined from the occupant load requirements as established by Section 1004 of this code using the formula 1000/(net floor area per occupant) but shall not be less than 50 psf nor more than 100 psf.j. For establishing live loads for occupancies not specifically listed herein, refer to Reference Standard ASCE 7 for guidance.

1607.2 Loads not specified. For occupancies or uses not designated in Table 1607.1, the live load shall be determined in accordance with a method approved by the commissioner.

1607.2.1 Stage areas using scenery or scenic elements. Scenery battens and suspension systems shall be designed for a load of 30 pounds per linear foot (437.7 N/m) of batten length. Loft block and head block beams shall be designed to support vertical and horizontal loads corresponding to a 4 inch (102 mm) spacing of battens for the entire depth of the gridiron. Direction and magnitude of total forces shall be determined from the geometry of the rigging system including load concentrations from spot line rigging. Locking rails shall be designed for a uniform uplift of 500 psf (3447 kN/m²) with a 1,000 pound (454 kg) concentration. Impact factor for batten design shall be 75 percent and for loft and head block beams shall be 25 percent. A plan drawn to a scale not less than 1/4 inch (6.4 mm) equals one foot (305 mm) shall be displayed in the stage area indicating the framing plan of the rigging loft and the design loads for all members used to support scenery or rigging. Gridirons over stages shall be designed to support a uniformly distributed live load of 50 psf (2.40 kN/m²) in addition to the rigging loads indicated.

1607.3 Uniform live loads. The live loads used in the design of buildings and other structures shall be the maximum loads expected by the intended use or occupancy but shall in no case be less than the minimum uniformly distributed unit loads required by Table 1607.1.

1607.4 Concentrated loads. Floors and other similar surfaces shall be designed to support the uniformly distributed live loads prescribed in Section 1607.3 or the concentrated load, in pounds (kilonewtons), given in Table 1607.1, whichever produces the greater load effects. Unless otherwise specified, the indicated concentration shall be assumed to be uniformly distributed over an area 2.5 feet by 2.5 feet [6.25 ft² (0.58 m²)] and shall be located so as to produce the maximum load effects in the structural members.

1607.5 Partition loads. Weights of all partitions shall be considered, using either actual weights at locations shown on the plans or the equivalent uniform load given in Section 1607.5.2. Partition loads shall be taken as superimposed dead loads.

1607.5.1 Actual loads. Where actual partition weights are used, the uniform design live load may be omitted from the strip of floor area under each partition.

1607.5.2 Equivalent uniform load. The equivalent uniform partition loads in Table 1607.5 may be used in lieu of actual partition weights except for bearing partitions or partitions in toilet room areas (other than in one- and two-family dwellings), at stairs and elevators, and similar areas where partitions are concentrated. In such cases, actual partition weights shall be used in design. Except as otherwise exempted, equivalent uniform partition loads shall be used in areas where partitions are not definitely located on the plans, or in areas where partitions are subject to rearrangement or relocation.

Table 1607.5 Equivalent Uniform Partition Loads	Partition Weight (plf)	Equivalent Uniform Load (psf)	(To be added to floor dead and live loads)
50 or less	051 to 100	6101 to 2001	2201 to 3502
Greater than 350	20 plus a concentrated live load of the weight in excess of 350 pfl.		

1607.6 Garages.

1607.6.1 Passenger vehicle garages. Areas used for, and restricted by physical limitations of clearance to, the transit or parking of passenger vehicles shall be designed for the uniformly distributed and concentrated loads for parking areas for such vehicles as provided in Table 1607.1 applied without impact. An exception is made for members or constructions which, because of physical limitations, cannot be subjected to direct load from the vehicle or from a jack or hoist used to raise or suspend the vehicle. Such members or constructions shall be designed for the loads corresponding to the actual usage.

1607.6.2 Truck and bus garages. Minimum live loads for garages having trucks or buses shall be as specified in Table 1607.6, but shall not be less than 50 psf (2.40 kN/m²), unless other loads are specifically justified and approved by the commissioner. Actual loads shall be used where they are greater than the loads specified in the table.

Table 1607.6 Uniform and Concentrated Loads	Loading Class	Uniform Load (pounds/linear foot of lane)	Concentrated Load (pounds)
b For moment design	For shear design	H20-44 and HS20-44	640
	H15-44 and HS15-44	480	
13,500	19,500	For SI: 1 pound per linear foot = 0.01459 kN/m, 1 pound = 0.004448 kN, 1 ton = 8.90 kN.	a. An H loading class designates a two-axle truck with a semitrailer. An HS loading class designates a tractor truck with a semitrailer. The numbers following the letter classification indicate the gross weight in tons of the standard truck and the year the loadings were instituted. b. See Section 1607.6.1 for the loading of multiple spans.

1607.6.2.1 Truck and bus garage live load application. The concentrated load and uniform load shall be uniformly distributed over a 10 foot (3048 mm) width on a line normal to the centerline of the lane placed within a 12-foot-wide (3658 mm) lane. The loads shall be placed within their individual lanes so as to produce the maximum stress in each structural member. Vertical impact shall be taken as 10 percent of the vertical load. Single spans shall be designed for the uniform load in Table 1607.6 and one simultaneous concentrated load positioned to produce the maximum effect. Multiple spans shall be designed for the uniform load in Table 1607.6 on the spans and two simultaneous concentrated loads in two spans positioned to produce the maximum negative moment effect. Multiple span design loads, for other effects, shall be the same as for single spans.

1607.7 Loads on handrails, guards, grab bars and vehicle barriers. Handrails, guards, grab bars designed in accordance with Chapter 11, and vehicle barriers shall be designed and constructed to the structural loading conditions set forth in this section.

1607.7.1 Handrails and guards. Handrail assemblies and guards shall be designed to resist a load of 50 plf (0.73 kN/m) applied in any direction at the top and to transfer this load through the supports to the structure.

Exceptions:

1. For one- and two-family dwellings, only the single, concentrated load required by Section 1607.7.1.1 shall be applied.

2. In Group I-3, F, H, and S occupancies, for areas that are not accessible to the general public and that have an occupant load no greater than 50, the minimum load shall be 20 pounds per foot (0.29 kN/m).

1607.7.1.1 Concentrated load. Handrail assemblies and guards shall be able to resist a single concentrated load of 200 pounds (0.89 kN), applied in any direction at any point along the top, and have attachment devices and supporting structure to transfer this loading to appropriate structural elements of the building. This load need not be assumed to act concurrently with the loads specified in the preceding paragraph.

1607.7.1.2 Components. Intermediate rails (all those except the handrail), balusters and panel fillers shall be designed to withstand a horizontally applied normal load of 50 pounds (0.22 kN) on an area equal to 1 square foot (0.09 m²), including openings and space between rails. Reactions due to this loading are not required to be superimposed with those of Section 1607.7.1 or 1607.7.1.1.

1607.7.1.3 Stress increase. Where handrails and guards are designed in accordance with the provisions for allowable stress design (working stress design) exclusively for the loads specified in Section 1607.7.1, the allowable stress for the members and their attachments are permitted to be increased by one-third.

1607.7.2 Grab bars, shower seats and dressing room bench seats. Grab bars, shower seats and dressing room bench seat systems shall be designed to resist a single concentrated load of 250 pounds (1.11 kN) applied in any direction at any point.

1607.7.3 Vehicle barriers. Vehicle barrier systems for passenger cars shall be designed to resist a single load of 6,000 pounds (26.70 kN) applied horizontally in any direction to the barrier system and shall have anchorage or attachment capable of transmitting this load to the structure. For design of the system, the load shall be assumed to act at a minimum height of 1 foot, 6 inches (457 mm) above the floor or ramp surface on an area not to exceed 1 square foot (0.09 m²), and is not required to be assumed to act concurrently with any handrail or guard loadings specified in the preceding paragraphs of Section 1607.7.1. Garages accommodating trucks and buses shall be designed in accordance with a recognized method acceptable to the commissioner that contains provision for traffic railings.

1607.7.3.1 Columns in parking areas. Unless specially protected, columns in parking areas subject to impact of moving vehicles shall be designed to resist the lateral load due to impact and this load shall be considered a variable load. For passenger vehicles, this lateral load shall be taken as a minimum of 6,000 pounds (26.70 kN) applied at least 1 foot 6 inches (457 mm); above the roadway, and acting simultaneously with other design loads.

1607.8 Impact loads. The live loads specified in Section 1607.2 include allowance for impact conditions. Provisions shall be made in the structural design for uses and loads that involve unusual vibration and impact forces.

1607.8.1 Elevators. Elevator loads shall be increased by 100 percent for impact and the structural supports shall be designed within the limits of stress and deflection prescribed by ASME A17.1.

1607.8.2 Machinery. For the purpose of design, the weight of machinery and moving loads shall be increased as follows to allow for impact: (1) elevator machinery, 100 percent; (2) light machinery, shaft- or motor-driven, 20 percent; (3) reciprocating machinery or power-driven units, 50 percent; (4) hangers for floors or balconies, 33 percent. Percentages shall be increased where specified by the manufacturer.

1607.8.3 Railroad equipment. Minimum loads (including vertical, lateral, longitudinal, and impact) and the distribution thereof shall meet the applicable requirements of the AREMA Manual for Railway Engineering Chapter 15, Steel Structures.

1607.8.4 Assembly structures. Seating areas in grandstands, stadiums, and similar assembly structures shall be designed to resist the simultaneous application of a horizontal swaying load of at least 24 plf (36 kg/m) of seats applied in a direction parallel to the row of the seats, and of at least 10 plf (15 kg/m) of seats in a direction perpendicular to the row of the seats. When this load is used in combination with wind for outdoor structures, the wind load shall be one-half of the design wind load.

1607.9 Reduction in live loads. The minimum uniformly distributed live loads, L_o , in Table 1607.1 are permitted to be reduced according to the following provisions.

1607.9.1 General. Subject to the limitations of Sections 1607.9.1.1 through 1607.9.1.4, members for which a value of KLL AT is 400 square feet (37.16 m²) or more are permitted to be designed for a reduced live load in accordance with the following equation:

[SEE graphical material in printed version]

Table 1607.9.1 Live Load Element Factor KLL Interior columns 4 Exterior columns without cantilever slabs 4 Edge columns with cantilever slabs 3 Corner columns with cantilever slabs 2 Edge beams without cantilever slabs 2 Interior beams 2 All other members not identified above including:

Edge beams with cantilever slabs

Cantilever beams

Two-way slabs 1

Members without provisions for continuous shear transfer

normal to their span

1607.9.1.1 Heavy live loads. Live loads that exceed 100 psf (4.79 kN/m²) shall not be reduced except the live loads for members supporting two or more floors are permitted to be reduced by a maximum of 20 percent, but the live load shall not be less than L as calculated in Section 1607.9.1.

1607.9.1.2 Passenger vehicle garages. The live loads shall not be reduced in passenger vehicle garages except the live loads for members supporting two or more floors are permitted to be reduced by a maximum of 20 percent, but the live load shall not be less than L as calculated in Section 1607.9.1.

1607.9.1.3 Special occupancies. Live loads of 100 psf (4.79 kN/m²) or less shall not be reduced in public assembly occupancies or in areas used for retail or wholesale sales.

1607.9.1.4 Special structural elements. Live loads shall not be reduced for one-way slabs except as permitted in Section 1607.9.1.1. Live loads shall not be reduced for calculating shear stresses at the heads of columns in flat slab or flat plate construction. Live loads of 100 psf (4.79 kN/m²) or less shall not be reduced for roof members except as specified in Section 1607.11.2.

1607.9.2 Alternate floor live load reduction. As an alternative to Section 1607.9.1, floor live loads are permitted to be reduced in accordance with the following provisions. Such reductions shall apply to slab systems, beams, girders, columns, piers, walls and foundations.

1. A reduction shall not be permitted in Group A occupancies.

2. A reduction shall not be permitted when the live load exceeds 100 psf (4.79 kN/m²) except that the design live load for columns may be reduced by 20 percent.

3. For live loads not exceeding 100 psf (4.79 kN/m²), the design live load for any structural member supporting 150 square feet (13.94 m²) or more is permitted to be reduced in accordance with the following equation:

$$R = r(A ;ms 150)(\text{Equation 16-22})$$

For SI: $R = r(A ;ms 13.94)$

Such reduction shall not exceed 40 percent for horizontal members, 60 percent for vertical members, nor R as determined by the following equation:

$$R = 23.1 (1 ;pl D/Lo)(\text{Equation 16-23})$$

where: A=Area of floor or roof supported by the member, square feet (m²). D=Dead load per square foot (m²) of area supported. Lo=Unreduced live load per square foot (m²) of area supported. R=Reduction in percent. r=Rate of reduction equal to 0.08 percent for floors.

1607.10 Distribution of floor loads. Where uniform floor live loads are involved in the design of structural members arranged so as to create continuity, the minimum applied loads shall be the full dead loads on all spans in combination with the floor live loads on spans selected to produce the greatest effect at each location under consideration. It shall be permitted to reduce floor live loads in accordance with Section 1607.9.

1607.11 Roof loads. The structural supports of roofs and marquees shall be designed to resist wind and, where applicable, snow and earthquake loads, in addition to the dead load of construction and the appropriate live loads as prescribed in this section, or as set forth in Table 1607.1. The live loads acting on a sloping surface shall be assumed to act vertically on the horizontal projection of that surface.

1607.11.1 Distribution of roof loads. Where uniform roof live loads are involved in the design of structural members arranged so as to create continuity, the minimum applied loads shall be the full dead loads on all spans in combination with the roof live loads on adjacent spans or on alternate spans, whichever produces the greatest effect. See Section 1607.11.2 for minimum roof live loads and Section 1608.5 for partial snow loading.

1607.11.1.1 Arches and gabled frames. The following simplification is permissible:

1. Live load placed on 1/2 of the span adjacent to one support.
2. Live load placed on the center 1/4 of the span.
3. Live load placed on 3/8 of the span adjacent to each support.

1607.11.2 Minimum roof live loads. Minimum roof loads shall be determined for the specific conditions in accordance with Sections 1607.11.2.1 through 1607.11.2.4.

1607.11.2.1 Flat, pitched and curved roofs. Ordinary flat, pitched and curved roofs shall be designed for the live loads specified in the following equation or other controlling combinations of loads in Section 1605, whichever produces the greater load. In structures where special scaffolding is used as a work surface for workers and materials during maintenance and repair operations, a lower roof load than specified in the following equation shall not be used unless approved by the commissioner. Greenhouses shall be designed for a minimum roof live load of 10 psf (0.479 kN/m²).

$$L_r = 20R_1R_2(\text{Equation 16-24})$$

where: 12 ;le L_r ;le 20

For SI: $L_r = 0.96 R_1 R_2$

where: $0.58 \leq L_r \leq 0.96$

L_r = Roof live load per square foot (m^2) of horizontal projection in pounds per square foot (kN/m^2).

The reduction factors R_1 and R_2 shall be determined as follows:

$R_1 = 1$ for $A_t \leq 200$ square feet ($18.58 m^2$) (Equation 16-25)

$R_1 = 1.2 - 0.001 A_t$ for 200 square feet $\leq A_t \leq 600$ square feet (Equation 16-26)

For SI: $1.2 - 0.011 A_t$ for 18.58 square meters $\leq A_t \leq 55.74$ square meters

$R_t = 0.6$ for $A_t \leq 600$ square feet ($55.74 m^2$) (Equation 16-27)

where: A_t = Tributary area (span length multiplied by effective width) in square feet (m^2) supported by any structural member, and F = for a sloped roof, the number of inches of rise per foot (for SI: $F = 0.12 \times$ slope, with slope expressed in percentage points), and F = for an arch or dome, rise-to-span ratio multiplied by 32, and

$R_2 = 1$ for $F \leq 4$ (Equation 16-28)

$R_2 = 1.2 - 0.05 F$ for 4 $\leq F \leq 12$ (Equation 16-29)

$R_2 = 0.6$ for $F \geq 12$ (Equation 16-30)

1607.11.2.2 Special-purpose roofs. Roofs used for promenade purposes shall be designed for a minimum live load of 60 psf (2.87 kN/m^2). Roofs used for roof gardens or assembly purposes shall be designed for a minimum live load of 100 psf (4.79 kN/m^2). Roofs used for other special purposes shall be designed for appropriate loads, as directed or approved by the commissioner.

1607.11.2.3 Green roofs. Where roofs utilize a green roof system and are not intended for human occupancy, the uniform design live load in the area covered by the green roof shall be 20 psf (0.958 kN/m^2). The weight of the landscaping materials shall be considered as dead load and shall be computed on the basis of saturation of the soil. Where roofs utilize a green roof system and are used for human occupancy, the minimum live load shall be as specified in Table 1607.1 or Section 1607.11.2.2, whichever is greater.

1607.11.2.4 Awnings and canopies. Awnings and canopies shall be designed for a uniform live load of 5 psf (0.240 kN/m^2) as well as for snow loads and wind loads as specified in Sections 1608 and 1609.

1607.11.2.5 Hanging loads. Girders and roof trusses (other than joists) over garage areas regularly utilized for the repair of vehicles and over manufacturing floors or storage floors used for commercial purposes shall be capable of supporting, in addition to the specified live and wind loads, a concentrated live load of 2,000 pounds (908 kg) applied at any lower chord panel point for trusses, and at any point of the lower flange for girders.

1607.12 Crane loads. The crane live load shall be the rated capacity of the crane. Design loads for the runway beams, including connections and support brackets, of moving bridge cranes and monorail cranes shall include the maximum wheel loads of the crane and the vertical impact, lateral and longitudinal forces induced by the moving crane.

1607.12.1 Maximum wheel load. The maximum wheel loads shall be the wheel loads produced by the weight of the bridge, as applicable, plus the sum of the rated capacity and the weight of the trolley with the trolley positioned on its runway at the location where the resulting load effect is maximum.

1607.12.2 Vertical impact force. The maximum wheel loads of the crane shall be increased by the percentages shown below to determine the induced vertical impact or vibration force:

Monorail cranes (powered) 25 percent

Cab-operated or remotely operated bridge cranes

(powered) 25 percent

Pendant-operated bridge cranes (powered) 10 percent

Bridge cranes or monorail cranes with hand-gear bridge,

trolley and hoist 0 percent

1607.12.3 Lateral force. The lateral force on crane runway beams with electrically powered trolleys shall be calculated as 20 percent of the sum of the rated capacity of the crane and the weight of the hoist and trolley. The lateral force shall be assumed to act horizontally at the traction surface of a runway beam, in either direction perpendicular to the beam, and shall be distributed according to the lateral stiffness of the runway beam and supporting structure.

1607.12.4 Longitudinal force. The longitudinal force on crane runway beams, except for bridge cranes with hand-gear bridges, shall be calculated as 10 percent of the maximum wheel loads of the crane. The longitudinal force shall be assumed to act horizontally at the traction surface of a runway beam, in either direction parallel to the beam.

1607.13 Interior walls and partitions. Interior walls and partitions that exceed 6 feet (1829 mm) in height, including their finish materials, shall have adequate strength to resist the loads to which they are subjected but not less than a horizontal load of 5 psf (0.240 kN/ m²).



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
 Title 28: NEW YORK CITY CONSTRUCTION CODES**
 CHAPTER 7: THE NEW YORK CITY BUILDING CODE
 Chapter 16: STRUCTURAL DESIGN
 SECTION BC 1608: SNOW LOADS AND THERMAL LOADS

NYC Administrative Code § 28-BC 1608

1608.1 General.

Design snow loads shall be determined in accordance with Section 7 of ASCE 7, but the design roof load shall not be less than that determined by Section 1607.

1608.2 Ground snow loads. The ground snow load, P_g , to be used in determining the design snow loads for roofs is 25 psf (1.2 kN/m²).

1608.3 Flat roof snow loads. The flat roof snow load, r_f , on a roof with a slope equal to or less than 5 degrees (0.09 rad) (1 inch per foot = 4.76 degrees) shall be calculated in accordance with Section 7.3 of ASCE 7.

1608.3.1 Exposure factor. The value for the snow exposure factor, C_e , used in the calculation of r_f shall be determined from Table 1608.3.1. Table 1608.3.1 Snow Exposure Factor C_e Terrain Category Exposure of Roofs

Exposure of Roofs	1. Fully exposed	2. Partially exposed	3. Sheltered
A (see Section 1609.4)	N/A	1.1	1.3
B (see Section 1609.4)	0.9	1.0	1.2
C (see Section 1609.4)	0.9	1.0	1.1

For SI: 1 mile = 1609 m. a. The terrain category and roof exposure condition chosen shall be representative of the anticipated conditions during the life of the structure. An exposure factor shall be determined for each roof of a structure. b. Definitions of roof exposure are as follows:

- Fully exposed shall mean roofs exposed on all sides with no shelter afforded by terrain, higher structures or trees. Roofs that contain several large pieces of mechanical equipment, parapets which extend above the height of the balanced snow load, h_b , or other obstructions are not in this category.
- Partially exposed shall include all roofs except those designated as "fully exposed" or "sheltered".
- Sheltered roofs shall mean those roofs located tight in among conifers that qualify as "obstructions". Obstructions within a distance of 10 h_o provide "shelter", where h_o is the height of the obstruction above the roof level. If the only obstructions are a few deciduous trees that are leafless in winter, the "fully exposed" category shall be used except for terrain category "A." Note that these are heights above the roof. Heights used to establish the terrain category in Section 1609.4 are heights above the ground.

1608.3.2 Thermal factor. The value for the thermal factor, C_t , used in the calculation of r_f shall be determined from

Table 1608.3.2. Thermal Factor, C_t Thermal Conditiona C_t All structures except as indicated below1.0 Structures kept just above freezing and others with cold, ventilated roofs in which the thermal resistance (R-value) between the ventilated space and the heated space exceeds 25h ;tb ft² ;tb (degrees)F/Btu1.1 Unheated structures1.2 Continuously heated greenhousesb with a roof having a thermal resistance (R-value) less than 2.0h ;tb ft² ;tb (degrees)F/Btu0.85 For SI: (degrees)C = [((degrees)F)-32]/1.8, 1 British thermal unit per hour = 0.2931W.a. The thermal condition shall be representative of the anticipated conditions during winters for the life of the structure.b. A continuously heated greenhouse shall mean a greenhouse with a constantly maintained interior temperature of 50(degrees)F or more during winter months. Such greenhouse shall also have a maintenance attendant on duty at all times or a temperature alarm system to provide warning in the event of a heating system failure.

1608.3.3Snow load importance factor.The value for the snow load importance factor, I_s , used in the calculation of r_f shall be determined in accordance with Table 1604.5. Greenhouses that are occupied for growing plants on production or research basis, without public access, shall be included in Structural Occupancy Category I.

1608.3.4Rain-on-snow surcharge load.Roofs with a slope less than 1/2 inch per foot (2.38 degrees) shall be designed for a rain-on-snow surcharge load determined in accordance with Section 7.10 of ASCE 7.

1608.3.5Ponding instability.For roofs with a slope less than 1/4 inch per foot (1.19 degrees), the design calculations shall include verification of the prevention of ponding instability in accordance with Section 7.11 of ASCE 7.

1608.3.6Ice.For ice loads to be used in the design of ice sensitive structures such as open framed or guyed towers refer to ASCE 7.

1608.4Sloped roof snow loads.The snow load, p_s , on a roof with a slope greater than 5 degrees (0.09 rad) (1 inch per foot = 4.76 degrees) shall be calculated in accordance with Section 7.4 of ASCE 7.

1608.5Partial loading.The effect of not having the balanced snow load over the entire loaded roof area shall be analyzed in accordance with Section 7.5 of ASCE 7.

1608.6Unbalanced snow loads.Unbalanced roof snow loads shall be determined in accordance with Section 7.6 of ASCE 7. Winds from all directions shall be accounted for when establishing unbalanced snow loads.

1608.7Drifts on lower roofs.In areas where the ground snow load, p_g , as determined by Section 1608.2, is equal to or greater than 5 psf (0.240 kN/ m²), roofs shall be designed to sustain localized loads from snowdrifts in accordance with Section 7.7 of ASCE 7.

1608.8Roof projections.Drift loads due to mechanical equipment, penthouses, parapets and other projections above the roof shall be determined in accordance with Section 7.8 of ASCE7.

1608.9Sliding snow.The extra load caused by snow sliding off a sloped roof onto a lower roof shall be determined in accordance with Section 7.9 of ASCE 7.

1608.10Thermal forces.The design of enclosed buildings more than 250 feet (76 200 mm) in plan dimension shall provide for the forces and/or movements resulting from an assumed expansion corresponding to a change in temperature of 40(degrees)F (4.44(degrees)C). For exterior exposed frames, arches, or shells regardless of plan dimensions, the design shall provide for the forces and/or movements resulting from an assumed expansion and contraction corresponding to an increase or decrease in temperature of 40(degrees)F (4.44(degrees)C) for concrete or masonry construction and 60(degrees)F (15.55(degrees)C) for metal construction. For determination of the required anchorage for piping, the forces shall be determined on the basis of temperature variations for the specific service conditions. Friction forces in expansion bearings shall be considered.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1608.3.3 amended L.L. 8/2008 § 123, eff. July 1, 2008.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 16: STRUCTURAL DESIGN
SECTION BC 1609: WIND LOADS

NYC Administrative Code § 28-BC 1609

1609.1 Applications.

Buildings, structures and parts thereof shall be designed to withstand the minimum wind loads prescribed herein. Decreases in wind loads shall not be made for the effect of shielding by other structures.

1609.1.1 Determination of wind loads. Wind loads on every building or structure shall be determined in accordance with Section 6 of ASCE 7. Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface considered. Exposure-A as defined in section 1609.4 can be considered using ASCE 7 where applicable.

Exceptions:

1. Wind loads determined by the provisions of Section 1609.6.
2. Subject to the limitations of Section 1609.1.1.1, the provisions of SBCCI SSTD 10 Standard for Hurricane Resistant Residential Construction shall be permitted for applicable Group R-2 and R-3 buildings.
3. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of the AF&PA Wood Frame Construction Manual for One- and Two-Family Dwellings.
4. Designs using NAAMM FP 1001 Guide Specification for Design of Metal Flagpoles.
5. Designs using TIA/EIA-222 for antenna-supporting structures and antennas.

1609.1.1.1 Applicability. The provisions of SSTD 10 are applicable only to buildings located within Exposure, B or C as defined in Section 1609.4. The provisions of SSTD 10 and the AF&PA Wood Frame construction Manual for One- and Two-Family Dwellings shall not apply to buildings sited on the upper half of an isolated hill, ridge or escarpment meeting the following conditions:

1. The hill, ridge or escarpment is 60 feet (18 288 mm) or higher if located in Exposure B or 30 feet (9144 mm) or higher if located in Exposure C;

2. The maximum average slope of the hill exceeds 10 percent; and

3. The hill, ridge or escarpment is unobstructed upwind by other such topographic features for a distance from the high point of 50 times the height of the hill or 1 mile (1.61 km), whichever is greater.

1609.1.2 Minimum wind loads. The wind loads used in the design of the main wind-force-resisting system shall not be less than 20 psf (0.958 kN/m²) multiplied by the area of the building or structure projected on a vertical plane normal to the wind direction. In the calculation of design wind loads for components and cladding for buildings, the algebraic sum of the pressures acting on opposite faces shall be taken into account. The design pressure for components and cladding of buildings shall not be less than 20 psf (0.958 kN/m²) acting in either direction normal to the surface. The design force for open buildings and other structures shall not be less than 10 psf (0.479 kN/m²) multiplied by the area A_f .

1609.1.3 Anchorage against overturning, uplift and sliding. Structural members and systems and components and cladding in a building or structure shall be anchored to resist wind-induced overturning, uplift and sliding and to provide continuous load paths for these forces to the foundation. Where a portion of the resistance to these forces is provided by dead load, the dead load, including the weight of soils and foundations, shall be taken as the minimum dead load likely to be in place during a design wind event. Where the alternate basic load combinations of Section 1605.3.2 are used, only two-thirds of the minimum dead load likely to be in place during a design wind event shall be used.

1609.1.4 Wind and seismic detailing. Lateral-force-resisting systems shall meet seismic detailing requirements and limitations prescribed in this code, even when wind code prescribed load effects are greater than seismic load effects.

1609.2 Definitions. The following words and terms shall, for the purposes of Section 1609.6, have the meanings shown herein.

BUILDINGS AND OTHER STRUCTURES, FLEXIBLE. Buildings and other structures that have a fundamental natural frequency less than 1 Hz.

BUILDING, ENCLOSED. A building that does not comply with the requirements for open or partially enclosed buildings.

BUILDING, LOW-RISE. Enclosed or partially enclosed buildings that comply with the following conditions:

1. Mean roof height, h , less than or equal to 60 feet (18 288 mm).
2. Mean roof height, h , does not exceed least horizontal dimension.

BUILDING, OPEN. A building having each wall at least 80 percent open. This condition is expressed for each wall by the equation:

$$A_o \geq 0.8 A_g \text{ (Equation 16-31)}$$

where: A_o = Total area of openings in a wall that receives positive external pressure, in square feet (m²). A_g = The gross area of that wall in which A_o is identified, in square feet (m²).

BUILDING, PARTIALLY ENCLOSED. A building that complies with both of the following conditions:

1. The total area of openings in a wall that receives positive external pressure exceeds the sum of the areas of openings in the balance of the building envelope (walls and roof) by more than 10 percent; and

2. The total area of openings in a wall that receives positive external pressure exceeds 4 square feet (0.37 m²) or 1 percent of the area of that wall, whichever is smaller, and the percentage of openings in the balance of the building envelope does not exceed 20 percent. These conditions are expressed by the following equations:

$A_o \leq 4 \text{ square feet (0.37 m}^2\text{) or } A_o \leq 0.01 A_g$ (Equation 16-32)

$A_o \leq 4 \text{ square feet (0.37 m}^2\text{) or } A_o \leq 0.01 A_g$, whichever is smaller, and $A_o/A_g \leq 0.20$ (Equation 16-33)

where:

A_o , A_g are as defined for an open building. A_o =The sum of the areas of openings in the building envelope (walls and roof) not including A_o , in square feet (m²). A_g =The sum of the gross surface areas of the building envelope (walls and roof) not including A_o , in square feet (m²).

BUILDING, SIMPLE DIAPHRAGM. A building in which wind loads are transmitted through floor and roof diaphragms to the vertical lateral-force-resisting systems.

COMPONENTS AND CLADDING. Elements of the building envelope that do not qualify as part of the main wind force-resisting system.

EFFECTIVE WIND AREA. The area used to determine $G C_p$. For component and cladding elements, the effective wind area in Tables 1609.6.2.1(2) and 1609.6.2.1(3) is the span length multiplied by an effective width that need not be less than one-third the span length. For cladding fasteners, the effective wind area shall not be greater than the area that is tributary to an individual fastener.

HURRICANE-PRONE REGIONS. New York City is within the hurricane prone region.

IMPORTANCE FACTOR, I . A factor that accounts for the degree of hazard to human life and damage to property.

MAIN WIND FORCE-RESISTING SYSTEM. An assemblage of structural elements assigned to provide support and stability for the overall structure. The system generally receives wind loading from more than one surface.

MEAN ROOF HEIGHT. The average of the roof eave height and the height to the highest point on the roof surface, except that eave height shall be used for roof angle of less than or equal to 10 degrees (0.1745 rad).

WIND-BORNE DEBRIS REGION. New York City is not in the Wind-Borne Debris Region.

1609.3 Basic wind speed. The basic wind speed for New York City which is measured at 33 feet (10 058 mm) above ground as 3-second gust speed is 98 mph (43.8 m/s). This wind speed is based on local wind climate with annual probability of 0.02 (50-year mean recurrence interval).

1609.3.1 Wind speed conversion. When required, the 3-second gust wind velocity of 98 mph (43.12 m/s) can be converted to 79 mph (35.2 m/s) fastest mile wind velocity.

1609.4 Exposure category. For each wind direction considered, an exposure category that adequately reflects the characteristics of ground surface irregularities shall be determined for the site at which the building or structure is to be constructed. For a site located in the transition zone between categories, the category resulting in the largest wind forces shall apply. Account shall be taken of variations in ground surface roughness that arise from natural topography and vegetation as well as from constructed features. For any given wind direction, the exposure in which a specific building or other structure is sited shall be assessed as being one of the following categories. When applying the simplified wind load method of Section 1609.6, a single exposure category shall be used based upon the most restrictive for any given wind direction.

1. Exposure A. Large city centers with at least 50 percent of the buildings having a height in excess of 70 feet (21 366 mm). Use of this exposure category shall be limited to those areas for which terrain representative of Exposure A prevails in the upwind direction for a distance of at least 2,500 feet (762 m) or 10 times the height of the building or structure, whichever is greater. Possible channeling effects or increased velocity pressures due to the building or structure being located in the wake of adjacent buildings shall be taken into account. See Table 1609.4.1-a and Table 1609.4.1-b for terrain and pressure coefficients related to Exposure-A. Table 1609.6.4.1-a Terrain Exposure Constants Exposure a Zg (ft) a' b' a b c l (ft) 5 Zmin (ft)* A 5.0 1500 1/5 0.64 1/3.0 0.30 0.45 180 1/2.0 60 *Zmin = minimum height used to ensure that the equivalent height z is greater of 0.6h or Zmin. For buildings with h ;le zmin, z shall be taken as zmin.3]Table 1609.6.4.1-b Velocity Pressure Exposure Coefficients, Kh and Kz

Height above ground level, z ft (m) Exposure A Case 1 Case 2 1]

Height above ground level, z ft (m) Exposure A Case 1 Case 2 2]0-15 (0-4.6) 0.68 0.32 20 (6.1) 0.68 0.36 25 (7.6) 0.68 0.39 30 (9.1) 0.68 0.42 40 (12.2) 0.68 0.47 50 (15.2) 0.68 0.52 60 (18) 0.68 0.55 70 (21.3) 0.68 0.59 80 (24.4) 0.68 0.62 90 (27.4) 0.68 0.65 100 (30.5) 0.68 0.68 120 (36.6) 0.73 0.73 140 (42.7) 0.78 0.78 160 (48.8) 0.82 0.82 180 (54.9) 0.86 0.86 200 (61.0) 0.90 0.90 250 (76.2) 0.98 0.98 300 (91.4) 1.05 1.05 350 (106.7) 1.12 1.12 400 (121.9) 1.18 1.18 450 (137.2) 1.24 1.24 500 (152.4) 1.29 1.29 4]1. The velocity pressure exposure coefficient Kz may be determined from the following formula: For 15 ft. ;le z ;le zg For z ;lt 15 ft. Kz = 2.01 (z/zg)2/a Kz = 2.01 (15/zg)2/a2. Linear interpolation for intermediate values of height z is acceptable.

2. Exposure B. Urban and suburban areas, wooded areas or other terrain with numerous closely spaced obstructions having the size of single-family dwellings or larger. Exposure B shall be assumed unless the site meets the definition of another type of exposure.

3. Exposure C. Open terrain with scattered obstructions, including surface undulations or other irregularities, having heights generally less than 30 feet (9144 mm) extending more than 1,500 feet (457.2 m) from the building site in any quadrant. This exposure shall also apply to any building located within Exposure B-type terrain where the building is directly adjacent to open areas of Exposure C-type terrain in any quadrant for a distance of more than 600 feet (182.9 m). This category includes flat open country, grasslands and shorelines in hurricane-prone regions.

4. Exposure D. Not applicable in New York City.

1609.5 Importance factor. Buildings and other structures shall be assigned a wind load importance factor, Iw, in accordance with Table 1604.5.

1609.6 Simplified wind load methods.

1609.6.1 Scope. The procedures in Section 1609.6 shall be permitted to be used for determining and applying wind pressures in the design of enclosed buildings as listed below:

1. For buildings with flat, gabled or hipped roofs having a mean roof height not exceeding the least horizontal dimension or 60 feet (18 288 mm), whichever is less, the use of Section 1609.6.2, Simplified Procedure-I, is permitted.

2. For buildings with a mean roof height of not more than 200 feet (60 960 mm) and located not closer than 2,000 feet (609.6 m) to the river, bay, or ocean shore line in any Borough other than Manhattan, the use of Section 1609.6.3, Simplified Procedure-II, is permitted.

3. For buildings with a mean roof height of not more than 300 feet (91 440 mm) within the Borough of Manhattan and located not closer than 2,000 feet (609.6 m) to the river, bay or ocean shore line, the use of Section 1609.6.3, Simplified Procedure-II, is permitted.

1609.6.1.1 Reduction of loads. The design wind pressures determined in accordance with Sections 1609.6.2 and

1609.6.3 may be reduced by one of the following methods:

1. Application of the directionality factor (K_d) as specified in Table 6-4 of ASCE 7 to the design wind pressures.
2. Reduction of the load factor for the wind load (W) from 1.6 to 1.3 for the load combinations specified in Section 1605.2.

1609.6.2 Simplified design procedure-I (for low-rise buildings).

1. The wind shall be assumed to come from any horizontal direction.
2. An importance factor I_w shall be determined in accordance with Section 1609.5.
3. An exposure category shall be determined in accordance with Section 1609.4.
4. A height and exposure adjustment coefficient, C_e , shall be determined from Table 1609.6.2.1(4).

1609.6.2.1 Main wind force-resisting system. Simplified design wind pressures, p_s , for the main wind force-resisting systems represent the net pressures (sum of internal and external) to be applied to the horizontal and vertical projections of building surfaces as shown in Figure 1609.6.2.1. For the horizontal pressures (Zones A, B, C, D), p_s is the combination of the windward and leeward net pressures. p_s shall be determined from Equation 16-34).

$$p_s = I_w P_{s30} \text{ (Equation 16-34)}$$

where: I_w = Adjustments factor for building height and exposure from Table 1609.6.2.1(4). I_w = Importance factor as defined in Section 1609.5. P_{s30} = Simplified design wind pressure for Exposure B, at $h = 30$ feet (9144 mm), and for $I_w = 1.0$, from Table 1609.6.2.1(1).

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1609.6.2.1.1 Minimum pressures. The load effects of the design wind pressures from Section 1609.6.2.1 shall not be less than assuming the pressures, p_s , for Zones A, B, C and D all equal to + 20 psf (0.96 kN/m²), while assuming Zones E, F, G, and H all equal to 0 psf.

1609.6.2.2 Components and cladding. Net design wind pressures, p_{net} , for the components and cladding of buildings represent the net pressures (sum of internal and external) to be applied normal to each building surface as shown in Figure 1609.6.2.2. The net design wind pressure, p_{net} , shall be determined from Equation 16-35:

$$p_{net} = I_w P_{net30} \text{ (Equation 16-35)}$$

where: I_w = Adjustments factor for building height and exposure from Table 1609.6.2.1(4). I_w = Importance factor as defined in Section 1609.5. P_{net30} = Net design wind pressure for Exposure B, at $h = 30$ feet (9144 mm), and for $I_w = 1.0$, from Table 1609.6.2.1(2) and 1609.6.2.1(3).

[SEE graphical material in printed version]

[SEE graphical material in printed version]

1609.6.2.2.1 Minimum pressures. The positive design wind pressures, p_{net} , from Section 1609.6.2.2 shall not be less than + 30 psf (1.44 kN/m²), and the negative design wind pressures, p_{net} , from Section 1609.6.2.2 shall not be less than - 30 psf (-1.44 kN/m²).

1609.6.2.3 Load case. Members that act as both part of the main wind force-resisting system and as components and cladding shall be designed for each separate load case.

1609.6.3 Simplified design procedure-II.

1609.6.3.1 Main wind force-resisting system. Main wind force-resisting systems shall comply with the following:

1. The building shall be designed for the following net lateral wind pressure to be applied to the horizontal projection of the building surfaces:

1.1. From 0 to 100 feet elevation 20 psf (0.96 kN/m²).

1.2. From 100 to 300 feet elevation 25 psf (1.2 kN/m²).

2. An importance factor I_w shall be determined in accordance with Section 1609.5. and shall be applied to the pressures indicated above.

1609.6.3.2 Design wind load cases. The main wind force-resisting system of buildings of all heights, whose wind loads have been determined pursuant to Section 1609.6.3, shall be designed for wind load cases as defined below:

Case-1. Full design wind pressure acting on the projected area perpendicular to each principal axis of the structure, considered separately along each principal axis.

Case-2. 75 percent of the design wind pressure acting on the projected area perpendicular to each principal axis of the structure to be applied eccentric to the center of the exposure with eccentricity equal to 15 percent of the exposure width, considered separately for each principal direction.

Case-3. Wind loading as defined in case-1, but considered to act simultaneously at 75 percent of the specified value.

1609.6.3.3 Components and cladding. Net design wind positive and negative pressures, (pressure and suction) for the components and cladding of buildings represent the net pressures (sum of internal and external) to be applied normal to each building surface. The net design wind pressure and suction shall be 30 psf (1.44 kN/m²).

1609.6.3.4 Roof. The design pressure and suction acting over the entire roof including purlins, roofing, and other roof elements (including their fastenings) shall be per values given in Section 1609.6.3.1.

1609.6.3.5 Other building elements. The following building elements of buildings whose wind loads have been determined under the provisions of Section 1609.6.3 shall be designed for wind pressures shown in Section 1609.6.3.1 multiplied by the following shape factors given in Table 1609.6.3.5. Table 1609.6.3.5 Other Building Elements Construction Shape Factor Signs (and their supports), or portions thereof, having 70 percent or more of solid surface 1.5 Signs (and their supports), or portions thereof, having less than 70 percent of solid surface 2.0 Tanks, cooling towers, and similar constructions 1.5 Square and rectangular chimneys 1.5

1609.6.3.5.1 Eaves and cornices. Eaves, cornices, and overhanging elements of the buildings shall be designed for upward pressures twice the values given in Section 1609.6.3.1.

1609.7Roof systems.

1609.7.1Roof deck.The roof deck shall be designed to withstand the wind pressures determined under either the provisions of Section 1609.6 for buildings satisfying the height and other requirements of the simplified methods or Section 1609.1.1 for buildings of any height.

1609.8Runback structures.Runback structures shall be designed in compliance with the rules of the department.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

Figure 1609.6.2.2 repealed and added L.L. 8/2008 § 124, eff. July 1, 2008.



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SECTION BC 1610: SOIL LATERAL LOAD

NYC Administrative Code § 28-BC 1610

1610.1 General.

Basement, foundation and retaining walls shall be designed to resist lateral soil loads. Soil loads specified in Table 1610.1 shall be used as the minimum design lateral soil loads unless specified otherwise in a soil investigation report approved by the commissioner. Basement walls and other walls in which horizontal movement is restricted at the top shall be designed for at-rest pressure. Retaining walls free to move and rotate at the top are permitted to be designed for active pressure. Design lateral pressure from surcharge loads shall be added to the lateral earth pressure load. Design lateral pressure shall be increased if soils with expansion potential are present at the site.

Exception: Basement walls extending not more than 8 feet (2438 mm) below grade and supporting flexible floor systems shall be permitted to be designed for active pressure.

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 SECTION BC 1611: RAIN LOADS

NYC Administrative Code § 28-BC 1611

1611.1 Design rain loads.

Each portion of a roof shall be designed to sustain the load of rainwater that will accumulate on it if the primary drainage system for that portion is blocked plus the uniform load caused by water that rises above the inlet of the secondary drainage system at its design flow.

$$R = 5.2(ds + dh) \text{ (Equation 16-37)}$$

For SI: $R = 0.0098 (ds + dh)$

where: dh = Additional depth of water on the undeflected roof above the inlet of secondary drainage system at its design flow (i.e., the hydraulic head), in inches (mm). ds = Depth of water on the undeflected roof up to the inlet of secondary drainage system when the primary drainage system is blocked (i.e., the static head), in inches (mm). R = Rain load on the undeflected roof, in psf (kN/m²). When the phrase "undeflected roof" is used, deflections from loads (including dead loads) shall not be considered when determining the amount of rain on the roof.

1611.2 Ponding instability. Ponding refers to the retention of water due solely to the deflection of relatively flat roofs. Roofs with a slope less than one-fourth unit vertical in 12 units horizontal (2-percent slope) shall be investigated by structural analysis to ensure that they possess adequate stiffness to preclude progressive deflection (i.e., instability) as rain falls on them or melt water is created from snow on them. The larger of snow load or rain load shall be used in this analysis. The primary drainage system within an area subjected to ponding shall be considered to be blocked in this analysis.

1611.3 Controlled drainage. Roofs equipped with hardware to control the rate of drainage shall be equipped with a secondary drainage system at a higher elevation that limits accumulation of water on the roof above that elevation. Such roofs shall be designed to sustain the load of rainwater that will accumulate on them to the elevation of the secondary drainage system plus the uniform load caused by water that rises above the inlet of the secondary drainage system at its

design flow determined from Section 1611.1. Such roofs shall also be checked for ponding instability in accordance with Section 1611.2.



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SECTION BC 1612: FLOOD LOADS

NYC Administrative Code § 28-BC 1612

1612.1 General.

The requirements for flood loads shall be as specified in Appendix G of this code.

1612.2Reserved.

1612.3Reserved.

1612.4Reserved.

1612.5Reserved.



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SECTION BC 1613: EARTHQUAKE LOADS DEFINITIONS

NYC Administrative Code § 28-BC 1613

1613.1 Definitions.

The following words and terms shall, for the purposes of this section, have the meanings shown herein.

ACTIVE FAULT/ACTIVE FAULT TRACE. A fault for which there is an average historic slip rate of 1 mm per year or more and geologic evidence of seismic activity within Holocene (past 11,000 years) times. Active fault traces are designated by the appropriate regulatory agency and/or registered design professional subject to identification by a geologic report.

ATTACHMENTS, SEISMIC. Means by which components and their supports are secured or connected to the seismic-force-resisting system of the structure. Such attachments include anchor bolts, welded connections and mechanical fasteners.

BASE. The level at which the horizontal seismic ground motions are considered to be imparted to the structure.

BOUNDARY ELEMENTS. Chords and collectors at diaphragm and shearwall edges, interior openings, discontinuities and reentrant corners.

BRITTLE. Systems, members, materials and connections that do not exhibit significant energy dissipation capacity in the inelastic range.

COLLECTOR. A diaphragm or shear wall element parallel to the applied load that collects and transfers shear forces to the vertical-force-resisting elements or distributes forces within a diaphragm or shear wall.

COMPONENT. A part or element of an architectural, electrical, mechanical or structural system.

Component, equipment. A mechanical or electrical component or element that is part of a mechanical and/or electrical system within or without a building system.

Component, flexible. Component, including its attachments, having a fundamental period greater than 0.06 second.

Component, rigid. Component, including its attachments, having a fundamental period less than or equal to 0.06 second.

DESIGN EARTHQUAKE. The earthquake effects that buildings and structures are specifically proportioned to resist in Sections 1613 through 1622.

DISPLACEMENT.

Design displacement. The design earthquake lateral displacement, excluding additional displacement due to actual and accidental torsion, required for design of the isolation system.

Total design displacement. The design earthquake lateral displacement, including additional displacement due to actual and accidental torsion, required for design of the isolation system.

Total maximum displacement. The maximum considered earthquake lateral displacement, including additional displacement due to actual and accidental torsion, required for verification of the stability of the isolation system or elements thereof, design of building separations and vertical load testing of isolator unit prototype.

DISPLACEMENT RESTRAINT SYSTEM. A collection of structural elements that limits lateral displacement of seismically isolated structures due to the maximum considered earthquake.

EFFECTIVE DAMPING. The value of equivalent viscous damping corresponding to energy dissipated during cyclic response of the isolation system.

EFFECTIVE STIFFNESS. The value of the lateral force in the isolation system, or an element thereof, divided by the corresponding lateral displacement.

HAZARDOUS CONTENTS. A material that is highly toxic or potentially explosive and in sufficient quantity to pose a significant life-safety threat to the general public if an uncontrolled release were to occur.

INVERTED PENDULUM-TYPE STRUCTURES. Structures that have a large portion of their mass concentrated near the top, and thus have essentially one degree of freedom in horizontal translation. The structures are usually T-shaped with a single column supporting the beams or framing at the top.

ISOLATION INTERFACE. The boundary between the upper portion of the structure, which is isolated, and the lower portion of the structure, which moves rigidly with the ground.

ISOLATION SYSTEM. The collection of structural elements that includes individual isolator units, structural elements that transfer force between elements of the isolation system and connections to other structural elements.

ISOLATOR UNIT. A horizontally flexible and vertically stiff structural element of the isolation system that permits large lateral deformations under design seismic load. An isolator unit is permitted to be used either as part of or in addition to the weight-supporting system of the building.

LOAD.

Gravity load (W). The total dead load and applicable portions of other loads as defined in Sections 1613 through 1622.

MAXIMUM CONSIDERED EARTHQUAKE. The most severe earthquake effects considered by this code.

NONBUILDING STRUCTURE. A structure, other than a building, constructed of a type included in Section 1622.

OCCUPANCY IMPORTANCE FACTOR. A factor assigned to each structure according to its seismic use group as prescribed in Table 1604.5.

SEISMIC DESIGN CATEGORY. A classification assigned to a structure based on its seismic use group and the severity of the design earthquake ground motion at the site.

SEISMIC-FORCE-RESISTING SYSTEM. The part of the structural system that has been considered in the design to provide the required resistance to the seismic forces prescribed herein.

SEISMIC FORCES. The assumed forces prescribed herein, related to the response of the structure to earthquake motions, to be used in the design of the structure and its components.

SEISMIC USE GROUP. A classification assigned to a building based on its use as defined in Section 1616.2.

SHEAR WALL. A wall designed to resist lateral forces parallel to the plane of the wall.

SHEAR WALL-FRAME INTERACTIVE SYSTEM. A structural system that uses combinations of shear walls and frames designed to resist lateral forces in proportion to their rigidities, considering interaction between shear walls and frames on all levels.

SITE CLASS. A classification assigned to a site based on the types of soils present and their engineering properties as defined in Section 1615.1.5.

SITE COEFFICIENTS. The values of, F_a , and, F_v , indicated in Tables 1615.1.2(1) and 1615.1.2(2), respectively.

STORY DRIFT RATIO. The story drift divided by the story height.

TORSIONAL FORCE DISTRIBUTION. The distribution of horizontal seismic forces through a rigid diaphragm when the center of mass of the structure at the level under consideration does not coincide with the center of rigidity (sometimes referred to as a "diaphragm rotation").

TOUGHNESS. The ability of a material to absorb energy without losing significant strength.

WIND-RESTRAINT SEISMIC SYSTEM. The collection of structural elements that provides restraint of the seismic-isolated structure for wind loads. The wind-restraint system may be either an integral part of isolator units or a separate device.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 16: STRUCTURAL DESIGN
SECTION BC 1614: EARTHQUAKE LOADS-GENERAL

NYC Administrative Code § 28-BC 1614

1614.1 Scope.

Every structure, and portion thereof, shall at a minimum, be designed and constructed to resist the effects of earthquake motions and assigned a seismic design category as set forth in Section 1616.3.

Exceptions:

1. Structures designed in accordance with the provisions of Sections 9.1 through 9.6, 9.13 and 9.14 of ASCE 7 shall be permitted.
2. One- and two-family dwellings not more than three stories in height are exempt from the requirements of Sections 1613 through 1622.
3. The seismic-force-resisting system of wood frame buildings that conform to the provisions of Section 2308 are not required to be analyzed as specified in Section 1616.1.
4. Agricultural storage structures intended only for incidental human occupancy are exempt from the requirements of Sections 1613 through 1623.

1614.1.1Reserved.

1613.2Reserved.

1614.3Reserved.

1614.4Quality assurance.A quality assurance plan shall be provided where required by Chapter 17.

1614.5Seismic and wind.When the code-prescribed wind design produces greater effects, the wind design shall

govern, but detailing requirements and limitations prescribed in this and referenced sections shall be followed.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 16: STRUCTURAL DESIGN
SECTION BC 1615: EARTHQUAKE LOADS-SITE GROUND MOTION

NYC Administrative Code § 28-BC 1615

1615.1 General procedure for determining maximum considered earthquake and design spectral response accelerations.

Ground motion accelerations, represented by response spectra and coefficients derived from these spectra, shall be determined in accordance with the general procedure of Section 1615.1, or the site-specific procedure of Section 1615.2. The site-specific procedure of Section 1615.2 shall be used for structures on sites classified as Site Class F, in accordance with Section 1615.1.1.

The mapped maximum considered earthquake spectral response acceleration at short periods (SS) shall be 0.365g and at 1-second period (S1) shall be 0.071g.

The site class shall be determined in accordance with Section 1615.1.1. The maximum considered earthquake spectral response accelerations at short period and 1-second period adjusted for site class effects, SMS and SM1, shall be determined in accordance with Section 1615.1.2. The design spectral response accelerations at short period, SDS, and at 1-second period, SD1, shall be determined in accordance with Section 1615.1.3. The general response spectrum shall be determined in accordance with Section 1615.1.4.

1615.1.1 Site class definitions. The site shall be classified as one of the site classes defined in Table 1615.1.1. Where the soil shear wave velocity, v_s , is not known, site class shall be determined, as permitted in Table 1615.1.1, from standard penetration resistance, N , or from soil undrained shear strength, su , calculated in accordance with Section 1615.1.5. Where site-specific data are not available to a depth of 100 feet (30 480 mm), appropriate soil properties are permitted to be estimated by the registered design professional preparing the soils report based on known geologic conditions. When the soil properties are not known in sufficient detail to determine the site class, Site Class D shall be used unless the commissioner determines that Site Class E or F soil is likely to be present at the site.
[SEE graphical material in printed version]

1615.1.2 Site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters. The maximum considered earthquake spectral response acceleration for short periods, SMS, and at 1-second

period, SM1, adjusted for site class effects, shall be determined by Equations 16-38 and 16-39, respectively:
[SEE graphical material in printed version]

where: F_a = Site coefficient defined in Table 1615.1.2(1). F_v = Site coefficient defined in Table 1615.1.2(2). S_s = The mapped spectral accelerations for short periods as determined in Section 1615.1. S_1 = The mapped spectral accelerations for a 1-second period as determined in Section 1615.1. Table 1615.1.2 (1) Values of Site Coefficient F_a as a Function of Site Class and Mapped Spectral Response Acceleration at Short Periods (SS) a Site Class F_a A 0.80 B 1.00 C 1.20 D 1.51 E 2.13 F Note a. Site-specific geotechnical investigation and dynamic site response analyses shall be performed to determine appropriate values, except that for structures with periods of vibration equal or less than 0.5 second, values of F_a for liquefiable soils are permitted to be taken equal to the values for the site class determined without regard to liquefaction in Section 1615.1.5.1. Table 1615.1.2 (2) Values of Site Coefficient F_v as a Function of Site Class and Mapped Spectral Response Acceleration at 1-Second Period (S1) a Site Class F_v A 0.80 B 1.00 C 1.70 D 2.4 E 3.5 F Note a. Site-specific geotechnical investigation and dynamic site response analyses shall be performed to determine appropriate values, except that for structures with periods of vibration equal or less than 0.5 second, values of F_v for liquefiable soils are permitted to be taken equal to the values for the site class determined without regard to liquefaction in Section 1615.1.5.1.

1615.1.3 Design spectral response acceleration parameters. Five-percent damped design spectral response acceleration at short periods, SDS, and at 1-second period, SD1, shall be determined from Equations 16-40 and 16-41, respectively:
[SEE graphical material in printed version]

[SEE graphical material in printed version]

where: SMS = The maximum considered earthquake spectral response accelerations for short period as determined in Section 1615.1.2. SM1 = The maximum considered earthquake spectral response accelerations for 1 second period as determined in Section 1615.1.2.

1615.1.4 General procedure response spectrum. The general design response spectrum curve shall be developed as indicated in Figure 1615.1.4 and as follows:

1. For periods less than or equal to T_0 , the design spectral response acceleration, S_a , shall be determined by Equation 16-42.
2. For periods greater than or equal to T_0 and less than or equal to T_s , the design spectral response acceleration, S_a , shall be taken equal to SDS.
3. For periods greater than T_s , the design spectral response acceleration, S_a , shall be determined by Equation 16-43.

[SEE graphical material in printed version]

[SEE graphical material in printed version]

where: SDS = The design spectral response acceleration at short periods as determined in Section 1615.1.3. SD1 = The design spectral response acceleration at 1-second period as determined in Section 1615.1.3. T = Fundamental period (in seconds) of the structure (see Section 9.5.5.3 of ASCE 7). $T_0 = 0.2 \text{ SD1/SDS}$ $T_s = \text{SD1/SDS}$
[SEE graphical material in printed version]

1615.1.5 Site classification for seismic design. Site classification for Site Class C, D or E shall be determined from Table 1615.1.5.

The notations presented below apply to the upper 100 feet (30 480 mm) of the site profile. Profiles containing

distinctly different soil layers shall be subdivided into those layers designated by a number that ranges from 1 to n at the bottom where there is a total of n distinct layers in the upper 100 feet (30 480 mm). The symbol, i, then refers to any one of the layers between 1 and n.

where: v = The shear wave velocity in feet per second (m/s). d_i = The thickness of any layer between 0 and 100 feet (30 480 mm).

[SEE graphical material in printed version]

N_i is the Standard Penetration Resistance (ASTM D1586) not to exceed 100 blow/foot (mm) as directly measured in the field without corrections.

[SEE graphical material in printed version]

[SEE graphical material in printed version]

where:

m

$S_{di} = d_s$

$i = 1$

Use only d_i and N_i for cohesionless soils. d_s = The total thickness of cohesionless soil layers in the top 100 feet (30 480 mm). S_{ui} = The undrained shear strength in psf (kPa), not to exceed 5,000 psf (240 kPa), ASTM D 2166 or D 2850.

[SEE graphical material in printed version]

where:

k

$S_{di} = d_c$

$i = 1$ d_c = The total thickness (100- d_s) (For SI: 30480- d_s) of cohesive soil layers in the top 100 feet (30480 mm). PI = The plasticity index, ASTM D 4318. W = The moisture content in percent, ASTM D 2216.

The shear wave velocity for rock, Site Class B, shall be either measured on site or estimated by a geotechnical engineer or engineering geologist/seismologist for competent rock with moderate fracturing and weathering. Softer and more highly fractured and weathered rock shall either be measured on site for shear wave velocity or classified as Site Class C.

The hard rock, Site Class A, category shall be supported by shear wave velocity measurements either on site or on profiles of the same rock type in the same formation with an equal or greater degree of weathering and fracturing. Where hard rock conditions are known to be continuous to a depth of 100 feet (30 480 mm), surficial shear wave velocity measurements are permitted to be extrapolated to assess vs.

The rock categories, Site Classes A and B, shall not be used if there is more than 10 feet (3048 mm) of soil between the rock surface and the bottom of the spread footing or mat foundation.

[SEE graphical material in printed version]

1615.1.5.1 Steps for classifying a site.

1. Check for the four categories of Site Class F requiring site-specific evaluation. If the site corresponds to any of these categories, classify the site as Site Class F and conduct a site-specific evaluation.

2. Check for the existence of a total thickness of soft clay ;mt 10 feet (3048 mm) where a soft clay layer is defined by: su ;lt 500 psf (25 kPa), w ;me 40 percent, and PI ;mt 20. If these criteria are satisfied, classify the site as Site Class E.

3. Categorize the site using one of the following three methods with vs, N, and su computed in all cases as specified.

3.1. vs for the top 100 feet (30 480 mm) (vs method).

3.2. N for the top 100 feet (30 480 mm) (N method).

3.3. Nch for cohesionless soil layers (PI ;lt 20) in the top 100 feet (30 480 mm) and average, su, for cohesive soil layers (PI ;mt 20) in the top 100 feet (30 480 mm) (su method).

1615.2Site-specific procedure for determining ground motion accelerations.A site-specific study shall account for the regional seismicity and geology; the expected recurrence rates and maximum magnitudes of events on known faults andsource zones; the location of the site with respect to these; near source effects if any and the characteristics of subsurface site conditions.

1615.2.1Probabilistic maximum considered earthquake.Where site-specific procedures are used as required or permitted by Section 1615, the maximum considered earthquake ground motion shall be taken as that motion represented by an acceleration response spectrum having a 2-percent probability of exceedance within a 50-year period. The maximum considered earthquake spectral response acceleration at any period, SaM, shall be taken from the 2-percent probability of exceedance within a 50-year period spectrum.

Exception: Where the spectral response ordinates at 0.2 second or 1 second for a 5-percent damped spectrum having a 2-percent probability of exceedance within a 50-year period exceed the corresponding ordinates of the deterministic limit of Section 1615.2.2, the maximum considered earthquake ground motion spectrum shall be taken as the lesser of the probabilistic maximum considered earthquake ground motion or the deterministic maximum considered earthquake ground motion spectrum of Section 1615.2.3, but shall not be taken as less than the deterministic limit ground motion of Section 1615.2.2.

1615.2.2Deterministic limit on maximum considered earthquake ground motion.The deterministic limit for the maximum considered earthquake ground motion shall be the response spectrum determined in accordance with Figure 1615.2.2, where site coefficients, Fa and Fv, are determined in accordance with Section 1615.1.2, with the value of the mapped short-period spectral response acceleration, SS, taken as 1.5g and the value of the mapped spectral response acceleration at 1 second, S1, taken as 0.6g.
[SEE graphical material in printed version]

1615.2.3Deterministic maximum considered earthquake ground motion.The deterministic maximum considered earthquake ground motion response spectrum shall be calculated as 150 percent of the median spectral response accelerations, SaM, at all periods resulting from a characteristic earthquake on any known active fault within the region.

1615.2.4Site-specific design ground motion.Where site-specific procedures are used to determine the maximum considered earthquake ground motion response spectrum, the design spectral response acceleration, Sa, at any period shall be determined from Equation 16-48:
[SEE graphical material in printed version]
and shall be greater than or equal to 80 percent of the design spectral response acceleration, Sa, determined by the general response spectrum in Section 1615.1.4.

1615.2.5Design spectral response coefficients.Where the site-specific procedure is used to determine the design ground motion in accordance with Section 1615.2.4, the parameter SDS shall be taken as the spectral acceleration, Sa,

obtained from the site-specific spectra at a period of 0.2 second, except that it shall not be taken as less than 90 percent of the peak spectral acceleration, S_a , at any period. The parameter SDI shall be taken as the greater of the spectral acceleration, S_a , at a period of 1 second or two times the spectral acceleration, S_a , at a period of 2 seconds. The parameters SMS and SMI shall be taken as 1.5 times SDS and SDI, respectively. The values so obtained shall not be taken as less than 80 percent of the values obtained from the general procedures of Section 1615.1.



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 SECTION BC 1616: EARTHQUAKE LOADS-CRITERIA SELECTION

NYC Administrative Code § 28-BC 1616

1616.1 Structural design criteria.

Each structure shall be assigned to a seismic design category in accordance with Section 1616.3. Seismic design categories are used in this code to determine permissible structural systems, limitations on height and irregularity, those components of the structure that must be designed for seismic resistance and the types of lateral force analysis that must be performed. Each structure shall be provided with complete lateral- and vertical-force-resisting systems capable of providing adequate strength, stiffness and energy dissipation capacity to withstand the design earthquake ground motions determined in accordance with Section 1615 within the prescribed deformation limits of Section 1617.3. The design ground motions shall be assumed to occur along any horizontal direction of a structure. A continuous load path, or paths, with adequate strength and stiffness to transfer forces induced by the design earthquake ground motions from the points of application to the final point of resistance shall be provided.

Allowable stress design is permitted to be used to evaluate sliding, overturning and soil bearing at the soil-structure interface regardless of the approach used in the design of the structure, provided load combinations of Section 1605.3 are utilized. When using allowable stress design for proportioning foundations, the value of 0.2 SDSD in Equations 16-50, 16-51, 16-52 and 16-53 or Equations 9.5.2.7-1, 9.5.2.7-2, 9.5.2.7.1-1 and 9.5.2.7.1-2 of ASCE 7 is permitted to be taken equal to zero. When the load combinations of Section 1605.3.2 are utilized, a one-third increase in soil allowable stresses is permitted for all load combinations that include W or E.

1616.2 Seismic use groups and occupancy importance factors. Each structure shall be assigned a seismic use group and a corresponding occupancy importance factor (IE) as indicated in Table 1604.5.

1616.2.1 Seismic Use Group I. Seismic Use Group I structures are those not assigned to either Seismic Use Group II or III.

1616.2.2 Seismic Use Group II. Seismic Use Group II structures are those, the failure of which would result in a substantial public hazard due to occupancy or use as indicated by Table 1604.5, or as designated by the commissioner.

1616.2.3 Seismic Use Group III. Seismic Use Group III structures are those having essential facilities that are required for post earthquake recovery and those containing substantial quantities of hazardous substances, as indicated in Table 1604.5, or as designated by the commissioner. Where operational access to a Seismic Use Group III structure is required through an adjacent structure, the adjacent structure shall conform to the requirements for Seismic Use Group III structures. Where operational access is less than 10 feet (3048 mm) from an interior lot line or less than 10 feet (3048 mm) from another structure, access protection from potential falling debris shall be provided by the owner of the Seismic Use Group III structure.

1616.2.4 Multiple occupancies. Where a structure is occupied for two or more occupancies not included in the same seismic use group, the structure shall be assigned the classification of the highest seismic use group corresponding to the various occupancies. Where structures have two or more portions that are structurally separated in accordance with Section 1620, each portion shall be separately classified. Where a structurally separated portion of a structure provides required access to, required egress from or shares life safety components with another portion having a higher seismic use group, both portions shall be assigned the higher seismic use group.

1616.3 Determination of seismic design category. All structures shall be assigned to a seismic design category based on their seismic use group and the design spectral response acceleration coefficients, SDS and SD1, determined in accordance with Section 1615.1.3 or 1615.2.5. Each building and structure shall be assigned to the most severe seismic design category in accordance with Table 1616.3(1) or 1616.3(2), irrespective of the fundamental period of vibration of the structure, T. Seismic Design Category B is the minimum design category allowed.

Exception: The seismic design category is permitted to be determined from Table 1616.3(1) alone when all of the following apply:

1. The approximate fundamental period of the structure, T_a , in each of the two orthogonal directions determined in accordance with Section 9.5.5.3.2 of ASCE 7, is less than $0.8 T_s$ determined in accordance with Section 1615.1.4,

2. Equation 9.5.5.2.1-1 of ASCE 7 is used to determine the seismic response coefficient, C_s , and

3. The diaphragms are rigid as defined in Section 1602. Table 1616.3 (1) Seismic Design Category Based on Short-Period Response Accelerations Value of SDS Seismic Use Group I II III SDS ;lt 0.167g A A A 0.167g ;lt SDS ;lt 0.33g B B C 0.33g ;lt SDS ;lt 0.50g C C D 0.50g ;lt SDS D a D a. Building structures in Seismic Use Groups I or II and on Site Class E may be designed in Seismic Design Category C if their Fundamental Period of Vibration is not between 1 and 2 seconds or a dynamic structural analysis based on a site specific spectrum is performed. Table 1616.3 (2) Seismic Design Category Based on 1-Second Period Response Accelerations Value of SD1 Seismic Use Group I II III SD1 ;lt 0.067g A A A 0.067g ;lt SD1 ;lt 0.133g B B C 0.133g ;lt SD1 ;lt 0.20g C C D 0.20g ;lt SD1 D D D

1616.3.1 Seismic Design Category A, E or F. Requirements for Seismic Design Categories A, E and F have been eliminated from the New York City Building Code as such categories do not apply in New York City. References to these categories can be found in ASCE 7.

1616.4 Reserved.

1616.5 Building configuration. Buildings shall be classified as regular or irregular based on the criteria in Section 9.5.2.3 of ASCE 7.

Exception: Buildings designed using the simplified analysis procedure in Section 1617.5 shall be classified in accordance with Section 1616.5.1.

1616.5.1 Building configuration (for use in the simplified analysis procedure of Section 1617.5). Buildings designed using the simplified analysis procedure in Section 1617.5 shall be classified as regular or irregular based on the criteria in this section. Such classification shall be based on the plan and vertical configuration. Buildings shall not exceed the

limitations of Section 1616.6.1.

1616.5.1.1 Plan irregularity. Buildings having one or more of the features listed in Table 1616.5.1.1 shall be designated as having plan structural irregularity and shall comply with the requirements in the sections referenced in that table.3]Table 1616.5.1.1 Plan Structural Irregularities

Irregularity Type and Description Reference Section Seismic Design Categorya Application 1]

Irregularity Type and Description Reference Section Seismic Design Categorya Application 2]1a Torsional Irregularity-to be considered when diaphragms are not flexible as determined in Section 1602.1.1

Torsional irregularity shall be considered to exist when the maximum story drift, computed including accidental torsion, at one end of the structure transverse to an axis is more than 1.2 times the average of the story drifts at the two ends of the structure.9.5.5.5.2 of ASCE 7 1620.4.1 9.5.2.1 of ASCE 7 9.5.5.7.1 of ASCE 7 C and D, D, D, C and D 1b Extreme Torsional Irregularity-to be considered when diaphragms are not flexible as determined in Section 1602.1.

Extreme Torsional irregularity shall be considered to exist when the maximum story drift9.5.5.5.2 of ASCE 7 1620.4.1 9.5.2.5.1 of ASCE 7 9.5.5.7.1 of ASCE 7 C and D, D D, C and D 2 Reentrant CornersPlan configurations of a structure and its lateral-force-resisting system contain reentrant corners where both projections of the structure beyond a reentrant corner are greater than 15 percent of the plan dimension of the structure in the given direction.1620.4.1 D 3 Diaphragm DiscontinuityDiaphragms with abrupt discontinuities or variations in stiffness, including those having cutout or open areas greater than 50 percent of the gross enclosed diaphragm area, or changes in effective diaphragm stiffness of more than 50 percent from one story to the next.1620.4.1 D 4 Out-of Plane OffsetsDiscontinuities in a lateral-force-resistance path, such as out of plane offset of the vertical elements.1620.4.1 9.5.2.5.1 of ASCE 7 1620.2.9 D, D, B, C and D 5 Nonparallel SystemsThe vertical lateral-force-resisting elements are not parallel to or symmetric about the major orthogonal axes of the lateral-force-resisting system.1620.3.2 C and D 4]

a. Seismic Design Category is determined in accordance with Section 1616.

1616.5.1.2 Vertical irregularity. Buildings having one or more of the features listed in Table 1616.5.1.2 shall be designated as having vertical irregularity and shall comply with the requirements in the sections referenced in that table.

Exceptions:

1. Structural irregularities of Type 1a, 1b or 2 in Table 1616.5.1.2 do not apply where no story drift ratio under design lateral load is greater than 130 percent of the story drift ratio of the next story above. Torsional effects need not be considered in the calculation of story drifts for the purpose of this determination. The story drift ratio relationship for the top two stories of the building is not required to be evaluated.

2. Irregularities of Types 1a, 1b and 2 of Table 1616.5.1.2 are not required to be considered for one-story buildings in any seismic design category or for two-story buildings in Seismic Design Category B, C or D. Table 1616.5.1.2 Vertical Structural Irregularities

Irregularity Type and Description Reference Section Seismic Design Categorya Application 1a Stiffness Irregularity-Soft StoryA soft story is one in which lateral stiffness is less than 70 percent of than in the story above or less than 80 percent for the average stiffness of the three stories above.9.5.2.5.1 of ASCE 7 D 1b Stiffness Irregularity-Extreme Soft StoryAn extreme soft story is one in which the lateral stiffness is less than 60 percent of that

in the story above or less than 70 percent of the average stiffness of the three stories above.9.5.2.5.1 of ASCE 7 D 2 Weight (Mass) IrregularityMass irregularity shall be considered to exist where the effective mass of any story is more than 150 percent of the effective mass of an adjacent story. A roof that is lighter than the floor below need not be considered.9.5.2.5.1 of ASCE 7 D 3 Vertical Geometric IrregularityVertical geometric irregularity shall be considered to exist where the horizontal dimension of the lateral-force resisting system in any story is more than 130 percent of than in an adjacent story.9.5.2.5.1 of ASCE 7 D 4In-Plane Discontinuity in Vertical Lateral-Force-Resisting ElementsAn in-lane offset of the lateral-force-resisting elements greater than the length of those elements or a reduction in stiffness of the resisting element in the story below.1620.4.1 9.5.2.5.1 of ASCE 7 1620.2.9 D, D, B, C and D 5 Discontinuity in Capacity-Weak StoryA weak story is one in which the story lateral strength is less than 80 percent of that in the story above. The story strength is the total strength of seismic-resisting elements sharing the story shear for the direction under consideration.1620.2.3 9.5.2.5.1 of ASCE 7 B, C and D, D a. Seismic Design Category is determined in accordance with Section 1616.

1616.6Analysis procedures.A structural analysis conforming to one of the types permitted in Section 9.5.2.5.1 of ASCE7 or to the simplified procedure in Section 1617.5 shall be made for all structures. The analysis shall form the basis for determining the seismic forces, E and E_m , to be applied in the load combinations of Section 1605 and shall form the basis for determining the design drift as required by Section 9.5.2.8 of ASCE 7 or Section 1617.3.

Exception: Design drift need not be evaluated in accordance with Section 1617.3 when the simplified analysis method of Section 1617.5 is used.

1616.6.1Simplified analysis.A simplified analysis, in accordance with Section 1617.5, shall be permitted to be used for any structure in Seismic Use Group I, subject to the following limitations, or a more rigorous analysis shall be made:

1. Buildings of light-framed construction not exceeding three stories in height, excluding basements.
2. Buildings of any construction other than light-framed construction, not exceeding two stories in height, excluding basements, with flexible diaphragms at every level as defined in Section 1602.



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SECTION BC 1617: EARTHQUAKE LOADS-MINIMUM DESIGN LATERAL FORCE AND RELATED EFFECTS

NYC Administrative Code § 28-BC 1617

1617.1 Seismic load effect E and Em.

The seismic load effect, E, for use in the basic load combinations of Sections 1605.2 and 1605.3 shall be determined from Section 9.5.2.7 of ASCE 7. The maximum seismic load effect, Em, for use in the special seismic load combination of Section 1605.4 shall be the special seismic load determined from Section 9.5.2.7.1 of ASCE 7.

Exception: For structures designed using the simplified analysis procedure in Section 1617.5, the seismic load effects, E and Em, shall be determined from Section 1617.1.1.

1617.1.1 Seismic load effects, E and Em (for use in the simplified analysis procedure of Section 1617.5). Seismic load effects, E and Em, for use in the load combinations of Section 1605 for structures designed using the simplified analysis procedure in Section 1617.5 shall be determined as follows.

1617.1.1.1 Seismic load effect, E. Where the effects of gravity and the seismic ground motion are additive, seismic load, E, for use in Equations 16-5, 16-10 and 16-17, shall be defined by Equation 16-50:

$$E = rQE + 0.2SDSD \text{ (Equation 16-50)}$$

where: D = The effect of dead load. E = The combined effect of horizontal and vertical earthquake-induced forces. r = A redundancy coefficient obtained in accordance with Section 1617.2. QE = The effect of horizontal seismic forces. SDS = The design spectral response acceleration at short periods obtained from Section 1615.1.3 or 1615.2.5.

Where the effects of gravity and seismic ground motion counteract, the seismic load, E, for use in Equations 16-6, 16-12 and 16-18 shall be defined by Equation 16-51.

$$E = rQE - 0.2SDSD \text{ (Equation 16-51)}$$

Design shall use the load combinations prescribed in Section 1605.2 for strength or load and resistance factor

design methodologies or Section 1605.3 for allowable stress design methods.

1617.1.1.2 Maximum seismic load effect, E_m . The maximum seismic load effect, E_m , shall be used in the special seismic load combinations in Section 1605.4.

Where the effects of the seismic ground motion and gravity loads are additive, seismic load, E_m , for use in Equation 16-19, shall be defined by Equation 16-52.

$$E_m = W_0 Q E ; \text{pl } 0.2 S D S D \text{ (Equation 16-52)}$$

Where the effects of the seismic ground and gravity loads counteract, seismic load, E_m , for use in Equation 16-20, shall be defined by Equation 16-53.

$$E_m = W_0 Q E ; \text{ms } 0.2 S D S D \text{ (Equation 16-53)}$$

Where E , Q , S , D are as defined above and W_0 is the system overstrength factor as given in Table 1617.6.2.

The term $W_0 Q E$ need not exceed the maximum force that can be transferred to the element by the other elements of the lateral-force-resisting system.

Where allowable stress design methodologies are used with the special load combinations of Section 1605.4, design strengths are permitted to be determined using an allowable stress increase of 1.7 and a resistance factor, ϕ , of 1.0. This increase shall not be combined with increases in allowable stresses or load combination reductions otherwise permitted by this code or the material reference standard except that combination with the duration of load increases in Chapter 23 is permitted.

1617.2 Redundancy. The provisions given in Section 9.5.2.4 of ASCE 7 shall be used.

Exception: Structures designed using the simplified analysis procedure in Section 1617.5 shall use the redundancy provisions in Sections 1617.2.2.

1617.2.1 ASCE 7, Section 9.5.2.4.2. Modify Section 9.5.2.4.2 as follows:

9.5.2.4.2 Seismic Design Category D: For structures in Seismic Design Category D, r shall be taken as the largest of the values of r_x calculated at each story "x" of the structure in accordance with Equation 9.5.2.4.2-1 as follows:

$$r_x = 2 ; \text{ms}$$

$$20$$

$$r_x = 2 ; \text{ms}$$

$$r_{\text{maxx}} \leq A_x$$

where: r_{maxx} = The ratio of the design story shear resisted by the single element carrying the most shear force in the story to the total story shear, for a given direction of loading. For braced frames, the value of r_{maxx} is equal to the lateral force component in the most heavily loaded brace element divided by the story shear. For moment frames, r_{maxx} shall be taken as the maximum of the sum of the shears in any two adjacent columns in the plane of a moment frame divided by the story shear. For columns common to two bays with moment-resisting connections on opposite sides at the level under consideration, 70 percent of the shear in that column is permitted to be used in the column shear summation. For shear walls, r_{maxx} shall be taken equal to shear in the most heavily loaded wall or wall pier multiplied by $10/l_w$ (the metric coefficient is $3.3/l_w$), divided by the story shear, where l_w is the wall or wall pier length in feet

(m). The value of the ratio of $10/l_w$ need not to be greater than 1.0 for buildings of light-framed construction. For dual systems, r_{maxx} shall be taken as the maximum value defined above, considering all lateral-load-resisting elements in the story. The lateral loads shall be distributed to elements based on relative rigidities considering the interaction of the dual system. For dual systems, the value of γ_{atn} need not exceed 80 percent of the value calculated above. A_x = The floor area in square feet of the diaphragm level immediately above the story.

Calculation of r_{maxx} need not consider the effects of accidental torsion and any dynamic amplification of torsion required by Section 9.5.5.5.2.

For a story with a flexible diaphragm immediately above, r_{maxx} shall be permitted to be calculated from an analysis that assumes rigid diaphragm behavior and r_x , need not exceed 1.25.

The value r of need not exceed 1.5, which is permitted to be used for any structure. The value of r shall not be taken as less than 1.0.

Exception: For structures with seismic-force-resisting systems in any direction comprised solely of special moment frames, the seismic-force-resisting system shall be configured such that the value of r calculated in accordance with this section does not exceed 1.25. The calculated value of r is permitted to exceed this limit when the design story drift, D , as determined in Section 9.5.5.7, does not exceed D_a/r for any story where a is the allowable story drift from Table 9.5.2.8.

The metric equivalent of Equation 9.5.2.4.2-1 is:

$$r_x = 2 ; m_s$$

6.1

$$r_x = 2 ; m_s$$

$$r_{maxx} \leq A_x$$

Where: A_x is in square meters.

The value shall be permitted to be taken equal to 1.0 in the following circumstances:

1. When calculating displacements for dynamic amplification of torsion in Section 9.5.5.5.2.
2. When calculating deflections, drifts and seismic shear forces related to Sections 9.5.5.7.1 and 9.5.5.7.2.
3. For design calculations required by Section 9.5.2.6, 9.6 or 9.14.

For structures with vertical combinations of seismic-force-resisting systems, the value of γ_{atn} shall be determined independently for each seismic-force-resisting system. The redundancy coefficient of the lower portion shall not be less than the following:

$$r_L = R_L r_u$$

$$R_u$$

where: r_L = r of lower portion. R_L = R of lower portion. r_u = r of upper portion. R_u = R of upper portion.

1617.2.2 Redundancy (for use in the simplified analysis procedure of Section 1617.5). A redundancy coefficient, r , shall be assigned to each structure designed using the simplified analysis procedure in Section 1617.5 in accordance with this section. Buildings shall not exceed the limitations of Section 1616.6.1.

1617.2.2.1 Seismic Design Category B or C. For structures assigned to Seismic Design Category B or C (see Section 1616), the value of the redundancy coefficient is 1.0.

1617.2.2.2 Seismic Design Category D. For structures in Seismic Design Category D (see Section 1616), the redundancy coefficient, r , shall be taken as the largest of the values of, r_i , calculated at each story "i" of the structure in accordance with Equation 16-54, as follows:
[SEE graphical material in printed version]

where: r_{maxi} = The ratio of the design story shear resisted by the most heavily loaded single element in the story to the total story shear, for a given direction of loading. r_{maxi} = For braced frames, the value r_{maxi} , is equal to the horizontal force component in the most heavily loaded brace element divided by the story shear. r_{maxi} = For moment frames, r_{maxi} , shall be taken as the maximum of the sum of the shears in any two adjacent columns in a moment frame divided by the story shear. For columns common to two bays with moment-resisting connections on opposite sides at the level under consideration, it is permitted to use 70 percent of the shear in that column in the column shear summation. r_{maxi} = For shear walls, r_{maxi} , shall be taken as the maximum value of the product of the shear in the wall or wall pier and $10/l_w$ ($3.3/l_w$ for SI), divided by the story shear, where l_w is the length of the wall or wall pier in feet (m). In light-framed construction, the value of the ratio of $10/l_w$ need not be greater than 1.0. r_{maxi} = For dual systems, r_{maxi} , shall be taken as the maximum value defined above, considering all lateral-load-resisting elements in the story. The lateral loads shall be distributed to elements based on relative rigidities considering the interaction of the dual system. For dual systems, the value of r need not exceed 80 percent of the value calculated above. A_i = The floor area in square feet of the diaphragm level immediately above the story.

For a story with a flexible diaphragm immediately above, r_{maxi} shall be permitted to be calculated from an analysis that assumes rigid diaphragm behavior and need r not exceed 1.25.

The value, r , shall not be less than 1.0, and need not exceed 1.5.

Calculation of r_{maxi} need not consider the effects of accidental torsion and any dynamic amplification of torsion required by Section 9.5.5.5.2 of ASCE 7.

For structures with seismic-force-resisting systems in any direction comprised solely of special moment frames, the seismic-force-resisting system shall be configured such that the value of r calculated in accordance with this section does not exceed 1.25 for structures assigned to Seismic Design Category D, and does not exceed 1.1 for structures assigned to Seismic Design Category E or F.

Exception: The calculated r value of is permitted to exceed these limits when the design story drift, D , as determined in Section 1617.5.4, does not exceed D_a/r for any story where a is the allowable story drift from Table 1617.3.1.

The value r shall be permitted to be taken equal to 1.0 in the following circumstances:

1. When calculating displacements for dynamic amplification of torsion in Section 9.5.5.5.2 of ASCE 7.
2. When calculating deflections, drifts and seismic shear forces related to Sections 9.5.5.7.1 and 9.5.5.7.2 of ASCE 7.
3. For design calculations required by Section 1620, 1621 or 1622.

For structures with vertical combinations of seismic-force-resisting systems, the value, r , shall be determined independently for each seismic-force-resisting system. The redundancy coefficient of the lower portion shall not be less than the following:

[SEE graphical material in printed version]

where: $r_L = r$ of lower portion. $R_L = R$ of lower portion. $r_u = r$ of upper portion. $R_u = R$ of upper portion.

1617.3 Deflection and drift limits. The provisions given in Section 9.5.2.8 of ASCE 7 shall be used.

Exception: Structures designed using the simplified analysis procedure in Section 1617.5 shall meet the provisions in Section 1617.3.1.

1617.3.1 Deflection and drift limits (for use in the simplified analysis procedure of Section 1617.5). The design story drift D , as determined in Section 1617.5.4, shall not exceed the allowable story drift D_a , as obtained from Table 1617.3.1 for any story. All portions of the building shall be designed to act as an integral unit in resisting seismic forces unless separated structurally by a distance sufficient to avoid damaging contact under total deflection as determined in Section 1617.5.4. Buildings shall not exceed the limitations of Section 1616.6.1.

[SEE graphical material in printed version]

1617.3.2 Structural separations. All structures shall be separated from adjacent structures. When a structure adjoins a property line not common to a public way (typically side or rear lot lines), that structure shall also be set back from the property line by at least 1 inch (25 mm) for each 50 feet (15 240) of height. For structures in Seismic Design Category D, refer to Section 1620.4.5 for additional requirements.

Exception: Smaller separations or property line setbacks shall be permitted when justified by rational analysis based on maximum expected ground motions.

1617.4 Equivalent lateral force procedure for seismic design of buildings. The provisions given in Section 9.5.5 of ASCE 7 shall be used with modifications. Modify Table 9.5.5.3.2 "Values of Approximate Period Parameters C_t and x " to include the following: Structure Type $C_t x$ Dual systems where the building height exceeds 400 feet (122 m) 0.03 (0.07) a 0.75 Dual systems where the building height (h) exceeds 160 feet (48 768 mm) but is less than 400 feet (122 m) $0.02 + 0.01 \times [h - 160] / 240$ (0.055 + 0.015 $\times [h - 48.8] / 73.2$) a 0.75 a) Metric equivalents are shown in parenthesis.

1617.5 Simplified analysis procedure for seismic design of buildings. See Section 1616.6.1 for limitations on the use of this procedure. For purposes of this analytical procedure, a building is considered to be fixed at the base.

1617.5.1 Seismic base shear. The seismic base shear, V , in a given direction shall be determined in accordance with the following equation:

[SEE graphical material in printed version]

where: S_{DS} = The design elastic response acceleration at short period as determined in accordance with Section 1615.1.3. R = The response modification factor from Table 1617.6.2. W = The effective seismic weight of the structure, including the total dead load and other loads listed below:

1. In areas used for storage, a minimum of 25 percent of the reduced floor live load (floor live load in public garages and open parking structures need not be included).
2. Where an allowance for partition load is included in the floor load design, the actual partition weight or a minimum weight of 10 psf of floor area, whichever is greater (0.48 kN/m²).
3. Total weight of permanent operating equipment.
4. 20 percent of flat roof snow load where flat snow load exceeds 30 psf (1.44 kN/m²).

1617.5.2 Vertical distribution. The forces at each level shall be calculated using the following equation:
[SEE graphical material in printed version]

where: w_x = The portion of the effective seismic weight of the structure, W , at Level x .

1617.5.3 Horizontal distribution. Diaphragms constructed of untopped steel decking or wood structural panels or similar light-framed construction are permitted to be considered as flexible.

1617.5.4 Design drift. For the purposes of Sections 1617.3.1 and 1620.4.6, the design story drift, D , shall be taken as 1 percent of the story height unless a more exact analysis is provided.

1617.6 Seismic-force-resisting systems. The provisions given in Section 9.5.2.2 of ASCE 7 shall be used except as modified in Section 1617.6.1.

Exception: For structures designed using the simplified analysis procedure in Section 1617.5, the provisions of Section 1617.6.2 shall be used.

1617.6.1 Modifications to ASCE 7, Section 9.5.2.2.

1617.6.1.1 ASCE 7, Table 9.5.2.2. Delete ASCE Table 9.5.2.2 and replace with Table 1617.6.2.

1617.6.1.2 ASCE 7, Section 9.5.2.2.2.1. Modify Section 9.5.2.2.2.1 by adding Exception 3 as follows:

3. The following two-stage static analysis procedure is permitted to be used for structures having a flexible upper portion supported on a rigid lower portion where both portions of the structure considered separately can be classified as being regular, the average story stiffness of the lower portion is at least 10 times the average story stiffness of the upper portion and the period of the entire structure is not greater than 1.1 times the period of the upper portion considered as a separate structure fixed at the base:

3.1. The flexible upper portion shall be designed as a separate structure using the appropriate values of R and r .

3.2. The rigid lower portion shall be designed as a separate structure using the appropriate values of R and r . The reactions from the upper portion shall be those determined from the analysis of the upper portion amplified by the ratio of the R/r of the upper portion over R/r of the lower portion. This ratio shall not be less than 1.0.

1617.6.1.3 ASCE 7, Section 9.5.2.2.4.3. Modify Section 9.5.2.2.4.3 by changing exception to read as follows:

Exception: Reinforced concrete frame members not designed as part of the seismic-force-resisting system and slabs shall comply with Section 21.11 of Ref. 9.9-1.

1617.6.2 Seismic-force-resisting systems (for use in the Simplified analysis procedure of Section 1617.5). The basic lateral and vertical seismic-force-resisting systems shall conform to one of the types indicated in Table 1617.6.2 subject to the limitations on height indicated in the table based on seismic design category as determined in Section 1616. The appropriate response modification coefficient, R , system over-strength factor, W_0 , and deflection amplification factor, C_d , indicated in Table 1617.6.2 shall be used in determining the base shear, element design forces and design story drift. For seismic-force-resisting systems not listed in Table 1617.6.2, analytical and test data shall be submitted that establish the dynamic characteristics and demonstrate the lateral-force resistance and energy dissipation capacity to be equivalent to the structural systems listed in Table 1617.6.2 for equivalent response modification coefficient, R , system over-strength coefficient, W_0 , and deflection amplification factor, C_d , values. Buildings shall not exceed the limitations of Section 1616.6.1.3.] Table 1617.6.2 Design Coefficient and Factors for Basic Seismic-Force-Resisting Systems Basic Seismic Force-Resisting System Detailing Reference Section Response Modification Coefficient, R_a System Over-strength Factor, W_0 Deflection Amplification Factor, C_d Structural System Limitations and Building Height (ft) Limitations Seismic Design Category B C Dd 1] Basic Seismic Force-Resisting System Detailing Reference Section

Response Modification Coefficient, R_a System Over-strength Factor, W_o Deflection Amplification Factor, C_{db} Structural System Limitations and Building Height (ft) Limitations

Seismic Design Category B C Dd 2]A. Bearing Wall Systems

1. Ordinary steel braced frames in light-frame construction 2211 4 2 31/2 NL NL 35i
2. Special reinforced concrete shear walls 1910.2.4 5 21/2 5 NL NL NL
3. Ordinary reinforced concrete shear walls 1910.2.3 4 21/2 4 NL NL NP
4. Detailed plain concrete shear walls 1910.2.2 21/2 21/2 2 NL NP NP
5. Ordinary plain concrete shear walls 1910.2.1 11/2 21/2 11/2 NL NP NP
6. Special reinforced masonry shear walls 1.13.2.2.5j 5 21/2 31/2 NL NL NL
7. Intermediate reinforced masonry shear walls 1.13.2.2.4j 31/2 21/2 21/4 NL NL NP
8. Ordinary reinforced masonry shear walls 1.13.2.2.3j 21/2 21/2 13/4 NL NL NP
9. Detailed plain masonry shear walls 1.13.2.2.2j 2 21/2 13/4 NL NP NP
10. Ordinary plain masonry shear walls 1.13.2.2.1j 11/2 21/2 11/4 NL NP NP
11. Light-framed walls sheathed with wood structural panels rated for shear resistance or steel sheets 2306.4.1/2211 61/2 3 4 NL NL 65
12. Light-framed walls with shear panels of all other materials 2306.4.5/2211 2 21/2 2 NL NL 35
13. Light-framed wall systems using flat strap bracing 2306/2211 4 2 31/2 NL NL 65
14. Ordinary plain prestressed masonry shear walls 2106.1.1.1 11/2 21/2 11/4 NL NP NP
15. Intermediate prestressed masonry shear walls 2106.1.1.2, 1.13.2.2.4j 21/2 21/2 21/2 NL 35 NP
16. Special prestressed masonry shear walls 2106.1.1.3, 1.13.2.2.5j 41/2 21/2 31/2 NL 35 35

B. Building Frame System

1. Steel eccentrically braced frames, moment resisting connections at columns away from links (15)k 8 2 4 NL NL NL
2. Steel eccentrically braced frames, non-moment resisting connections at columns away from links (15)k 7 2 4 NL NL NL
3. Special steel concentrically braced frames (13)k 6 2 5 NL NL NL
4. Ordinary steel concentrically braced frames (14)k 5 2 41/2 NL NL 35i
5. Special reinforced concrete shear walls 1910.2.4 6 21/2 5 NL NL NL
6. Ordinary reinforced concrete shear walls 1910.2.3 5 21/2 41/2 NL NL NP
7. Detailed plain concrete shear walls 1910.2.2 3 21/2 21/2 NL NP NP
8. Ordinary plain concrete shear walls 1910.2.1 2 21/2 2 NL NP NP
9. Composite eccentrically braced frames (14)l 8 2 4 NL NL NL
10. Composite concentrically braced frames (13)l 5 2 41/2 NL NL NL
11. Ordinary composite braced frames (12)l 3 2 3 NL NL NP
12. Composite steel plate shear walls (17)l 61/2 21/2 51/2 NL NL NL
13. Special composite reinforced concrete shear walls with steel elements (16)l 6 21/2 5 NL NL NL
14. Ordinary composite reinforced concrete shear walls with steel elements (15)l 5 21/2 41/4 NL NL NP
15. Special reinforced masonry shear walls 1.13.2.2.5j 51/2 21/2 4 NL NL NL
16. Intermediate reinforced masonry shear walls 1.13.2.2.4j 4 21/2 4 NL NL NP
17. Ordinary reinforced masonry shear walls 1.13.2.2.3j 3 21/2 21/2 NL NL NP
18. Detailed plain masonry shear walls 1.13.2.2.2j 21/2 21/2 21/4 NL 160 NP
19. Ordinary plain masonry shear walls 1.13.2.2.1j 11/2 21/2 11/4 NL NP NP
20. Light-framed walls sheathed with wood structural panels rated for shear resistance or steel sheets 2306.4.1/2211 7 21/2 41/4 NL NL 65
21. Light-framed walls with shear panels of all other materials 2306.4.5/2211 21/2 21/2 21/2 NL 35
22. Ordinary plain prestressed masonry shear walls 2106.1.1.1 11/2 21/2 11/4 NL NP NP
23. Intermediate prestressed masonry shear walls 2106.1.1.2, 1.13.2.2.4j 3 21/2 21/2 NL 35 NP
24. Special prestressed masonry shear walls 2106.1.1.3, 1.13.2.2.5j 41/2 21/2 4 NL 35 35

C. Moment Resisting Frame Systems

1. Special steel moment frames (9)k 8 3 51/2 NL NL NL
2. Special steel truss moment frames (12)k 7 3 51/2 NL NL NL
3. Intermediate steel moment frames (10)k 41/2 3 4 NL NL 35g
4. Ordinary steel moment frames (11)k 31/2 3 3 NL NL NPg,h
5. Special reinforced concrete moment frames (21.1)m 8 3 51/2 NL NL NL
6. Intermediate reinforced concrete moment frames (21.1)m 5 3 41/2 NL NL NP
7. Ordinary reinforced concrete moment frames (21.1)m 3 3 21/2 NL NP NP
8. Special composite moment frames (9)l 8 3 51/2 NL NL NL
9. Intermediate composite moment frames (10)l 5 3 41/2 NL NL NP
10. Composite partially restrained moment frames (8)l 6 3 51/2 NL NL 100
11. Ordinary composite moment frames (11)l 3 3 21/2 NL NP NP
12. Special masonry moment frames 2108 51/2 3 5 NL NL NL

D. Dual Systems with Special Moment Frames Capable of Resisting at Least 25% of Prescribed Seismic Forces

1. Steel eccentrically braced frames, moment resisting connections at columns away from links (15)k 8 21/2 4 NL NL NL
2. Steel eccentrically braced frames, non-moment resisting connections at columns away from links (15)k 7 21/2 4 NL NL NL
3. Special steel concentrically braced frames (13)k 8 21/2 61/2 NL NL NL
4. Special reinforced concrete shear walls 1910.2.4 8 21/2 61/2 NL NL NL
5. Ordinary reinforced concrete shear walls 1910.2.3 7 21/2 6 NL NL NP
6. Composite eccentrically braced frames (14)l 8 21/2 4 NL NL NL
7. Composite concentrically braced frames (13)l 6 21/2 5 NL NL NL
8. Composite steel plate shear walls (17)l 8 21/2 61/2 NL NL NL
9. Special composite reinforced concrete shear walls with steel elements (16)l 8 21/2 61/2 NL NL NL
10. Ordinary composite reinforced concrete shear walls with steel elements (15)l 7 21/2 6 NL NL NP
11. Special reinforced masonry shear walls 1.13.2.2.5j 7 3 61/2 NL NL NL
12. Intermediate reinforced masonry shear walls 1.13.2.2.4j 6 21/2 5 NL NL NL
13. Ordinary steel concentrically braced frames (14)k 6 21/2 5 NL NL NL

E. Dual Systems with Intermediate Moment Frames Capable of Resisting at Least

25% of Prescribed Seismic Forces 1. Special steel concentrically braced frames (13)k 4 1/2 2 1/2 4 1/2 NL NL 35 2. Special reinforced concrete shear walls 1910.2.4 6 2 1/2 5 NL NL NL 3. Ordinary reinforced masonry shear walls 1.13.2.2.3j 3 3 2 1/2 NL NL NP 4. Intermediate reinforced masonry shear walls 1.13.2.2.4j 5 3 4 1/2 NL NL NP 5. Composite concentrically braced frames (13)l 5 2 1/2 4 1/2 NL NL NL 6. Ordinary composite braced frames (12)l 4 2 1/2 3 NL NL NP 7. Ordinary composite reinforced concrete shear walls with steel elements (15)l 5 3 4 1/2 NL NL NP 8. Ordinary steel concentrically braced frames (14)k 5 2 1/2 4 1/2 NL NL NL 9. Ordinary reinforced concrete shear walls 1910.2.3 5 1/2 2 1/2 4 1/2 NL NL NP F. Shear Wall-frame Interactive System with Ordinary Moment Frames and Ordinary Reinforced Concrete Shear Walls (21.1)m 1910.2.3 5 1/2 2 1/2 5 NL NP NP G. Inverted Pendulum Systems and Cantilevered Column Systems 1. Cantilevered Column System 1602.1 2 1/2 2 2 1/2 NL NL 35 2. Special steel moment frames (9)k 2 1/2 2 2 1/2 NL NL NL 3. Ordinary steel moment frames (11)k 1 1/4 2 2 1/2 NL NL NP 4. Special reinforced concrete moment frames (21.1)m 2 1/2 2 1 1/4 NL NL NL H. Structural Steel Systems Not Specifically Detailed for Seismic Resistance AISC-335 AISC-LRFD AISC-HSS AISI 3 3 3 NL NL NP For SI: 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 KN/m². Notes: a. Response modification coefficient, R, for use throughout the standard. Note R reduces forces to a strength level not an allowable stress level. b. Deflection amplification factor, Cd. c. NL = Not Limited and NP = Not Permitted. For metric units use 30 m for 100 ft and use 50 m for 160 ft. Heights are measured for the base of the structure as defined in ASCE 7 section 9.2.1.d. See ASCE 7 section 9.5.2.2.4.1 for a description of building systems limited to buildings with a height of 240 ft (75 m) or less. e. Ordinary moment frame is permitted to be used in lieu of intermediate moment frame in Seismic Design Categories B and C. f. The tabulated value of the overstrength factor, W₀, may be reduced by subtracting 1/2 for structures with flexible diaphragms but shall not be taken as less than 2.0 for any structure. g. Steel ordinary moment frames and intermediate moment frames are permitted in single-story buildings up to a height of 60 ft, when the moment joints of field connections are constructed of bolted end plates and the dead load of the roof does not exceed 15 psf. h. Steel ordinary moment frames are permitted in buildings up to a height of 35 ft when the dead load of the walls, floors, and roofs does not exceed 15 psf. i. Steel ordinary concentrically braced frames are permitted in single-story buildings up to a height of 60 ft when the dead load of the roof does not exceed 15 psf and in penthouse structures. j. ACI 530/ASCE 5/TMS 402 section number. k. AISC 341 Part I or Part III section number. l. AISC 341 Part II section number. m. ACI 318 section number.

1617.6.2.1 Dual systems. For a dual system, the moment frame shall be capable of resisting at least 25 percent of the design forces. The total seismic force resistance is to be provided by the combination of the moment frame and the shear walls or braced frames in proportion to their stiffness.

1617.6.2.2 Combination along the same axis. For other than dual systems and shear wall-frame interactive systems, where a combination of different structural systems is utilized to resist lateral forces in the same direction, the value, R, used for design in that direction shall not be greater than the least value for any of the systems utilized in that same direction.

Exception: For light-framed, flexible diaphragm buildings, of Seismic Use Group I and two stories or less in height: Resisting elements are permitted to be designed using the least value of R for the different structural systems found on each independent line of resistance. The value of R used for design of diaphragms in such structures shall not be greater than the least value for any of the systems utilized in that same direction.

1617.6.2.3 Combinations of framing systems. Where different seismic-force-resisting systems are used along the two orthogonal axes of the structure, the appropriate response modification coefficient, R, system over-strength factor, W₀, and deflection amplification factor, Cd, indicated in Table 1617.6.2 for each system shall be used.

1617.6.2.3.1 Combination framing factor. The response modification coefficient, R, in the direction under consideration at any story shall not exceed the lowest response modification coefficient, R, for the seismic-force-resisting system in the same direction considered above that story, excluding penthouses. The system over-strength factor, W₀, in the direction under consideration at any story, shall not be less than the largest value of this factor for the seismic-force-resisting system in the same direction considered above that story. In structures assigned to Seismic Design Category D, if a system with a response modification coefficient, R, with a value less than five is used

as part of the seismic-force-resisting system in any direction of the structure, the lowest such value shall be used for the entire structure.

Exceptions:

1. Detached one- and two-family dwellings constructed of light framing.
2. The response modification coefficient, R , and system over-strength factor, W_0 , for supported structural systems with a weight equal to or less than 10 percent of the weight of the structure are permitted to be determined independent of the values of these parameters for the structure as a whole.
3. The following two-stage static analysis procedure is permitted to be used for structures having a flexible upper portion supported on a rigid lower portion where both portions of the structure considered separately can be classified as being regular, the average story stiffness of the lower portion is at least 10 times the average story stiffness of the upper portion and the period of the entire structure is not greater than 1.1 times the period of the upper portion considered as a separate structure fixed at the base:

3.1. The flexible upper portion shall be designed as a separate structure using the appropriate values of R and r .

3.2. The rigid lower portion shall be designed as a separate structure using the appropriate values of R and r . The reactions from the upper portion shall be those determined from the analysis of the upper portion amplified by the ratio of, R/r , of the upper portion over, R/r , of the lower portion. This ratio shall not be less than 1.0.

1617.6.2.3.2 Combination framing detailing requirements. The detailing requirements of Section 1620 required by the higher response modification coefficient, R , shall be used for structural components common to systems having different response modification coefficients.

1617.6.2.4 System limitations for Seismic Design Category D. In addition to the system limitation indicated in Table 1617.6.2, structures assigned to Seismic Design Category D shall be subject to the following.

1617.6.2.4.1 Interaction effects. Moment-resisting frames that are enclosed or adjoined by stiffer elements not considered to be part of the seismic-force-resisting system shall be designed so that the action or failure of those elements will not impair the vertical load and seismic-force-resisting capability of the frame. The design shall consider and provide for the effect of these rigid elements on the structural system at deformations corresponding to the design story drift, D , as determined in Section 1617.5.4. In addition, the effects of these elements shall be considered when determining whether a structure has one or more of the irregularities defined in Section 1616.5.1.

1617.6.2.4.2 Deformational compatibility. Every structural component not included in the seismic-force-resisting system in the direction under consideration shall be designed to be adequate for vertical load-carrying capacity and the induced moments and shears resulting from the design story drift, D , as determined in accordance with Section 1617.5.4. Where allowable stress design is used, D shall be computed without dividing the earthquake force by 1.4. The moments and shears induced in components that are not included in the seismic-force-resisting system in the direction under consideration shall be calculated including the stiffening effects of adjoining rigid structural and nonstructural elements.

Exception: Reinforced concrete frame members not designed as part of the seismic-force-resisting system shall comply with Section 21.11 of ACI 318.

1617.6.2.4.3 Special moment frames. A special moment frame that is used but not required by Table 1617.6.2 is permitted to be discontinued and supported by a stiffer system with a lower response modification coefficient, R , provided the requirements of Sections 1620.2.3 and 1620.4.1 are met. Where a special moment frame is required by Table 1617.6.2, the frame shall be continuous to the foundation.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1617.6.2 table amended L.L. 8/2008 § 125, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 16: STRUCTURAL DESIGN
SECTION BC 1618: DYNAMIC ANALYSIS PROCEDURE FOR THE SEISMIC DESIGN OF BUILDINGS

NYC Administrative Code § 28-BC 1618

1618.1 Dynamic analysis procedures.

The following dynamic analysis procedures are permitted to be used in lieu of the equivalent lateral force procedure of Section 1617.4:

1. Modal Response Spectral Analysis.
2. Linear Time-history Analysis.
3. Nonlinear Time-history Analysis. The dynamic analysis procedures listed above shall be performed in accordance with the requirements of Sections 9.5.6, 9.5.7 and 9.5.8, respectively, of ASCE 7.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE

Chapter 16: STRUCTURAL DESIGN

SECTION BC 1619: EARTHQUAKE LOADS SOIL-STRUCTURE INTERACTION EFFECTS

NYC Administrative Code § 28-BC 1619

1619.1 Analysis procedure.

If soil-structure interaction is considered in the determination of seismic design forces and corresponding displacements in the structure, the procedure given in Section 9.5.9 of ASCE 7 shall be used.



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Chapter 16: STRUCTURAL DESIGN
SECTION BC 1620: EARTHQUAKE LOADS-DESIGN, DETAILING REQUIREMENTS AND STRUCTURAL
COMPONENT LOAD EFFECTS

NYC Administrative Code § 28-BC 1620

1620.1 Structural component design and detailing.

The design and detailing of the components of the seismic-force-resisting system shall comply with the requirements of Section 9.5.2.6 of ASCE 7 in addition to the nonseismic requirements of this code except as modified in Sections 1620.1.1, 1620.1.2 and 1620.1.3.

Exception: For structures designed using the simplified analysis procedure in Section 1617.5, the provisions of Sections 1620.2 through 1620.5 shall be used.

1620.1.1 ASCE 7, Section 9.5.2.6.2.5. Section 9.5.2.6.2.5 of ASCE 7 shall not apply.

1620.1.2 ASCE 7, Section 9.5.2.6.2.11. Modify ASCE 7, Section 9.5.2.6.2.11, to read as follows:

9.5.2.6.2.11 Elements supporting discontinuous walls or frames. Columns, beams, trusses or slabs supporting discontinuous walls or frames of structures and the connections of the discontinuous element to the supporting member having plan irregularity Type 4 of Table 9.5.2.3.2 or vertical irregularity Type 4 of Table 9.5.2.3.3 shall have the design strength to resist the maximum axial force that can develop in accordance with the special seismic loads of Section 9.5.2.7.1.

Exceptions:

1. The quantity E in Section 9.5.2.7.1 need not exceed the maximum force that can be transmitted to the element by the lateral-force-resisting system at yield.

2. Concrete slabs supporting light-framed walls.

1620.1.3 ASCE 7, Section 9.5.2.6.3. Modify ASCE 7, Section 9.5.2.6.3, to read as follows:

9.5.2.6.3 Seismic Design Category C. Structures assigned to Category C shall conform to the requirements of Section 9.5.2.6.2 for Category B and to the requirements of this section. Structures that have plan structural irregularity Type 1a or 1b of Table 9.5.2.3.2 along both principal plan axes, or plan structural irregularity Type 5 of Table 9.5.2.3.2, shall be analyzed for seismic forces in compliance with Section 9.5.2.5.2.2. When the square root of the sum of the squares method of combining directional effects is used, each term computed shall be assigned the sign that will yield the most conservative result.

The orthogonal combination procedure of Section 9.5.2.5.2.2, Item a, shall be required for any column or wall that forms part of two or more intersecting seismic-force-resisting systems and is subjected to axial load due to seismic forces acting along either principal plan axis equaling or exceeding 20 percent of the axial load design strength of the column or wall.

1620.2 Structural component design and detailing (for use in the simplified analysis procedure of Section 1617.5). The design and detailing of the components of the seismic-force-resisting system for structures designed using the simplified analysis procedure in Section 1617.5 shall comply with the requirements of this section in addition to the nonseismic requirements of this code. Buildings shall not exceed the limitations of Section 1616.6.1.

Exception: Structures assigned to Seismic Design Category B (see Section 1616) shall conform to Sections 1620.2.1 through 1620.2.10.

1620.2.1 Second-order load effects. Where ρ exceeds 0.10 as determined in Section 9.5.5.7.2 in ASCE 7, second-order load effects shall be included in the evaluation of component and connection strengths.

1620.2.2 Openings. Where openings occur in shear walls, diaphragms or other plate-type elements, reinforcement at the edges of the openings shall be designed to transfer the stresses into the structure. The edge reinforcement shall extend into the body of the wall or diaphragm a distance sufficient to develop the force in the reinforcement.

1620.2.3 Discontinuities in vertical system. Structures with a discontinuity in lateral capacity, vertical irregularity Type 5, as defined in Table 1616.5.1.2, shall not be over two stories or 30 feet (9144 mm) in height where the "weak" story has a calculated strength of less than 65 percent of the story above.

Exception: Where the "weak" story is capable of resisting a total seismic force equal to the over-strength factor, W_0 , as given in Table 1617.6.2, multiplied by the design force prescribed in Section 1617.5, the height limitation does not apply.

1620.2.4 Connections. All parts of the structure, except at separation joints, shall be interconnected and the connections shall be designed to resist the seismic force, F_p , induced by the parts being connected. Any smaller portion of the structure shall be tied to the remainder of the structure for the greater of:

$$F_p = 0.133 \text{ SDS } w_p \text{ (Equation 16-58)}$$

or

$F_p = 0.05 w_p$ (Equation 16-59) SDS = The design, 5-percent damped, spectral response acceleration at short periods as defined in Section 1615. w_p = The weight of the smaller portion.

A positive connection for resisting a horizontal force acting parallel to the member shall be provided for each beam, girder or truss to its support for a force not less than 5 percent of the dead plus live load reaction.

1620.2.5 Diaphragms. Permissible deflection shall be that deflection up to which the diaphragm and any attached distributing or resisting element will maintain its structural integrity under design load conditions, such that the resisting element will continue to support design loads without danger to occupants of the structure.

Floor and roof diaphragms shall be designed to resist F_p as follows:

$$F_p = 0.2 I_E S_D S_w p_l V_{px} \text{ (Equation 16-60)}$$

where: F_p =The seismic force induced by the parts. I_E =Occupancy importance factor (Table 1604.5). S_D =The short-period site design spectral response acceleration coefficient (Section 1615). w_p =The weight of the diaphragm and other elements of the structure attached to the diaphragm. V_{px} =The portion of the seismic shear force at the level of the diaphragm, required to be transferred to the components of the vertical seismic-force-resisting system because of the offsets or changes in stiffness of the vertical components above or below the diaphragm.

Diaphragms shall provide for both shear and bending stresses resulting from these forces. Diaphragms shall have ties or struts to distribute the wall anchorage forces into the diaphragm. Diaphragm connections shall be positive, mechanical or welded-type connections.

1620.2.6 Collector elements. Collector elements shall be provided that are capable of transferring the seismic forces originating in other portions of the structure to the element providing the resistance to those forces. Collector elements, splices and their connections to resisting elements shall have the design strength to resist the special load combinations of Section 1605.4.

Exception: In structures or portions thereof braced entirely by light-framed shear walls, collector elements, splices and connections to resisting elements need only have the strength to resist the load combinations of Section 1605.2 or 1605.3.

1620.2.7 Bearing walls and shear walls. Bearing walls and shear walls and their anchorage shall be designed for an out-of-plane force, F_p , that is the greater of 10 percent of the weight of the wall, or the quantity given by Equation 16-61:

$$F_p = 0.40 I_E S_D S_w w \text{ (Equation 16-61)}$$

where: I_E =Occupancy importance factor (Table 1604.5). S_D =The short-period site design spectral response acceleration coefficient (Section 1615.1.3 or 1615.2.5). w =The weight of the wall.

In addition, concrete and masonry walls shall be anchored to the roof and floors and members that provide lateral support for the wall or that are supported by the wall. The anchorage shall provide a direct connection between the wall and the supporting construction capable of resisting the greater of the force, F_p , as given by Equation 16-61 or $(400 S_D I_E)$ pounds per linear foot of wall. For SI: $5838 S_D I_E$ N/m. Walls shall be designed to resist bending between anchors where the anchor spacing exceeds 4 feet (1219 mm). Parapets shall conform to the requirements of Section 9.6.2.2 of ASCE 7.

1620.2.8 Inverted pendulum-type structures. Supporting columns or piers of inverted pendulum-type structures shall be designed for the bending moment calculated at the base determined using the procedures given in Section 1617.4 and varying uniformly to a moment at the top equal to one-half the calculated bending moment at the base.

1620.2.9 Elements supporting discontinuous walls or frames. Columns or other elements subject to vertical reactions from discontinuous walls or frames of structures having plan irregularity Type 4 of Table 1616.5.1.1 or vertical irregularity Type 4 of Table 1616.5.1.2 shall have the design strength to resist special seismic load combinations of Section 1605.4. The connections from the discontinuous walls or frames to the supporting elements need not have the design strength to resist the special seismic load combinations of Section 1605.4.

Exceptions:

1. The quantity, E_m , in Section 1617.1.1.2 need not exceed the maximum force that can be transmitted to the

element by the lateral-force-resisting system at yield.

2. Concrete slabs supporting light-framed walls.

1620.2.10 Direction of seismic load. The direction of application of seismic forces used in design shall be that which will produce the most critical load effect in each component. The requirement will be deemed satisfied if the design seismic forces are applied separately and independently in each of the two orthogonal directions.

1620.3 Seismic Design Category C. Structures assigned to Seismic Design Category C (see Section 1616) shall conform to the requirements of Section 1620.2 for Seismic Design Category B and to Sections 1620.3.1 through 1620.3.2.

1620.3.1 Anchorage of concrete or masonry walls. Concrete or masonry walls shall be anchored to floors and roofs and members that provide out-of-plane lateral support for the wall or that are supported by the wall. The anchorage shall provide a positive direct connection between the wall and floor or roof capable of resisting the horizontal forces specified in Equation 16-62 for structures with flexible diaphragms or in Section 9.6.1.3 of ASCE 7 (using a_p of 1.0 and R_p of 2.5) for structures with diaphragms that are not flexible.

$$F_p = 0.8 SDS IE w_w \text{ (Equation 16-62)}$$

where: F_p = The design force in the individual anchors. IE = Occupancy importance factor in accordance with Section 1616.2. SDS = The design earthquake spectral response acceleration at short period in accordance with Section 1615.1.3. w_w = The weight of the wall tributary to the anchor.

Diaphragms shall be provided with continuous ties or struts between diaphragm chords to distribute these anchorage forces into the diaphragms. Where added chords are used to form subdiaphragms, such chords shall transmit the anchorage forces to the main cross ties. The maximum length-to-width ratio of the structural subdiaphragm shall be 2 1/2 to 1. Connections and anchorages capable of resisting the prescribed forces shall be provided between the diaphragm and the attached components. Connections shall extend into the diaphragms a sufficient distance to develop the force transferred into the diaphragm.

The strength design forces for steel elements of the wall anchorage system shall be 1.4 times the force otherwise required by this section.

In wood diaphragms, the continuous ties shall be in addition to the diaphragm sheathing. Anchorage shall not be accomplished by use of toenails or nails subject to withdrawal, nor shall wood ledgers or framing be used in cross-grain bending or cross-grain tension. The diaphragm sheathing shall not be considered effective as providing the ties or struts required by this section.

In metal deck diaphragms, the metal deck shall not be used as the continuous ties required by this section in the direction perpendicular to the deck span.

Diaphragm-to-wall anchorage using embedded straps shall be attached to or hooked around the reinforcing steel or otherwise terminated so as to directly transfer force to the reinforcing steel.

1620.3.2 Direction of seismic load. For structures that have plan structural irregularity Type 1a or 1b of Table 1616.5.1.1 along both principal plan axes, or plan structural irregularity Type 5 in Table 1616.5.1.1, the critical direction requirement of Section 1620.2.10 shall be deemed satisfied if components and their foundations are designed for the following orthogonal combination of prescribed loads.

One hundred percent of the forces for one direction plus 30 percent of the forces for the perpendicular direction. The combination requiring the maximum component strength shall be used. Alternatively, the effects of the two

orthogonal directions are permitted to be combined on a square root of the sum of the squares (SRSS) basis. When the SRSS method of combining directional effects is used, each term computed shall be assigned the sign that will result in the most conservative result.

The orthogonal combination procedure above shall be required for any column or wall that forms part of two or more intersecting seismic-force-resisting systems and is subjected to axial load due to seismic forces acting along either principal plan axis equaling or exceeding 20 percent of the axial load design strength of the column or wall.

1620.4 Seismic Design Category D. Structures assigned to Seismic Design Category D shall conform to the requirements of Section 1620.3 for Seismic Design Category C and to Sections 1620.4.1 through 1620.4.6.

1620.4.1 Plan or vertical irregularities. For buildings having a plan structural irregularity of Type 1a, 1b, 2, 3 or 4 in Table 1616.5.1.1 or a vertical structural irregularity of Type 4 in Table 1616.5.1.2, the design forces determined from Section 1617.5 shall be increased 25 percent for connections of diaphragms to vertical elements and to collectors, and for connections of collectors to the vertical elements.

Exception: When connection design forces are determined using the special seismic load combinations of Section 1605.4

1620.4.2 Vertical seismic forces. In addition to the applicable load combinations of Section 1605, horizontal cantilever and horizontal prestressed components shall be designed to resist a minimum net upward force of 0.2 times the dead load.

1620.4.3 Diaphragms. Floor and roof diaphragms shall be designed to resist design seismic forces determined in accordance with Equation 16-63 as follows:
[SEE graphical material in printed version]

where: F_i = The design force applied to Level i . F_{px} = The diaphragm design force. w_i = The weight tributary to Level i . w_{px} = The weight tributary to the diaphragm at Level x .

The force determined from Equation 16-63 need not exceed $0.4SDSIEw_{px}$ but shall not be less than $0.2SDSIEw_{px}$ where SDS is the design spectral response acceleration at short period determined in Section 1615.1.3 and IE is the occupancy importance factor determined in Section 1616.2. When the diaphragm is required to transfer design seismic force from the vertical-resisting elements above the diaphragm to other vertical-resisting elements below the diaphragm due to offsets in the placement of the elements or to changes in relative lateral stiffness in the vertical elements, these forces shall be added to those determined from Equation 16-63 and to the upper and lower limits on that equation.

1620.4.4 Collector elements. Collector elements shall be provided that are capable of transferring the seismic forces originating in other portions of the structure to the element providing resistance to those forces.

Collector elements, splices and their connections to resisting elements shall resist the forces determined in accordance with Equation 16-63. In addition, collector elements, splices and their connections to resisting elements shall have the design strength to resist the earthquake loads as defined in the special load combinations of Section 1605.4.

Exception: In structures, or portions thereof, braced entirely by light-framed shear walls, collector elements, splices and their connections to resisting elements need only be designed to resist forces in accordance with Equation 16-63.

1620.4.5 Building separations. All structures shall be separated from adjoining structures. Separations shall allow for the displacement d_M . Adjacent buildings on the same property shall be separated by at least d_{MT} where
[SEE graphical material in printed version]
and d_{M1} and d_{M2} are the displacements of the adjacent buildings.

When a structure adjoins a property line not common to a public way, that structure shall also be set back from the property line by at least the displacement, dM , of that structure.

Exception: Smaller separations or property line setbacks shall be permitted when justified by rational analyses based on maximum expected ground motions.

1620.4.6 Anchorage of concrete or masonry walls to flexible diaphragms. In addition to the requirements of Section 1620.3.1, concrete and masonry walls shall be anchored to flexible diaphragms based on the following:

1. When elements of the wall anchorage system are not loaded concentrically or are not perpendicular to the wall, the system shall be designed to resist all components of the forces induced by the eccentricity.

2. When pilasters are present in the wall, the anchorage force at the pilasters shall be calculated considering the additional load transferred from the wall panels to the pilasters. The minimum anchorage at a floor or roof shall not be less than that specified in Item 1.

1620.5 Reserved.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1620.3.1 open par amended L.L. 8/2008 § 126, eff. July 1, 2008.



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Chapter 16: STRUCTURAL DESIGN
SECTION BC 1621: ARCHITECTURAL, MECHANICAL AND ELECTRICAL COMPONENT SEISMIC DESIGN
REQUIREMENTS

NYC Administrative Code § 28-BC 1621

1621.1 Component design.

Architectural, mechanical, electrical and nonstructural systems, components and elements permanently attached to structures, including supporting structures and attachments (hereinafter referred to as "components"), and nonbuilding structures that are supported by other structures, shall meet the requirements of Section 9.6 of ASCE 7 except as modified in Sections 1621.1.1, 1621.1.2 and 1621.1.3, excluding Section 9.6.3.11.2, of ASCE 7, as amended in this section.

1621.1.1 ASCE 7, Section 9.6.3.11.2. Section 9.6.3.11.2 of ASCE 7 shall not apply.

1621.1.2 ASCE 7, Section 9.6.2.8.1. Modify ASCE 7, Section 9.6.2.8.1, to read as follows:

9.6.2.8.1 General. Partitions that are tied to the ceiling and all partitions greater than 6 feet (1829 mm) in height shall be laterally braced to the building structure. Such bracing shall be independent of any ceiling splay bracing. Bracing shall be spaced to limit horizontal deflection at the partition head to be compatible with ceiling deflection requirements as determined in Section 9.6.2.6 for suspended ceilings and Section 9.6.2.6 for other systems.

Exception: Partitions not taller than 9 feet (2743 mm) when the horizontal seismic load does not exceed 5 psf (0.240 kN/m²) required in Section 1607.13.

1621.1.3 ASCE 7, Section 9.6.3.13. Modify ASCE 7, Section 9.6.3.13, to read as follows:

9.6.3.13 Mechanical equipment, attachments and supports. Attachments and supports for mechanical equipment not covered in Sections 9.6.3.8 through 9.6.3.12 or Section 9.6.3.16 shall be designed to meet the force and displacement provisions of Section 9.6.1.3 and 9.6.1.4 and the additional provisions of this section. In addition to their attachments and supports, such mechanical equipment designated as having an $I_p = 1.5$, which contains hazardous or flammable

materials in quantities that exceed the maximum allowable quantities for an open system listed in Section 307, shall, itself, be designed to meet the force and displacement provisions of Sections 9.6.1.3 and 9.6.1.4 and the additional provisions of this section. The seismic design of mechanical equipment, attachments and their supports shall include analysis of the following: the dynamic effects of the equipment, its contents and, when appropriate, its supports. The interaction between the equipment and the supporting structures, including other mechanical and electrical equipment, shall also be considered.



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SECTION BC 1622: NONBUILDING STRUCTURES SEISMIC DESIGN REQUIREMENTS

NYC Administrative Code § 28-BC 1622

1622.1 Nonbuilding structures.

The requirements of Section 9.14 of ASCE 7 shall apply to nonbuilding structures except as modified by Sections 1622.1.1, 1622.1.2 and 1622.1.3.

1622.1.1ASCE 7, Section 9.14.5.1.Modify Section 9.14.5.1, Item 9, to read as follows:

9. Where an approved national standard provides a basis for the earthquake-resistant design of a particular type of nonbuilding structure covered by Section 9.14, such a standard shall not be used unless the following limitations are met:

1. The seismic force shall not be taken as less than 80 percent of that given by the remainder of Section 9.14.5.1.
2. The seismic ground acceleration, and seismic coefficient, shall be in conformance with the requirements of Sections 9.4.1 and 9.4.1.2.5, respectively.
3. The values for total lateral force and total base overturning moment used in design shall not be less than 80 percent of the base shear value and overturning moment, each adjusted for the effects of soil structure interaction that is obtained by using this standard.

1622.1.2ASCE 7, Section 9.14.7.2.1.Modify Section 9.14.7.2.1 to read as follows:

9.14.7.2.1 General. This section applies to all earth-retaining walls. The applied seismic forces shall be determined in accordance with Section 9.7.5.1 with a geotechnical analysis prepared by a registered design professional.

The seismic use group shall be determined by the proximity of the retaining wall to other nonbuilding structures or buildings. If failure of the retaining wall would affect an adjacent structure, the seismic use group shall not be less than that of the adjacent structure, as determined in Section 9.1.3. Earth-retaining walls are permitted to be designed for

seismic loads as either yielding or nonyielding walls. Cantilevered reinforced concrete retaining walls shall be assumed to be yielding walls and shall be designed as simple flexural wall elements.

1622.1.3ASCE 7, Section 9.14.7.9.Add a new Section 9.14.7.9 to read as follows:

9.14.7.9 Buried structures. As used in this section, the term "buried structures" means subgrade structures such as tanks, tunnels and pipes. Buried structures that are designated as Seismic Use Group II or III, as determined in Section 9.1.3, or are of such a size or length as to warrant special seismic design as determined by the registered design professional, shall be identified in the geotechnical report. Buried structures shall be designed to resist seismic lateral forces determined from a substantiated analysis using standards approved by the commissioner. Flexible couplings shall be provided for buried structures where changes in the support system, configurations or soil condition occur.



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SECTION BC 1623: SEISMICALLY ISOLATED STRUCTURES

NYC Administrative Code § 28-BC 1623

1623.1 Design requirements.

Every seismically isolated structure and every portion thereof shall be designed and constructed in accordance with the requirements of Section 9.13 of ASCE 7, except as modified in Section 1623.1.1.

1623.1.1 ASCE 7, Section 9.13.6.2.3. Modify ASCE 7, Section 9.13.6.2.3, to read as follows:

9.13.6.2.3 Fire resistance. Fire-resistance ratings for the isolation system shall comply with Section 714.7 of the New York City Building Code.



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SECTION BC 1624: STRUCTURAL INTEGRITY DEFINITIONS

NYC Administrative Code § 28-BC 1624

1624.1 Definitions.

The following words and terms shall, for the purposes of this section, have the meanings shown herein.

ALTERNATE LOAD PATH. A secondary or redundant load path capable of transferring the load from one structural element to other structural elements.

ALTERNATE LOAD PATH METHOD. A design approach that accounts for an extreme event by providing alternate load paths for elements that are no longer able to carry load. In an alternate load path design, key elements are considered notionally removed, one at a time, and the structure is designed to transfer the loads from the removed element to other structural elements, as required by Section 1626.

ASPECT RATIO. The height of any portion of a building divided by its least dimension at the elevation from which the height is being measured.

COLLAPSE. Failure of a structural element to the extent that it can no longer support any load.

ELEMENT. A structural member or structural assembly.

KEY ELEMENT. An element of the structural system, including its connections, that meets one or more of the following criteria:

1. An element which when lost, results in more than local collapse.
2. An element that braces a key element, the failure of which results in failure of the key element (further secondary elements need not be considered key elements).

LOCAL COLLAPSE. Failure of a structural element that results in the collapse of areas being directly supported by

that element and not extending vertically more than three stories.

RESPONSE RATIO. The ratio of an ultimate response quantity (e.g., deflection) to its value at yield.

ROTATION. The angle, measured at the ends of a member, whose tangent is equal to the deflection of the member at mid-span divided by half the length of the member.

SPECIFIC LOCAL LOAD. A load applied to a structural element or structural system as specified in Section 1626.7.

SPECIFIC LOCAL RESISTANCE METHOD. A design approach that accounts for extreme event loads by providing sufficient strength for elements that may fail. In a specific local resistance design, key elements are designed for specific local loads as required by Section 1626.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 16: STRUCTURAL DESIGN
SECTION BC 1625: STRUCTURAL INTEGRITY-PRESCRIPTIVE REQUIREMENTS

NYC Administrative Code § 28-BC 1625

1625.1 Scope.

The intent of these provisions is to enhance structural performance under extreme event scenarios by providing additional overall system redundancy and local robustness. All structures shall be designed to satisfy the prescriptive requirements of this Section.

Exception: Structures in Structural Occupancy Category I of Table 1604.5 and structures in occupancy group R-3 are exempt from the requirements of Sections 1624 through 1626.

1625.2Continuity and ties.All structural elements shall have a minimum degree of continuity and shall be tied together horizontally and vertically as specified in Chapters 19, 21, and 22 for concrete, masonry and steel, respectively.

1625.3Lateral bracing.Floor and roof diaphragms or other horizontal elements shall be tied to the lateral load resisting system.

1625.4Reserved.

1625.5Vehicular impact.Structural columns that are directly exposed to vehicular traffic shall be designed for vehicular impact. Structural columns that are adequately protected by bollards, guard walls, vehicle arrest devices or other elements need not be designed for vehicular impact. The load combinations for vehicular impact shall be as specified in Section 1605.7.

Specific loads for vehicular impact shall be as follows:

1. Exterior corner columns shall be designed for a concentrated load of 40 kips applied horizontally in any direction from which a vehicle can approach at a height of either 18 inches (457 mm) or 36 inches (914 mm) above the finished driving surface, whichever creates the worst effect.

2. All other exterior columns exposed to vehicular traffic, and columns within loading docks, and columns in parking garages along the driving lane shall be designed for a concentrated load of 20 kips applied horizontally in any direction from which a vehicle can approach at a height of either 18 inches (457 mm) or 36 inches (914 mm) above the finished driving surface, whichever creates the worst effect.

1625.6 Gas explosions. In buildings with gas piping operating at pressures in excess of 15 psig (103 kPa gauge), all key elements and their connections within 15 feet (4572 mm) of such piping shall be designed to resist a potential gas explosion. The structure shall be designed to account for the potential loss of the affected key elements one at a time by the Alternate Load Path Method. Load combinations for the Alternate Load Path shall be as specified in Section 1605.6. In lieu of the Alternate Load Path Method, the affected key elements shall be designed to withstand a load of 430 psf (20.6 kPa) applied using the load combinations specified in Section 1605.7. The load shall be applied along the entire length of the element, and shall be applied in the manner and direction that produces the most damaging effect.

Exceptions:

1. If a structural enclosure designed to resist the specified pressure is provided around the high-pressure gas piping, only the key elements within the structural enclosure need to comply with this section.

2. A reduced pressure for gas explosions can be used based on an engineering analysis approved by the commissioner.

1625.7 Design criteria. Alternate load path design and/or specific local resistance design shall conform to the appropriate design criteria as determined from Sections 1626.9, 1626.10 and 1626.11. Load combinations for the alternate load path shall be as specified in Section 1605.6.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1625.1 amended L.L. 8/2008 § 127, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 16: STRUCTURAL DESIGN
SECTION BC 1626: STRUCTURAL INTEGRITY-KEY ELEMENT ANALYSIS

NYC Administrative Code § 28-BC 1626

1626.1 Scope.

A Key Element Analysis shall be performed for the following buildings:

1. Buildings included in Structural Occupancy Category IV as defined in this chapter and more than 50,000 square feet (4645 m²) of framed area.
2. Buildings with the aspect ratios of seven or greater.
3. Buildings greater than 600 feet (183 m) in height or more than 1,000,000 square feet (92 903 m²) in gross floor area.
4. In Buildings taller than seven stories for any element which supports in aggregate more than 15 percent of the building area a Key Element Analysis shall be performed.
5. Buildings designed using non-linear time history analysis or with special seismic energy dissipation systems.
6. Buildings where a structural peer review is requested by the commissioner.

1626.2 Load combination. Where specifically required by Sections 1626.1, elements and components shall be designed to resist the forces calculated using the combination specified in Section 1605.6.

1626.3 Reserved.

1626.4 Seismic and wind. When the code-prescribed seismic or wind design produces greater effects, the seismic or wind design shall govern, but the detailing requirements and limitations prescribed in this and referenced sections shall also be followed

1626.5 Joints. Where a structure is divided by joints that allow for movement, each portion of the structure between joints shall be considered as a separate structure.

1626.6 Key Element Analysis. Where key elements are present in a structure, the structure shall be designed to account for their potential loss one at a time by the Alternate Load Path Method or by the Specific Local Resistance Method as specified in Section 1626.7.

1626.7 The Specific Local Resistance Method. Where the specific local resistance method is used key elements shall be designed using specific local loads as follows:

1. Each compression element shall be designed for a concentrated load equal to 2 percent of its axial load but not less than 15 kips, applied at mid-span in any direction, perpendicular to its longitudinal axis. This load shall be applied in combination with the full dead load and 50 percent of the live load in the compression element.

2. Each bending element shall be designed for the combination of the principal acting moments plus an additional moment, equal to 10 percent of the principal acting moment applied in the perpendicular plane.

3. Connections of each tension element shall be designed to develop the smaller of the ultimate tension capacity of the member or 3 times the force in the member.

4. All structural elements shall be designed for a reversal of load. The reversed load shall be equal to 10 percent of the design load used in sizing the member.

1626.8 Design criteria. Alternate load path method and/or specific local resistance method for key elements shall conform to the appropriate design criteria as determined from Sections 1626.9, 1626.10 and 1626.11. Load combinations shall be as specified in Section 1605.6.

1626.9 Analysis procedures. All structural analysis for specific local loads and/or key elements shall be made by one of the following methods:

1626.9.1 Static elastic analysis. For analysis of this type, dynamic effects of member loss or dynamic effects of specific local loads need not be considered. The structure shall be assumed to remain elastic; however, structural elements may reach yield across their entire cross-section. The response ratio of structural elements so designed shall be limited to one.

1626.9.2 Dynamic inelastic analysis. For analysis of this type, dynamic effects of member loss or specific local loads shall be considered. The structure need not remain elastic; however, the response ratio and rotation limits obtained from Table 1626.9.3 shall not be exceeded.

1626.9.3 Energy methods. Static inelastic analysis using energy equilibrium may also be used. The structure need not remain elastic; however, the response ratio and rotation limits obtained from Table 1626.9.3 shall not be exceeded.

Table 1626.9.3 Response Ratio and Rotation Limits	Element	Response Ratio	Rotation
Concrete Slabs	10 q	4(degrees)	Post-Tensioned Beams
Concrete Beams	20 q	6(degrees)	Concrete Columns
Long Span Acoustical Deck	2 q	3(degrees)	Open Web Steel Joists
Steel Beams	20 q	10(degrees)	Steel Columns

Table 1624.2 is intended for SDOF and simplified MDOF response calculations and a low level of protection. Table 1624.2 does not apply for explicit finite element methods that calculate the performance of the structural elements in response to the specified loading intensity. Steel Joists: downward loading 6-degrees, upward loading ductility of 2.

1626.10 Minimum response. Structural response of elements determined using a dynamic inelastic analysis shall not be less than 80 percent of the structural response determined using a static elastic analysis.

1626.11 Strength reduction factors. For structural design for specific local loads and/or key elements, all strength reduction factors may be taken as one.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1626.1 item 1 amended L.L. 8/2008 § 128, eff. July 1, 2008.

1626.3 repealed L.L. 8/2008 § 129, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 16: STRUCTURAL DESIGN
SECTION BC 1627: STRUCTURAL PEER REVIEW

NYC Administrative Code § 28-BC 1627

1627.1 General.

The provisions of this section specify where structural peer review is required, how and by whom it is to be performed.

1627.2Where required.A structural peer review of the primary structure shall be performed and a report provided for the following buildings:

1. Buildings included in Structural Occupancy Category IV as defined in this chapter and more than 50,000 square feet (4645 m²) of framed area.
2. Buildings with aspect ratios of seven or greater.
3. Buildings greater than 600 feet (183 m) in height or more than 1,000,000 square feet (92 903 m²) in gross floor area.
4. Buildings taller than seven stories where any element supports in aggregate more than 15 percent of the building area.
5. Buildings designed using non-linear time history analysis or with special seismic energy dissipation systems.
6. Buildings where a structural peer review is requested by the commissioner.

1627.3Structural design review.It shall be verified that the structural design of the primary structure is in general conformance with the requirements of this code.

1627.4Structural peer reviewer.The structural peer review shall be performed by a qualified independent structural engineer who has been retained by or on behalf of the owner. A structural peer reviewer shall meet the requirements of the rules of the department.

1627.5Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

PRIMARY STRUCTURE. The structural frame and the load supporting parts of floors, roofs, and walls, and the foundations. Cladding, cladding framing, stairs, equipment supports, ceiling supports, non-load bearing partitions, and railings and other secondary structural items are excluded from this definition of primary structure.

1627.6Extent of the structural peer review.

1627.6.1Scope. The reviewing engineer shall review the plans and specifications submitted with the permit application for general compliance with the structural and foundation design provisions of this code. The reviewing engineer shall perform the following tasks at a minimum:

1. Confirm that the design loads conform to this code.
2. Confirm that other structural design criteria, and design assumptions, conform to this code and are in accordance with generally accepted engineering practice.
3. Review geotechnical and other engineering investigations that are related to the foundation and structural design and confirm that the design properly incorporates the results and recommendations of the investigations.
4. Confirm that the structure has a complete load path.
5. Perform independent calculations for a representative fraction of systems, members, and details to check their adequacy. The number of representative systems, members, and details verified shall be sufficient to form a basis for the reviewer's conclusions.
6. Verify that performance-specified structural components (such as certain precast concrete elements) have been appropriately specified and coordinated with the primary building structure.
7. Confirm that the structural integrity provisions of the code are being followed.
8. Review the structural and architectural plans for the building. Confirm that the structural plans are in general conformance with the architectural plans regarding loads and other conditions that may affect the structural design.
9. Confirm that major mechanical items are accommodated in the structural plans.
10. Attest to the general completeness of the structural plans and specifications.

1627.6.2Structural calculations. The structural calculations prepared by the structural engineer of record shall be submitted to the reviewing engineer, upon the reviewing engineer's request, for reference only. The reviewing engineer shall not be obliged to review or check these calculations. If the design criteria and design assumptions are not shown on the drawings or in the computations, the structural engineer of record shall provide a statement of these criteria and assumptions for the reviewer.

1627.7Structural peer review report.

1627.7.1General. The reviewing engineer shall submit a report to the department stating whether or not the structural design shown on the plans and specifications generally conforms to the structural and foundation requirements of this code.

1627.7.2Contents. The report shall demonstrate at a minimum compliance with items 1 through 10 of section 1627.6.1. In addition, the report shall also include the following:

1. The codes and standards used in the structural design of the project.
2. The structural design criteria, including loads and performance requirements.

3. The basis for design criteria that are not specified directly in applicable codes and standards. This should include reports by specialty consultants such as wind tunnel study reports and geotechnical reports. Generally, the report should confirm that existing conditions at the site have been investigated as appropriate and that the design of the proposed structure is in general conformance with these conditions.

1627.7.3 Phased submission. If an application is submitted for a permit for the construction of foundations or any other part of a building before the construction documents for the whole building have been submitted, then the structural peer review and report shall be phased. The structural peer reviewer shall be provided with sufficient information on which to make a structural peer review of the phased submission.

1627.8 Responsibility.

1627.8.1 Structural engineer of record. The structural engineer of record shall retain sole responsibility for the structural design. The activities and reports of the structural peer reviewer shall not relieve the structural engineer of record of this responsibility.

1627.8.2 Structural peer reviewer. The structural peer reviewer's report states his or her opinion regarding the design by the engineer of record. The standard of care to which the structural peer reviewer shall be held in the performance of the structural peer review and report is that level of skill and care consistent with structural peer review services performed by professional engineers licensed in the State of New York for similar types of projects.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1627.2 item 1 amended L.L. 8/2008 § 130, eff. July 1, 2008.

1627.7.2 amended L.L. 8/2008 § 130, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 17: STRUCTURAL TESTS AND SPECIAL INSPECTIONS
SECTION BC 1701: GENERAL

NYC Administrative Code § 28-BC 1701

1701.1 Scope.

The provisions of this chapter shall govern the inspection of quality, workmanship and requirements for construction. Materials, inspection and testing shall conform to the applicable standards listed in this code or in the rules of the department. See Chapter 1 of Title 28 of the Administrative Code for additional provisions relating to materials, testing and inspections.

1701.2New materials.See Chapter 1 of Title 28 of the Administrative Code for additional provisions.

1701.3Used materials.See Chapter 1 of Title 28 of the Administrative Code.



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Chapter 17: STRUCTURAL TESTS AND SPECIAL INSPECTIONS
SECTION BC 1702: DEFINITIONS

NYC Administrative Code § 28-BC 1702

1702.1 General.

The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

APPROVED AGENCY. See Chapter 1 of Title 28 of the Administrative Code.

APPROVED FABRICATOR. An established and qualified person, firm or corporation approved by the commissioner to custom manufacture or build products or assemblies regulated by this code.

CERTIFICATE OF COMPLIANCE. A certificate stating that materials meet specified standards or that work was done in compliance with approved construction documents and other applicable provisions of law and with respect to specified service equipment, a certificate issued by the department authorizing the operation of such equipment.

FABRICATED ITEM. Products and assemblies regulated by this code that are custom manufactured, or built prior to their incorporation into the work at the job site. Fabricated items shall not include listed, labeled or approved products or assemblies.

INSPECTION CERTIFICATE. An identification applied on a product by an approved agency containing the name of the manufacturer, the function and performance characteristics, and the name and identification of the approved agency that indicates that the product or material has been inspected and evaluated by such approved agency. An inspection certificate shall also mean a certificate issued by the department upon satisfactory completion of an inspection or test.

LABEL. An identification applied on a product by the manufacturer that contains the name of the manufacturer, the function and performance characteristics of the product or material, and the name and identification of an approved agency and that indicates that a representative sample of the product or material has been tested and evaluated by an

approved agency for compliance with nationally recognized standards or tests to determine suitable usage in a specified manner.

MANUFACTURER'S DESIGNATION. An identification applied on a product by the manufacturer indicating that a product or material complies with a specified standard or set of rules.

MARK. An identification applied on a product by the manufacturer indicating the name of the manufacturer and the function of a product or material.

SPECIAL INSPECTION. Inspection of selected materials, equipment, installation, fabrication, erection or placement of components and connections, to ensure compliance with approved construction documents and referenced standards as required by this chapter or elsewhere in this code or its referenced standards.

SPECIAL INSPECTION, CONTINUOUS. The full-time observation of work requiring special inspection by a special inspector who is continuously present in the area where the work is being performed.

SPECIAL INSPECTION, PERIODIC. The intermittent observation of work requiring special inspection by a special inspector who is present in the area where the work has been or is being performed and at the completion of the work. All work requiring special inspection shall remain accessible and exposed until approved by the special inspector.

SPECIAL INSPECTOR. See Chapter 1 of title 28 of the Administrative Code.

SPRAYED FIRE-RESISTANT MATERIALS. Cementitious or fibrous materials that are spray applied to provide fire-resistant protection of the substrates.

SUPERINTENDENT OF CONSTRUCTION. See Chapter 1 of Title 28 of the Administrative Code.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

APPROVED FABRICATOR amended L.L. 8/2008 § 131, eff. July 1, 2008.



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Chapter 17: STRUCTURAL TESTS AND SPECIAL INSPECTIONS
SECTION BC 1704: SPECIAL INSPECTIONS

NYC Administrative Code § 28-BC 1704

1704.1 General.

Where application is made for construction as described in this section, one or more special inspectors shall be employed by the owner to provide inspections during construction on the types of work listed under Section 1704 and elsewhere in this code. The special inspector shall be acceptable to the registered design professional of record.

Exception: Special inspections are not required for building components unless the design involves the practice of professional engineering or architecture as defined by the Education Law of the State of New York and applicable regulations governing the professional registration and certification of engineers or architects.

1704.1.1 Building permit requirement. The permit applicant shall submit a statement of special inspections as a condition for permit issuance on forms supplied by the department. This statement shall include a complete list of materials and work requiring special inspections by this section, the inspections to be performed and a list of the individuals or approved agencies to be retained for conducting the special inspections listed on the approved plans. Within each category of work, multiple special inspectors may be employed.

1704.1.1.1 Required notification to special inspectors. The permit holder shall notify the relevant special inspectors in writing at least 72 hours before the commencement of any work requiring special inspection.

1704.1.1.2 Identification of design professionals providing design documents for certain construction operations. The registered design professionals responsible for the production of design, sequence of construction operations or shop drawings for projects that require design as defined in Chapter 33, shall file documentation of their intent to perform those duties on forms supplied by the department.

1704.1.2 Report requirement. Special inspectors shall keep records of inspections for the period of six years from the date of project sign-off. Such records shall be supplied to the commissioner upon request. The commissioner may require that special inspection reports be filed with the department and/or that such reports be otherwise made accessible

for review. Reports shall indicate that work inspected was done in conformance with approved construction documents. Discrepancies shall be brought to the immediate attention of the contractor and, when applicable, to the superintendent of construction, for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the owner, and the registered design professional of record prior to the completion of that phase of the work. Special inspection reports and records of special inspections shall be in the form and format supplied by the commissioner.

1704.1.2.1Hazardous conditions.The special inspector shall report conditions noted as hazardous to life, safety or health, to the immediate attention of the commissioner.

1704.1.2.2Approval of partially completed work.Reports of partially completed work shall be accepted when such reports indicate the code compliant status of completed work and the condition of the remaining work.

1704.2Inspection of fabricators.Where fabrication of structural members, and other regulated products is performed on the premises of a fabricator's shop, special inspection of the fabricated items shall be required as provided in Sections 1704.2.1 through 1704.2.2 and in Chapter 1 of Title 28 of the Administrative Code.

1704.2.1Fabrication and implementation procedures.The special inspector shall verify that the fabricator maintains detailed fabrication and quality control procedures that provide a basis for inspection control of the workmanship and the fabricator's ability to conform to approved construction documents and referenced standards. The special inspector shall review the procedures for completeness and adequacy relative to the code requirements for the fabricator's scope of work.

Exception: Special inspections as required by Section 1704.2 shall not be required where the fabricator is approved in accordance with Section 1704.2.2 and with Chapter 1 of Title 28 of the Administrative Code..

1704.2.2Fabricator approval.Special inspections required by this code are not required where the work is done on the premises of a fabricator registered and approved to perform such work without special inspection. Approval of fabricators shall be based upon review of the fabricator's written procedural and quality control manuals and periodic auditing of fabrication practices by an approved agency.

1704.2.2.1Fabricator's certificate of compliance.For all fabricated items, the approved fabricator shall submit a certificate of compliance to the department stating that the work was performed in accordance with the approved construction documents, referenced standards and applicable provisions of law.

1704.3Steel construction.The special inspections for steel elements of buildings and structures shall be as required by Section 1704.3 and Table 1704.3. Where required, special inspection of steel shall also comply with Section 1715.

Exceptions:

1. Special inspection of the steel fabrication process shall not be required where the fabricator does not perform any welding, thermal cutting or heating operation of any kind as part of the fabrication process. In such cases, the fabricator shall be required to submit a detailed procedure for material control that demonstrates the fabricator's ability to maintain suitable records and procedures such that, at any time during the fabrication process, the material specification, grade and mill test reports for the main stress-carrying elements are capable of being determined.

2. The special inspector need not be continuously present during welding of the following items, provided the materials, welding procedures and qualifications of welders are verified prior to the start of the work; periodic inspections are made of the work in progress and a visual inspection of all welds is made prior to completion or prior to shipment of shop welding.

- 2.1. Single-pass fillet welds not exceeding 5/16 inch (7.9 mm) in size.

2.2. Floor and roof deck welding.

2.3. Welded studs when used for structural diaphragm.

2.4. Welded sheet steel for cold-formed steel framing members such as studs and joists.

2.5. Welding of stairs and railing systems.3]Table 1704.3 Required Verification and Inspection of Steel Construction Verification and Inspection Continuous Periodic Referenced Standard BC Reference 1]Verification and Inspection Continuous Periodic Referenced Standard BC Reference 2]1. Material verification of high-strength bolts, nuts and washers:1. A. Identification markings to conform to ASTM standards specified in the approved construction documents.- X Applicable ASTM material specification; AISC 335, Section A3.4; AISC LRFD, Section A3.3 - 1. B. Manufacturer's certificate of compliance required.- X - - 2. Inspection of high-strength bolting:2. A. Bearing-type connections2. B. Slip-critical connections.- X X Note b X AISC LRFD Section M2.5 1704.3.3 3. Material verification of structural steel:3. A. Identification markings to conform to ASTM standards specified in the approved construction documents.3. B. Manufacturers' certified mill test reports.- - - -

ASTM A 6 or ASTM A 568 ASTM A 6 or ASTM A 568 1708.4 4. Material Verification of weld filler materials4. A. Identification markings to conform to AWS specification in the approved construction documents.- - AISC, ASD, Section A3.6; AISC LRFD, Section A3.5 - 4. B. Manufacturer's certificate of compliance required.- - - 5. Inspection of welding:A. Structural Steel:5. 1) Complete and partial penetration groove welds.5. 2) Multipass fillet weldsX X - - AWS D1.1 1704.3.1 5. 3) Single-pass fillet welds ;mt5/16"5. 4) Single-pass fillet welds 5/16"X - - X 5. 5) Floor and deck welds- X AWS D1.3 - 5. B. Reinforcing Steel:- - 5. 1) Verification of weldability of reinforcing steel other than ASTM A 706.- X 5. 2) Reinforcing steel-resisting flexural and axial forces in intermediate and special moment frames, and boundary elements of special reinforced concrete shear walls and shear reinforcement.X - AWS d1.4 ACI 18: 3.5.2 1903.5.2 5. 3) Shear reinforcementX Note a - 5. 4) Other reinforcing steel.- X 6. Inspection of steel frame joint details for compliance with approved construction documents:X a) Details such as bracing and stiffening.- - - 1704.3.2 b) member locations.- - c) Application of joint details at each connection.- 4]a) A minimum of 10% of shear studs shall be verified for strength of welded connection. If failure is evident on one or more then the strength of all shear studs shall be verified.b) Turn of the nut bolting shall be continuously inspected. Exception: Periodic inspection shall be acceptable when the contractor's procedures have been established and verified for compliance by the special inspector.

1704.3.1Welding.Welding inspection shall be in compliance with AWS D1.1.

1704.3.2Details.The special inspector shall perform an inspection of the steel frame to verify compliance with the details shown on the approved construction documents, such as bracing, stiffening, member locations and proper application of joint details at each connection, including connections designed for seismic effects.

1704.3.3High-strength bolts.Installation of high-strength bolts shall be inspected in accordance with this section.

1704.3.3.1General.While the work is in progress, the special inspector shall determine that the requirements for bolts, nuts, washers and paint; bolted parts and installation and tightening in such standards are met. For bolts requiring pretensioning, the special inspector shall observe the preinstallation testing and calibration procedures when such procedures are required by the installation method or by project plans or specifications; determine that all plies of connected materials have been drawn together and properly snugged and monitor the installation of bolts to verify that the selected procedure for installation is properly used to tighten bolts. For joints required to be tightened only to the snug-tight condition, the special inspector need only verify that the connected materials have been drawn together and properly snugged.

1704.3.3.2Periodic monitoring.Monitoring of bolt installation for pretensioning is permitted to be performed on a periodic basis when using the turn-of-nut method with matchmarking techniques, the direct tension indicator method or the alternate design fastener (twist-off bolt) method. Joints designated as snug tight need be inspected only on a periodic basis.

1704.3.3.3Continuous monitoring.Monitoring of bolt installation for pretensioning using the calibrated wrench method or the turn-of-nut method without matchmarking shall be performed on a continuous basis.

1704.3.4Cold-formed steel construction.Cold-formed steel used structurally shall be subject to the special inspection requirements of Section 1704.3, and Table 1704.3. In addition, the following requirements shall be inspected for compliance by the special inspector:

1. The special inspector shall check for compliance with the requirements of Section 2209.1.3.
2. Temporary bracing, shoring, jacks, etc. shall not be removed until the special inspector determines that they are no longer needed.

1704.4Concrete construction.The special inspections and verifications for concrete construction shall be as required by this section and Table 1704.4.

Exception: Special inspections shall not be required for the following when specifically exempted on the approved construction documents:

1. Concrete placement of less than 50 cubic yards provided that the concrete is non-structural and is not subject to the durability requirements of Section 1904. In such case, testing may be waived by the registered design professional who prepared the structural construction documents.

2. Nonstructural concrete slabs supported directly on the ground, including prestressed slabs on grade, where the effective prestress in the concrete is less than 150 psi (1.03 Mpa).

3. Concrete foundation(s) for lightweight fences and recreational equipment.

4. Concrete patios, site furnishings, garden walls, driveways, sidewalks, and similar construction.3]Table 1704.4 Required Verification and Inspection of Concrete Construction Verification and Inspection Continuous Periodic Referenced Standard BC Reference 1]Verification and Inspection Continuous Periodic Referenced Standard BC Reference 2]1. Inspection of reinforcing steel, including prestressing tendons, and placement.- X ACI 318:3.5, 7.1 - 7.7 1903.5, 1907.1, 1907.7, 1914.4 2. Inspection of reinforcing steel welding in accordance with table 1704.3, Item 5B.- - AWS D1.4 ACI 318:3.5.2 1903.5.2 3. Inspect bolts to be installed in concrete prior to and during placement of concrete where allowable loads have been increased.X - - 1912.5 4. Verifying use of required design mix.- X ACI 318: Ch. 4, 5.2-5.4 1904, 1905.2- 1905.4, 1914.2, 1914.3 5. At the time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.X - ASTM C 172 ASTM C 31 ACI 318: 5.6, 5.8 (Note a,b) 1905.6, 1914.10 6. Inspection of concrete and shotcrete placement for proper application techniques.X - ACI 318: 5.9, 5.10 1905.9, 1905.10, 1914.6, 1914.7, 1914.8 7. Inspection for maintenance of specified curing temperature and techniques.- X ACI 318: 5.11-5.13 1905.11, 1905.13, 1914.9 8. Inspection of prestressed concrete:8. A. Application of prestressing forces8. B. Grouting of bonded prestressing tendons in the seismic-force-resisting system.X X - ACI 318: 18.20 ACI 318:18.18.4 - 9. Erection of precast concrete members.- X ACI 318: Ch. 16 - 10. Verification of in-situ concrete strength, prior to stressing of tendons in posttensioned concrete and prior to removal of shores and forms from beams and structural slabs.- X ACI 318: 6.2 1906.2 4]a. Standard sampling rate shall be in accordance with Section 1905.6.2.b. 4" x 8" cylinders may be accepted in lieu of 6" x 12" cylinders at the option of the engineer of record.

1704.4.1Materials.In the absence of sufficient data or documentation providing evidence of conformance to quality standards for materials in Chapter 3 of ACI 318, the commissioner shall require testing of materials in accordance with the appropriate standards and criteria for the material in Chapter 3 of ACI 318. Weldability of reinforcement, except that which conforms to ASTM A 706, shall be determined in accordance with the requirements of Section 1903.5.2.

1704.4.2Concrete construction.When the specified compressive strength of concrete in a column is greater than 1.4

times that specified for a floor system, the special inspections for concrete construction shall also comply with the requirements of section 1908.2.1.

1704.5Masonry construction.Masonry construction shall be inspected and evaluated in accordance with the requirements of this section, depending on the Structural Occupancy Category of the building or structure or nature of occupancy, as defined by this code (see Table 1604.5 and Section 1616.2).

Exception: Special inspections shall not be required for:

1. Empirically designed masonry, glass unit masonry or masonry veneer designed by Section 2109, 2110 or ACI 530/ASCE 5/TMS 402, Chapters 5, 6 or 7, when they are part of nonessential buildings (see Table 1604.5 and Section 1616.2).

2. Masonry foundation walls constructed in accordance with Table 1805.5(1), 1805.5(2), 1805.5(3) or 1805.5(4).

1704.5.1Empirically designed masonry, glass unit masonry and masonry veneer in essential facilities.The minimum inspection program for masonry designed by Chapter 14, Section 2109 or 2110, or by Chapter 5, 6 or 7 of ACI 530/ASCE 5/TMS 402, in essential facilities listed in Table 1604.5 and Section 1616.2, shall comply with Table 1704.5.1.3]Table 1704.5.1 Level 1 Special Inspection Inspection Task Frequency of Inspection Continuous during task listed Periodically during task listed Reference for Criteria BC section ACI 530/ASCE 5/TMS 402a ACI 530.1/ ASCE 6/TMS 602a 1]Inspection Task Frequency of Inspection Continuous during task listed Periodically during task listed Reference for Criteria BC section ACI 530/ASCE 5/TMS 402a ACI 530.1/ ASCE 6/TMS 602a 2]1. As masonry construction begins, the following shall be verified to ensure compliance:1. a. Proportions of site-prepared mortar.- X - - Art. 2.6A 1. b. Construction of mortar joints.- X - - Art. 3.3B 1. c. Location of reinforcement and connectors.- X - - Art. 3.4, 3.6A 1. d. Prestressing technique.- X - - Art. 3.6B 1. e. Grade and size of prestressing tendons and anchorages.- X - - Art. 2.4B 2.4H 2. The inspection program shall verify:2. a. Size and location of structural elements.- X - - Art. 3.3G 2. b. Type, size and location of anchors, including other details of anchorage of masonry to structural members, frames or other construction.- X - Sec. 4, 3.1.6 2.1.4, 3.1.6 - 2. c. Specified size, grade and type of reinforcement.- X - Sec. 1.12 Art. 2.4, 3.4 2. d. Welding of reinforcing bars.X - - Sec. 2.1.10.6.2, 3.2.3.4(b) - 2. e. Protection of masonry during cold weather (temperature below 40(degrees)F) or hot weather (temperature above 90(degrees)F).- X Sec. 2104.3, 2104.4 - Art. 1.8C,1.8D 2. f. Application and measurement of prestressing force.- X - - Art. 3.6B 3. Prior to grouting, the following shall be verified to ensure compliance:3. a. Grout space is clean.- X - - Art. 3.2D 3. b. Placement of reinforcement and connectors and prestressing tendons and anchorages.- X - Sec. 1.12 Art. 3.4 3. c. Proportions of site-prepared grout and prestressing grout for bonded tendons.- X - - Art. 2.6B 3. d. Construction of mortar joints.- X - - Art. 3.3B 4. Grout placement shall be verified to ensure compliance with code and construction document provisions.X - - - Art. 3.5 4. a. Grouting of prestressing bonded tendons.X - - Art. 3.6C 5. Preparation of any required grout specimens, mortar specimens and/or prisms shall be observed.X - Sec. 2105.2.2, 2105.3 - Art. 1.4 6. Compliance with required inspection provisions of the construction documents and the approved submittals shall be verified.- X - - Art. 1.5 4]For SI: (degrees)C = ((degrees)F-32)/1.8.a. The specific standards referenced are those listed in Chapter 35.

1704.5.2Masonry facilities less than three stories in height and engineered masonry in nonessential facilities.The minimum special inspection program for masonry designed by Section 2106, 2107 or 2108, or by chapters other than Chapters 5, 6 or 7 of ACI 530/ASCE 5/TMS 402, in nonessential facilities (see Table 1604.5 and Section 1616.2), shall comply with Table 1704.5.1.

1704.5.3Structural and veneer masonry in facilities three stories or more in height and engineered masonry in essential facilities.The minimum special inspection program for masonry designed by Section 2106, 2107 or 2108, or by chapters other than Chapters 5, 6 or 7 of ACI 530/ASCE 5/TMS 402, in essential facilities (see Table 1604.5 and Section 1616.2), shall comply with Table 1704.5.3.3]Table 1704.5.3 Level 2 Special Inspection Frequency of Inspection Continuous during task listed Periodically during task listed Reference for Criteria BC section ACI 530/ASCE 5/TMS 402a ACI 530.1/ ASCE 6/TMS 602a 1]Frequency of Inspection Continuous during task listed Periodically

during task listed Reference for Criteria BC section ACI 530/ASC 5/TMS 402a ACI 530.1/ ASCE 6/TMS 602a 2]1. From the beginning of masonry construction, the following shall be verified to ensure compliance: 1. a. Proportions of site-prepared mortar, grout and prestressing grout for bonded tendons.- X - - Art. 2.6A 1. b. Placement of masonry units and construction of mortar joints.- X - - Art. 3.3B 1. c. Placement of reinforcement, connectors, and prestressing tendons and anchorages.- X - Sec. 1.12 Art. 3.4, 3.6A 1. d. Grout space prior to grouting.X - - - Art. 3.2D 1. e. Placement of grout.X - - - Art. 3.5 1. f. Placement of prestressing frouit.X - - - Art. 3.6C 2. The inspection program shall verify: 2. a. Size and location of structural elements.- X - - Art. 3.3G 2. b. Type, size, and location of anchors, including other details of anchorage of masonry to structural members, frames or other construction.X - - Sec. 1.2.2(e), 2.1.4, 3.1.6 - 2. c. Specified size, grade and type of reinforcement.- X - Sec.1.12 Art. 2.4, 3.4 2. d. welding reinforment.X - - Sec. 2.1.10.6.2, 3.2.3.4(b) - 2. e. Protection of masonry during cold weather (temp. below 40(degrees)F) or hot weather (temp. above 90(degrees)F).- X Sec. 2104.3, 2104.4 - Art. 1.8C, 1.8D 2. f. Application and measurement of prestressing force.X - - - Art. 3.6B 3. Preparation of any required grout specimens, mortar specimens and/or prisms shall be observed.X - Sec. 2105.2.2, 2105.3 - Art. 1.4 4. Compliance with required inspection provisions of the construction documents and the approved submittals shall be verified.- X - - Art. 1.5

1704.6Wood construction.Special inspections of the fabrication process of prefabricated wood structural elements and assemblies shall be in accordance with Section 1704.2. Special inspections of site-built assemblies shall be in accordance with Section 1704.1.

1704.6.1Fabrication of high-load diaphragms.High-load diaphragms using values from Table 2306.3.2 shall be installed with special inspections as indicated in Section 1704.1. The special inspector shall inspect the wood structural panel sheathing to ascertain whether it is of the grade and thickness shown on the approved construction documents. Additionally, the special inspector must verify the nominal size of framing members at adjoining panel edges, the nail or staple diameter and length, the number of fastener lines and that spacing between fasteners in each line and at edge margins agrees with the approved construction documents.

1704.6.2Other structural wood construction.Special inspection of structural wood construction shall be performed in accordance with Chapter 1.

1704.6.3Metal-plate-connected wood trusses.In addition to the requirements of Section 1704.1, metal-plate-connected wood trusses shall be subject to special inspection in accordance with Section 1704.6.3.1.

1704.6.3.1Erection.The use of all metal-plate-connected wood trusses shall be subject to special inspection for compliance with the approved construction documents, the requirements of Section 1704.1, and the following:

1. All installed materials shall be clean, straight, and otherwise undamaged. Members and parts shall not be stretched, bent, or otherwise distorted unless such forming is in the integral part of the design. The special inspector shall ensure that damaged members are not used for construction.

2. Profiles of members used structurally shall conform to the dimensions specified in the approved construction documents. The installation shall be inspected for compliance with the approved construction documents regarding locations, positions, beam separators, bearing surfaces, fasteners, screws, bolts, and bracing as applicable.

3. Temporary bracing, shoring, jacks, etc. shall not be removed until the special inspector determines that they are no longer needed.

4. Where prefabricated metal-plate-connected wood trusses are utilized, such prefabricated wood structural elements and assemblies shall also comply with Section 1704.2. Where any metal-plate connectors are utilized in site-built assemblies, such connections and assemblies shall be subject to special inspection for compliance with the requirements of the approved construction documents and manufacturers' instructions.

1704.6.4Prefabricated wood I-joists.The fabrication of prefabricated wood I-joists shall be subject to special

inspections in accordance with Section 1704.2 and the requirements of Section 2303.1.2.

1704.6.4.1Erection.The erection of prefabricated wood I-joists shall be subject to special inspection for compliance with the approved construction documents, the requirements of Section 1704.1, and the following:

1. All installed materials shall be clean, straight, and otherwise undamaged. Members and parts shall not be stretched, bent, or otherwise distorted unless such forming is in the integral part of the design. The special inspector shall ensure that damaged members are not used for construction.

2. Profiles of members used structurally shall conform to the dimensions specified in the approved construction documents. The installation shall be inspected for compliance with the approved construction documents regarding locations, positions, beam separators, bearing surfaces, fasteners, screws, bolts, and bracing as applicable.

3. The size, location, and number of penetrations shall be inspected for compliance with the approved construction documents and manufacturers' instructions.

4. Temporary bracing, shoring, jacks, etc. shall not be removed until the special inspector determines that they are no longer needed.

1704.7Soils.The special inspections for existing site soil conditions, fill placement and load-bearing requirements shall be performed in accordance with Sections 1704.7.1 through 1704.7.3. The approved soils report, required by Section 1802.2, shall be used to determine compliance.

1704.7.1Site preparation.Immediately prior to placement of the footings, foundations, fill or other supporting materials the special inspector shall determine that the site has been prepared in accordance with the approved soils report.

1704.7.2During fill placement.During placement and compaction of the fill material, the special inspector shall determine that the material being used and the maximum lift thickness comply with the approved report, as specified in Section 1803.5.

1704.7.3Evaluation of in-place density.The special inspector shall determine, at the approved frequency, that the in-place dry density of the compacted fill complies with the approved report.

1704.7.4Special inspection of soils investigations, borings and test pits.Boring operations shall be subject to continuous special inspection to verify compliance with Section 1802. Soil sample recovery operations for test pits shall be subject to continuous special inspection to verify compliance with Section 1802.

Exception: Existing boring, test pit and soil investigation records that have been deemed acceptable to the commissioner in accordance with Section 1802.4.2 are not subject to special inspection.

1704.7.4.1Boring and /or test pit report.The special inspector's report shall include statements attesting to the following: that borings were performed in accordance with the procedures established in Section 1802.5, that 50 percent or more of the borings were witnessed directly by the registered design professional designated for this special inspection, the identification of those borings, the name and address of the individual(s) that witnessed any other borings, the borings and/or test pits so inspected were made and carried to the depths indicated; that to the best of the special inspector's knowledge and belief, the description and classification of the soils are a true description of the samples recovered from the respective borings and/or test pits: that such samples were recovered at the levels indicated; and that the boring and/or test pit work progressed in such manner that the samples recovered are reasonably representative of the subsurface conditions.

1704.8Pile foundations.A special inspector shall be present when pile foundations are being installed and during

tests. The special inspector shall make and submit to the commissioner records of the installation of each pile and results of load tests. Records shall include the cutoff and tip elevation of each pile relative to a permanent reference. A special inspector shall verify that pile installation procedures are in accordance with Section 1808.

1704.9Pier foundations.Special inspection is required for all pier foundations designed in accordance with Section 1802.2.4.

Exception: Piers for support of lightweight fences, recreational equipment, site furnishings and similar construction, unless special inspection is specifically noted as required on the approved construction documents.

1704.9.1Underpinning operations.Special inspection is required for underpinning operations in accordance with Sections 1704.19 and 1814.

1704.10Wall panels, curtain walls and veneers.Special inspection is required for exterior architectural wall panels and the anchoring of veneers designed for installation on buildings above a height of 40 feet (12 192 mm). Special inspection of masonry veneer on such structures shall be in accordance with Section 1704.5.

1704.10.1Special Inspection for wall panels, curtain walls and veneers.The special inspector shall become familiar with and retain a copy of the construction documents, shop drawings, instructions for the sequence of component installation, samples and/or mock-ups, if supplied. The special inspector shall field check the site conditions at the time the structure is prepared for component installation to verify: that the supporting structure is properly aligned and within design tolerances, that required inserts are properly installed, that framing components are properly sized, aligned, and without structural defects or weakness, that anchors are properly placed, welded, bolted and finished as applicable, that weeps, flashings and tubes are in place and properly drained, that joinery and end dams are properly sealed per plans, that sealing materials with sufficient elongation capability are provided, that gaskets meet specifications, that materials are installed to compensate for horizontal and vertical movement in accordance with the design and the manufacturers guidelines and that any other observations pertinent to safety of performance of the wall system have been performed.

1704.10.2Unsafe wall conditions.The special inspector shall report any immediate hazards to the department.

1704.11Sprayed fire-resistant materials.Special inspections for sprayed fire-resistant materials applied to structural elements and decks shall be in accordance with Sections 1704.11.1 through 1704.11.5. Special inspections shall be based on the fire-resistance design as designated in the approved construction documents.

1704.11.1Structural member surface conditions.The surfaces shall be prepared in accordance with the approved fire-resistance design and the approved manufacturer's written instructions. The prepared surface of structural members to be sprayed shall be inspected before the application of the sprayed fire-resistant material.

1704.11.2Application.The substrate shall have a minimum ambient temperature before and after application as specified in the approved manufacturer's written instructions. The area for application shall be ventilated during and after application as required by the manufacturer's written instructions.

1704.11.3Thickness.The average thickness of the sprayed fire-resistant materials applied to structural elements shall not be less than the thickness required by the approved fire-resistant design. Individual measured thickness, which exceeds the thickness specified in a design by 1/4 inch (6.4mm) or more, shall be recorded as the thickness specified in the design plus 1/4 inch (6.4 mm). For design thicknesses 1 inch (25 mm) or greater, the minimum allowable individual thickness shall be the design thickness minus 1/4 inch (6.4 mm). For design thicknesses less than 1 inch (25 mm), the minimum allowable individual thickness shall be the design thickness minus 25 percent. Thickness shall be determined in accordance with ASTM E 605. Samples of the sprayed fire-resistant materials shall be selected in accordance with Sections 1704.11.3.1 and 1704.11.3.2.

1704.11.3.1Floor, roof and wall assemblies.The thickness of the sprayed fire-resistant material applied to floor, roof

and wall assemblies shall be determined in accordance with ASTM E 605, taking the average of not less than four measurements for each 1,000 square feet (93 m²) of the sprayed area on each floor or part thereof.

1704.11.3.2 Structural framing members. The thickness of the sprayed fire-resistant material applied to structural members shall be determined in accordance with ASTM E 605. Thickness testing shall be performed on not less than 25 percent of the structural members on each floor.

1704.11.4 Density. The density of the sprayed fire-resistant material shall not be less than the density specified in the approved fire-resistant design. Density of the sprayed fire-resistant material shall be determined in accordance with ASTM E 605.

1704.11.5 Bond strength. The cohesive/adhesive bond strength of the cured sprayed fire-resistant material applied to structural elements shall not be less than 150 pounds per square foot (psf) (7.18 kN/m²). The cohesive/adhesive bond strength shall be determined in accordance with the field test specified in ASTM E 736 by testing in-place samples of the sprayed fire-resistant material selected in accordance with Sections 1704.11.5.1 and 1704.11.5.2.

1704.11.5.1 Floor, roof and wall assemblies. The test samples for determining the cohesive/adhesive bond strength of the sprayed fire-resistant materials shall be selected from each floor, roof and wall assembly at the rate of not less than one sample for every 10,000 square feet (929 m²) or part thereof of the sprayed area in each story.

1704.11.5.2 Structural framing members. The test samples for determining the cohesive/adhesive bond strength of the sprayed fire-resistant materials shall be selected from beams, girders, joists, trusses and columns at the rate of not less than one sample for each type of structural framing member for each 10,000 square feet (929 m²) of floor area or part thereof in each story.

1704.11.6 Inspection of existing sprayed fire-resistant materials during alterations in office spaces and spaces classified in occupancy Group B. In office spaces and spaces classified in occupancy Group B, where an alteration exposes any required sprayed fire-resistant materials on structural members or where, pursuant to an alteration, persons are required to enter or access areas in which such sprayed fire-resistant materials are capable of being observed, the existing required sprayed fire-resistant materials shall be subject to special inspection. Such inspection shall require a determination, based on visual inspection (i) that the existing sprayed fire-resistant materials as originally applied or installed comply with the applicable requirements of this code, including those for installation methods, materials, thickness and coverage; and (ii) that, since their original application, the integrity of the existing sprayed fire-resistant materials has not been compromised, damaged or displaced by the current alteration or by any prior alteration or other event.

1704.12 Exterior insulation and finish systems (EIFS). Special inspections shall be required for all EIFS applications installed more than fifteen feet above adjacent finished grades.

1704.12.1 The special inspection shall include verification of: compliance with approved construction documents for attachment to structure, installation of waterproofing membranes, weeps, drains, mold prevention features and conformance with the manufacturers installation guidelines.

1704.13 Special cases. Special inspections shall be required for proposed work that is, in the opinion of the commissioner, unusual in its nature, such as, but not limited to, the following examples:

1. Construction materials and systems that are alternatives to materials and systems prescribed by this code.
2. Unusual design applications of materials described in this code.
3. Materials and systems required to be installed in accordance with additional manufacturer's instructions that prescribe requirements not contained in this code or in standards referenced by this code.

1704.14 Special inspection for smoke control. Smoke control systems shall be tested by a special inspector in accordance with Section 1704.14.1 and 909.

1704.14.1 Testing scope. The test scope shall be as follows:

1. During erection of ductwork and prior to concealment for the purposes of leakage testing and recording of device location.

2. Prior to occupancy and after sufficient completion for the purposes of pressure difference testing, flow measurements and detection and control verification.

1704.15 Special inspection for mechanical systems. Mechanical systems regulated by the New York City Mechanical Code Sections 107 and 507 and Chapters 10, 11, and 12 shall be inspected for conformance with the approved construction documents.

1704.15.1 Tests for mechanical systems. Tests of mechanical systems shall be performed in accordance with New York City Mechanical Code Sections 507.16, 1011, 1108 and 1208.

Exception: Listed and labeled self contained factory built equipment and appliances deemed to meet the design, manufacture and factory test requirements of this code shall be field tested in accordance with their manufacturers installation and operational test standards.

1704.15.2 Special Inspection of Mechanical Systems. Inspections of mechanical systems shall include the following as applicable to the system:

1. Visual certification that required components of such systems are complete in accordance with the manufacturers installation guidelines and the approved construction documents,

2. Supports, hangers, seismic bracing, and vibration isolation equipment are properly spaced and anchored to supporting structure,

3. Installation of required signage and safety instructions,

4. Electrical components are installed and electrical sign-off issued,

5. Ventilation balancing report is complete and in accordance with design documents,

6. Required labeling, operational instructions and safety signage properly posted,

7. All related special inspections for such systems are complete,

8. Noise producing mechanical equipment located within 100 feet (30 480 mm) of habitable room windows shall be tested at the equipment for compliance with the design STC rating of the equipment,

9. Required fire and smoke dampers are installed and functioning properly.

Exception: Systems and equipment exempt from service equipment certificate of compliance in accordance with Section 28-116.4.1 of the Administrative Code.

1704.16 Special inspection for fuel storage and fuel piping systems. Fuel oil storage equipment including tanks, pumps, valves, including transfer, return, fill and vent piping, hangers and bracing, fill and vent terminals, and related systems regulated by the New York City Mechanical Code Sections 1308, shall be inspected for conformance with the approved construction documents and the manufacturer's installation standards. Testing of fuel storage tanks and piping

shall be performed in accordance with New York City Mechanical Code Section 1308.1.

Exceptions:

1. Testing for listed fuel oil storage tanks 660 gallons (2498 L) or less in capacity, supplied with a label or manufacturer's certification attesting that the tank was factory tested to a testing standard indicated in New York City Mechanical Code Section 1308.1.

2. Systems and equipment exempt from service equipment certificate of compliance in accordance with Section 28-116.4.1 of the Administrative Code.

1704.17High pressure steam piping.High pressure steam piping regulated by New York City Mechanical Code Section 1210, shall be subject to special inspection in accordance with this section.

1704.17.1Welding.The special inspector shall verify the qualifications of the welder and the quality of the welding materials and equipment prior to welding operations. The special inspector shall review the proposed welding procedures for compliance with applicable standards listed in the New York City Mechanical Code Section 1210.4.

1704.17.2Welding operations.The special inspector shall perform periodic inspection of the pipe joining and welding operations in accordance with the above. Radiographic testing shall be applied to connections as indicated in New York City Mechanical Code Section 1210.4.9. Unacceptable connections and installations shall be rejected.

1704.17.3Testing of high pressure steam piping.Hydrostatic testing shall be performed on the completed installation of new and altered systems in accordance with New York City Mechanical Code Section 1210.4.10.

Exception: Testing requirements shall not apply to alteration or repairs to existing high pressure steam piping systems in which the integrity of the piping is not affected. Such alterations shall be visually inspected for compliance with the approved construction documents.

1704.18High pressure gas piping.High pressure gas piping regulated in New York City Fuel Gas Code Section 406 shall be subject to periodic special inspection in accordance with this section.

1704.18.1Welding.The special inspector shall verify the qualifications of the welder, the quality of the welding materials and equipment prior to welding operations. The special inspector shall review the proposed welding procedures for compliance with applicable standards listed in New York City Fuel Gas Code Section 406.

1704.18.2Welding operations.The special inspector shall perform periodic special inspection for the pipe joining and welding operations in accordance with the above, Radiographic testing shall be performed to the connections as indicated in New York City Fuel Gas Code Section 406.4.

1704.18.3Testing of high pressure gas piping.Pressure testing shall be performed on the completed installation of new and altered systems in accordance with New York City Fuel Gas Code Section 406.4.

1704.19Structural safety during construction operations.Construction work consisting of structural alterations, excavation, underpinning, and demolition work that requires "design" as defined in Chapter 33, including: earth shoring, underpinning, protection of adjacent structures and buildings, shall be subject to special inspection in accordance with this section. All alterations to existing structures in which loads are transferred from one structural system of structural elements to another, such as installation of columns or girders, replacement of existing bearing walls, the creation of openings or slots in existing walls, girders or floors, alteration of arches, rigid frames, trusses in frame buildings, or where the stability or integrity of a structural system is to be temporarily diminished shall be subject to special inspections in accordance with this section.

Exception:

Construction operations not requiring "design" as defined in Chapter 33.

1704.19.1General. Prior to commencement of work, the special inspector shall review the contractor's proposed sequence of operations and determine the areas of work that require design. A written statement shall be prepared, mutually acceptable to the contractor and the special inspector, indicating:

1. The portions of work requiring design as defined in Chapter 33.
2. The names and addresses of the licensed professionals that have been engaged to supply design documents for applicable work.
3. The approximate dates for delivery of design documents.
4. A schedule of periodic special inspections, at agreed intervals, including adequate frequency to assure the contractor's continued compliance with the proposed designs and sequence of construction operations.

1704.19.2Site structural safety design documents. Design documents including: shop drawings, sketches and written descriptions of proposed work regarding site structural safety in construction operations shall be prepared by a registered design professional in the employ of the owner or the contractor. Such designs may be revised at any time by the registered design professional. Copies of the special inspection log book, the design documents and revisions thereof, shall be maintained at the jobsite, and at the office of the special inspector, available for use and review at all reasonable times, until the structural work is complete. In the case of alteration to existing structures, the design documents shall be reviewed by the registered design professional of record.

1704.19.3Inspection for structural safety in construction operations. The special inspector shall visit the jobsite at agreed intervals, assess the ongoing work and verify that operations conform with the design documents. Deficiencies shall be reported as required by Section 1704.2. In the event unsafe conditions are discovered, the commissioner and the registered design professional employed by the contractor shall be immediately notified.

1704.19.4Records of structural safety inspections in construction operations. The special inspection logbook shall be maintained at the special inspector's office and shall contain the following information:

1. Project identification, application number and address.
2. Date and time of each inspection.
3. Names of personnel who performed each inspection.
4. Dates of off-site meetings, names of the participants and a summary of the conversations.
5. Any significant observations or instructions given related to any of the following:
 - 5.1. Deviations from the design documents.
 - 5.2. Anticipated field conditions.
 - 5.3. Proper execution of the work.
 - 5.4. Safe jobsite conditions.
 - 5.5. Precautions taken to maintain safe conditions, if work is stopped for any reason.

1704.19.5Special requirements for work in occupied multiple dwellings. When alteration or construction operations are performed at occupied multiple dwellings, the special inspector shall periodically verify compliance with a Tenant

Protection Plan as provided for in Chapter 1 of Title 28 of the Administrative Code.

1704.20Site storm drainage disposal and detention facilities.Storm water detention facilities, roof retention facilities and dry-well systems shall be inspected for conformance with the approved construction documents. Minor variations, based on actual site conditions shall be acceptable at the discretion of the registered design professional of record. Verification shall include:

1. Materials of construction.
2. Bedding of pipe and facilities.
3. Placement and installation of fill materials.
4. Volume of drywell and detention facilities.
5. Installation of volume flow control devices.
6. Workmanship and quality of installation.
7. Overall conformance with the approved construction documents. Hydrostatic testing of the detention system shall be required when the system is designed as watertight.

1704.20.1Soil percolation tests.Soil percolation tests shall be performed at the site of a proposed individual on-site private sewage disposal system installation to determine the suitability of the soil and site. Such test shall be performed under the supervision of a special inspector. The results of the percolation tests shall be filed on forms provided by the department, stating the suitability of the site and the capacity of the subsoil for the proposed use. The registered design professional of record for the dry-well system shall be notified immediately if the results of the percolation test demonstrate that the approved system may not function as designed.

1704.21Sprinkler system special inspection.New and altered sprinkler system shall be inspected in accordance with Section 903. The permit holder responsible for the sprinkler work shall perform all required acceptance tests, complete and sign the appropriate contractor's material and test certifications. The special inspector shall witness all required tests, and shall verify that all installations of all materials, fittings, hangers, assemblies and signage are in accordance with the approved construction documents and that the contractor has transmitted required maintenance literature and instruction to the owner. The special inspector shall verify that the material and test certification forms have been transmitted to the Fire Department and the department.

Exception: Special inspection of the hydrostatic test shall not be required when such test is witnessed by the department.

1704.22Standpipe system special inspection.New and altered standpipe systems shall be inspected in accordance with Section 905 The permit holder responsible for the standpipe work shall perform all required acceptance tests, complete and sign the appropriate contractor's material and test certifications. The special inspector shall witness all required tests, verify that installation of all materials, fittings, hangers, assemblies and signage are in accordance with the approved construction documents and that the contractor has transmitted required maintenance literature and instruction to the owner. The special inspector shall verify that the material and test certification forms have been transmitted to the Fire Department and the department.

Exception: Special inspection of the hydrostatic test shall not be required when such test is witnessed by the department.

1704.23Heating systems.Special Inspection shall be required for new and altered boilers and heating systems. All boilers and heating systems, including chimney connectors, shall be inspected for compliance with the approved

construction documents. New heating systems shall be tested in accordance with New York City Mechanical Code Section 1011. Alterations to heating systems shall be subjected to applicable tests for the altered portions of the system and to verification of its satisfactory operation within the existing system.

Exception: Tests and inspections need not duplicate any tests or inspections previously certified by the commissioner or a duly authorized insurance company.

1704.24Chimneys.New and altered chimneys shall be subject to special inspection. The chimney shall be inspected to verify compliance with the approved construction documents, and proper clearance or isolation from adjacent combustible construction. Testing of the chimney shall be performed in accordance with Section 810 of the New York City Mechanical Code.

Exception: A pressurized smoke test need not be performed on an existing negative pressure chimney if the lining of such chimney is not affected by alterations and the registered design professional specifies on the approved construction documents that such test need not be performed on such chimney.

1704.25Through-penetration firestop systems, concealed draftstop and fireblock systems.All through-penetration firestopping, draftstopping and fireblocking shall be subject to periodic special inspection prior to concealment to determine compliance with the approved construction documents. Listed systems shall be inspected for compliance with their listing.

Exception: Through-penetration firestop systems may be inspected in accordance with ASTM E2174-04 when authorized by the registered design professional of record and when the contractor applies the procedures established in that standard.

1704.26Aluminum Construction.The special inspections for structural aluminum elements of buildings and structures shall be as required by section 1704.28.1.

1704.26.1Welding Operations.All welding operations of aluminum elements shall be subject to special inspection for compliance with this code, AA ASM-35, Parts 1A and 1B of the Aluminum Design Manual, and AWS D1.2.

Exception: Welding operations in connections where the calculated stresses in the welds are less than fifty percent of the basic allowable values.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1704.1.1.1 added L.L. 8/2008 § 132, eff. July 1, 2008.

1704.1.1.2 renumbered (former 1704.1.1.1) L.L. 8/2008 § 132, eff. July 1, 2008.

1704.3.4 added L.L. 8/2008 § 133, eff. July 1, 2008.

1704.4 table amended L.L. 8/2008 § 134, eff. July 1, 2008.

1704.5 amended L.L. 8/2008 § 135, eff. July 1, 2008.

1704.6.3 added L.L. 8/2008 § 136, eff. July 1, 2008.

1704.6.3.1 added L.L. 8/2008 § 136, eff. July 1, 2008.

1704.6.4 added L.L. 8/2008 § 136, eff. July 1, 2008.

1704.6.4.1 added L.L. 8/2008 § 136, eff. July 1, 2008.

1704.9.1 amended L.L. 8/2008 § 137, eff. July 1, 2008.

1704.15.2 Exception amended L.L. 8/2008 § 139, eff. July 1, 2008.

1704.16 Exceptions item 2 amended L.L. 8/2008 § 140, eff. July 1, 2008.



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SECTION BC 1707: SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE

NYC Administrative Code § 28-BC 1707

1707.1 Reserved.

1707.2 Reserved.

1707.3 Reserved.

1707.4 Reserved.

1707.5 Reserved.

1707.6 Reserved.

1707.7 Mechanical and electrical components. Periodic special inspection is required during the anchorage of electrical equipment for emergency power systems in structures assigned to Seismic Design Category C, or D. Periodic special inspection is required during the installation of piping systems intended to carry flammable, combustible or highly toxic contents and their associated mechanical units in structures assigned to Seismic Design Category C, or D. Periodic special inspection is required during the installation of HVAC ductwork that will contain hazardous materials in structures assigned to Seismic Design Category C, or D.

1707.8 Seismic isolation system. There shall be periodic special inspection during the fabrication and installation of isolator units and energy dissipation devices if used as part of the seismic isolation system.



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SECTION BC 1710: DESIGN STRENGTHS OF MATERIALS

NYC Administrative Code § 28-BC 1710

1710.1 Conformance to standards.

The design strengths and permissible stresses of any structural material that are identified by a manufacturer's designation as to manufacture and grade by mill tests, or the strength and stress grade is otherwise confirmed to the satisfaction of the commissioner shall conform to the specifications and methods of design of accepted engineering practice or the rules of the department in the absence of applicable standards.

1710.2 New materials. For materials that are not specifically provided for in this code, the design strengths and permissible stresses shall be established by tests as provided for in Section 1711.



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SECTION BC 1711: ALTERNATIVE TEST PROCEDURE

NYC Administrative Code § 28-BC 1711

1711.1 General.

In the absence of rules or other approved standards, and upon special application by a registered design professional the commissioner shall make, or cause to be made, the necessary tests and investigations; or the commissioner shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in Article 113 of Chapter 1 of Title 28 of the Administrative Code. The cost of all tests and other investigations required under the provisions of this code shall be borne by the permit applicant.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.
1711.1 amended L.L. 8/2008 § 138, eff. July 1, 2008.



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SECTION BC 1712: TEST SAFE LOAD

NYC Administrative Code § 28-BC 1712

1712.1 Where required.

Where proposed construction is not capable of being designed by approved engineering analysis, or where proposed construction design method does not comply with the applicable material design standard, the system of construction or the structural unit and the connections shall be subjected to the tests prescribed in Section 1714. The commissioner shall accept certified reports of such tests conducted by an approved testing agency, provided that such tests meet the requirements of this code and approved procedures.



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SECTION BC 1713: IN-SITU LOAD TESTS

NYC Administrative Code § 28-BC 1713

1713.1 General.

Whenever there is a reasonable doubt as to the stability or load-bearing capacity of a completed building, structure or portion thereof for the expected loads, an engineering assessment shall be required. The engineering assessment shall involve either a structural analysis or an in-situ load test, or both. The structural analysis shall be based on actual material properties and other as-built conditions that affect stability or load-bearing capacity, and shall be conducted in accordance with the applicable design standard. If the structural assessment determines that the load-bearing capacity is less than that required by the code, load tests shall be conducted in accordance with Section 1713.2. If the building, structure or portion thereof is found to have inadequate stability or load-bearing capacity for the expected loads, modifications to ensure structural adequacy or the removal of the inadequate construction shall be required.

1713.2 Test standards. Structural components and assemblies shall be tested in accordance with the appropriate material standards listed in Chapter 35. In the absence of a standard that contains an applicable load test procedure, the test procedure shall be developed by a registered design professional and approved. The test procedure shall simulate loads and conditions of application that the completed structure or portion thereof will be subjected to in normal use.

1713.3 In-situ load tests. In-situ load tests shall be conducted in accordance with Section 1713.3.1 or 1713.3.2 and shall be supervised by a registered design professional. The test shall simulate the applicable loading conditions specified in Chapter 16 as necessary to address the concerns regarding structural stability of the building, structure or portion thereof.

1713.3.1 Load test procedure specified. Where a standard listed in Chapter 35 contains an applicable load test procedure and acceptance criteria, the test procedure and acceptance criteria in the standard shall apply. In the absence of specific load factors or acceptance criteria, the load factors and acceptance criteria in Section 1713.3.2 shall apply.

1713.3.2 Load test procedure not specified. In the absence of applicable load test procedures contained within a standard referenced by this code or acceptance criteria for a specific material or method of construction, such existing

structure shall be subjected to a test procedure developed by a registered design professional that simulates applicable loading and deformation conditions. For components that are not a part of the seismic-load-resisting system, the test load shall be equal to two times the unfactored design loads. The test load shall be left in place for a period of 24 hours. The structure shall be considered to have successfully met the test requirements where the following criteria are satisfied:

1. Under the design load, the deflection shall not exceed the limitations specified in Section 1604.3.
2. Within 24 hours after removal of the test load, the structure shall have recovered not less than 75 percent of the maximum deflection.
3. During and immediately after the test, the structure shall not show evidence of failure.



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SECTION BC 1714: PRECONSTRUCTION LOAD TESTS

NYC Administrative Code § 28-BC 1714

1714.1 General.

In evaluating the physical properties of materials and methods of construction that are not capable of being designed by approved engineering analysis or do not comply with applicable material design standards listed in Chapter 35, the structural adequacy shall be predetermined based on the load test criteria established in this section.

1714.2 Load test procedures specified. Where specific load test procedures, load factors and acceptance criteria are included in the applicable design standards listed in Chapter 35, such test procedures, load factors and acceptance criteria shall apply. In the absence of specific test procedures, load factors or acceptance criteria, the corresponding provisions in Section 1714.3 shall apply.

1714.3 Load test procedures not specified. Where load test procedures are not specified in the applicable design standards listed in Chapter 35, the load-bearing and deformation capacity of structural components and assemblies shall be determined on the basis of a test procedure developed by a registered design professional that simulates applicable loading and deformation conditions. For components and assemblies that are not a part of the seismic-load-resisting system, the test shall be as specified in Section 1714.3.1. Load tests shall simulate the applicable loading conditions specified in Chapter 16.

1714.3.1 Test procedure. The test assembly shall be subjected to an increasing superimposed load equal to not less than two times the superimposed design load. The test load shall be left in place for a period of 24 hours. The tested assembly shall be considered to have successfully met the test requirements if the assembly recovers not less than 75 percent of the maximum deflection within 24 hours after the removal of the test load. The test assembly shall then be reloaded and subjected to an increasing superimposed load until either structural failure occurs or the superimposed load is equal to two and one-half times the load at which the deflection limitations specified in Section 1714.3.2 were reached, or the load is equal to two and one-half times the superimposed design load. In the case of structural components and assemblies for which deflection limitations are not specified in Section 1714.3.2, the test specimen shall be subjected to an increasing superimposed load until structural failure occurs or the load is equal to two and

one-half times the desired superimposed design load. The allowable superimposed design load shall be taken as the lesser of:

1. The load at the deflection limitation given in Section 1714.3.2.
2. The failure load divided by 2.5.
3. The maximum load applied divided by 2.5.

1714.3.2 Deflection. The deflection of structural members under the design load shall not exceed the limitations in Section 1604.3.

1714.4 Wall and partition assemblies. Load-bearing wall and partition assemblies shall sustain the test load both with and without window framing. The test load shall include all design load components. Wall and partition assemblies shall be tested both with and without door and window framing.

1714.5 Exterior window and door assemblies. The design pressure rating of exterior windows and doors in buildings shall be determined in accordance with Section 1714.5.1 or 1714.5.2.

Exception: Structural wind load design pressures for window units smaller than the size tested in accordance with Section 1714.5.1 or 1714.5.2 shall be permitted to be higher than the design value of the tested unit provided such higher pressures are determined by accepted engineering analysis. All components of the small unit shall be the same as the tested unit. Where such calculated design pressures are used, they shall be validated by an additional test of the window unit having the highest allowable design pressure.

1714.5.1 Aluminum, vinyl and wood exterior windows and glass doors. Aluminum, vinyl and wood exterior windows and glass doors shall be labeled as conforming to AAMA/NWWDA 101/I.S.2 or 101/I.S.2/NAFS. The label shall state the name of the manufacturer, the approved labeling agency and the product designation as specified in AAMA/NWWDA 101/I.S.2 or 101/I.S.2/NAFS. Products tested and labeled as conforming to AAMA/NWWDA 101/I.S.2 or 101/I.S.2/NAFS shall not be subject to the requirements of Sections 2403.2 and 2403.3.

1714.5.2 Exterior windows and door assemblies not provided for in Section 1714.5.1. Exterior window and door assemblies shall be tested in accordance with ASTM E 330. Exterior window and door assemblies containing glass shall comply with Section 2403. The design pressure for testing shall be calculated in accordance with Chapter 16. Each assembly shall be tested for 10 seconds at a load equal to 1.5 times the design pressure.

1714.6 Test specimens. Test specimens and construction shall be representative of the materials, workmanship and details normally used in practice. The properties of the materials used to construct the test assembly shall be determined on the basis of tests on samples taken from the load assembly or on representative samples of the materials used to construct the load test assembly. Required tests shall be conducted or witnessed by an approved agency.



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SECTION BC 1715: MATERIAL AND TEST STANDARDS

NYC Administrative Code § 28-BC 1715

1715.1 Test standards for joist hangers and connectors.

1715.1.1 Test standards for joist hangers. The vertical load-bearing capacity, torsional moment capacity and deflection characteristics of joist hangers shall be determined in accordance with ASTM D 1761, using lumber having a specific gravity of 0.49 or greater, but not greater than 0.55, as determined in accordance with AFPA NDS for the joist and hangers.

1715.1.2 Vertical load capacity for joist hangers. The vertical load capacity for the joist hanger shall be determined by testing three joist hanger assemblies as specified in ASTM D 1761. If the ultimate vertical load for any one of the tests varies more than 20 percent from the average ultimate vertical load, at least three additional tests shall be conducted. The allowable vertical load for a normal duration of loading of the joist hanger shall be the lowest value determined from the following:

1. The lowest ultimate vertical load from any test divided by three (where three tests are conducted and each ultimate vertical load does not vary more than 20 percent from the average ultimate vertical load).
2. The average ultimate vertical load for all tests divided by six (where six or more tests are conducted).
3. The vertical load at which the vertical movement of the joist with respect to the header is 0.125 inch (3.2 mm) in any test.
4. The allowable design load for nails or other fasteners utilized to secure the joist hanger to the wood members.
5. The allowable design load for the wood members forming the connection.

1715.1.3 Torsional moment capacity for joist hangers. The torsional moment capacity for the joist hanger shall be determined by testing at least three joist hanger assemblies as specified in ASTM D 1761. The allowable torsional

moment for normal duration of loading of the joist hanger shall be the average torsional moment at which the lateral movement of the top or bottom of the joist with respect to the original position of the joist is 0.125 inch (3.2 mm).

1715.1.4 Design value modifications for joist hangers. Allowable design values for joist hangers that are determined by Item 4 or 5 in Section 1715.1.2 shall be permitted to be modified by the appropriate duration of loading factors as specified in AFPA NDS but shall not exceed the direct loads as determined by Item 1, 2 or 3 in Section 1715.1.2. Allowable design values determined by Item 1, 2 or 3 in Sections 1715.1.2 and 2305.1 shall not be modified by duration of loading factors.

1715.2 Concrete and clay roof tiles.

1715.2.1 Overturning resistance. Concrete and clay roof tiles shall be tested to determine their resistance to overturning due to wind in accordance with SBCCI SSTD 11 and Chapter 15.

1715.2.2 Wind tunnel testing. When roof tiles do not satisfy the limitations in Chapter 16 for rigid tile, a wind tunnel test shall be used to determine the wind characteristics of the concrete or clay tile roof covering in accordance with SBCCI SSTD 11 and Chapter 15.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 18: SOILS AND FOUNDATIONS
SECTION BC 1801: GENERAL

NYC Administrative Code § 28-BC 1801

1801.1 Scope.

The provisions of this chapter shall apply to building and foundation systems in those areas not subject to scour or water pressure by wind and wave action. Buildings and foundations subject to such scour or water pressure loads shall be designed in accordance with Chapter 16 and Appendix G of this code.

1801.2Design.Allowable bearing pressures, allowable stresses and design formulas provided in this chapter shall be used with the allowable stress design load combinations specified in Section 1605.3.

The quality and design of materials used structurally in excavations, footings and foundations shall conform to the requirements specified in Chapters 16, 19, 21, 22 and 23 of this code. Excavations and fills shall also comply with Chapter 33.

Members shall have adequate capacity to resist all applicable combinations of the loads listed in Chapter 16, in accordance with the following:

Where the structural design of soil or foundation members is based on allowable working stresses, the load reductions as described in Section 1605.3.1.1 shall be modified to use the following factors and the design shall be based on the resulting load values:

1. For the design of temporary structures (defined for this chapter as a structure, that will be in place 180 days or less) load combinations in Equations 16-8, 16-9 can be multiplied by a factor of 0.75.
2. For the design of temporary structures the Equations 16-10, 16-11, 16-12 can be multiplied by a factor of 0.67.
3. For any combination of dead loads with three or more variable loads, these variable loads can be multiplied by a factor of 0.67.

4. For the combinations of loads to be used in the design of permanent structures, the load due to lateral earth and ground water pressure shall be multiplied by a factor of 1.

1801.2.1 Foundation design for seismic overturning. Where the foundation is proportioned using the strength design load combinations of Section 1605.2, the seismic overturning moment need not exceed 75 percent of the value computed from Section 9.5.5.6 of ASCE 7 for the equivalent lateral force method, or Section 1618 for the modal analysis method.



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SECTION BC 1802: FOUNDATION AND SOILS INVESTIGATIONS

NYC Administrative Code § 28-BC 1802

1802.1 General.

Foundation and soils investigations shall be subject to special inspections in accordance with Sections 1704.7, 1704.8 and 1704.9 and be conducted in conformance with Sections 1802.2 through 1802.6. An Engineer shall scope, supervise and approve the classification and subsurface investigation of soil.

1802.2 Where required. The owner or applicant shall submit a foundation and soils investigation to the commissioner where required in Sections 1802.2.1 through 1802.2.3.

1802.2.1 Questionable soil. Where the safe load-bearing capacity of the soil is in doubt, or where a load-bearing value superior to that specified in this code is claimed, the commissioner shall require that the necessary investigation be made. Such investigation shall comply with the provisions of Sections 1802.4 through 1802.6.

1802.2.2 Seismic design category C. Where a structure is determined to be in Seismic Design Category C in accordance with Section 1616, an investigation shall be conducted, and shall include an evaluation of the following potential hazards resulting from earthquake motions: slope instability, liquefaction and surface rupture due to faulting or lateral spreading.

1802.2.3 Seismic design category D. Where the structure is determined to be in Seismic Design Category D in accordance with Section 1616, the soils investigation requirements for Seismic Design Category C, given in Section 1802.2.6, shall be met, in addition to the following:

1. A site-specific analysis in accordance with Sections 1813.2, 1813.3, and 1813.4. Site specific response shall be evaluated for site peak ground acceleration magnitudes and source characteristics consistent with the design earthquake ground motions.

2. A determination of lateral pressures on basement, cellar, and retaining walls due to earthquake motions.

3. An assessment of potential consequences of any liquefaction and soil strength loss, including estimation of differential settlement, lateral movement or reduction in foundation soil-bearing capacity, and shall address mitigation measures. Such measures shall be given consideration in the design of the structure and shall include, but are not limited to, ground stabilization, selection of appropriate foundation type and depths, selection of appropriate structural systems to accommodate anticipated displacements or any combination of these measures. Peak ground acceleration shall be determined from a site-specific study taking into account soil amplification effects, as specified in Section 1615.2.

Exception: A site-specific study need not be performed provided that peak ground acceleration equal to SDS/2.5 is used, where SDS is determined in accordance with Section 1615.

1802.3Material classification.Soil and rock classification shall be based on materials disclosed by borings, test pits or other subsurface exploration methods and shall be determined in accordance with Tables 1804.1 and 1804.2 and Section 1804.2. Additional laboratory tests shall be conducted to ascertain these classifications where deemed necessary by the engineer responsible for the investigation or the commissioner.

1802.3.1General.For the purposes of this chapter, the definition and classification of soil materials for use in Table 1804.2 and Section 1804.2 shall be in accordance with ASTM D 2487.

1802.4Investigation.Soil classification shall be based on observation and any necessary tests of the materials disclosed by borings, test pits or other subsurface exploration made in appropriate locations. Additional studies shall be made as necessary to evaluate stratigraphy, slope stability, soil strength, adequacy of load-bearing soils, the effect of moisture variation on soil-bearing capacity, compressibility, liquefaction and expansiveness.

1802.4.1Scope of investigation.The scope of the soil investigation, including the number, types and depths of borings or test pits; the equipment used to drill and sample; the in-situ testing; and the laboratory testing program shall be determined by the engineer responsible for the investigation. Borings shall be uniformly distributed under the structure or distributed in accordance with load patterns imposed by the structure. As a minimum, investigations shall include two exploratory borings for built-over areas up to 5,000 square feet (465 m²), and at least one additional boring for each additional 2,500 square feet (233 m²), or part thereof, of built-over areas up to 20,000 square feet (1860 m²). For built-over areas in excess of 20,000 square feet (1860 m²), there shall be at least one boring for each additional 5,000 square feet (465 m²), or part thereof. Borings shall be taken into bedrock, or to an adequate depth below the top of the load bearing strata to demonstrate that the foundation loads have been sufficiently dissipated. For structures having an average area load (dead plus live) of 1,000 pounds per square foot (47.9 kN/m²) or more, at least one boring for every 10,000 square feet (930 m²) of footprint area shall penetrate at least 100 feet (30 480 mm) below the curb grade or 5 feet (1524 mm) into bedrock of Class 1c or better, whichever is less. At least one-half of the borings satisfying this requirement shall be located within the limits of the built-up area and the remainder shall be within 25 feet (7620 mm) of the built-up area limits. For structures to be supported on pile foundations the required number of borings shall be increased by 30 percent.

The engineer responsible for the investigation shall have a qualified representative on the site inspecting all boring, sampling, and in-situ testing operations.

Exception: Test pits may be substituted for borings for one- and two-story structures, and may be used to establish the top of rock, where practical, for taller structures. In such case, there shall be prepared a test pit observation report that shall be submitted to the commissioner.

1802.4.2Existing data.Suitable borings, test pits, probings, and the logs and records that were obtained as part of earlier exploration programs and that meet the requirements of this section may be used as partial fulfillment of the requirements of this section, subject to the approval of the commissioner. Additional borings shall be made at the direction of the engineer responsible for the investigation when uncertainty exists as to the accuracy of the available information or specific new project or loading conditions indicate the need for additional information.

1802.4.3Ground-water table.The subsurface soil investigation shall determine the existing ground-water table.

1802.4.4Compressible soils.In areas that have compressible soils, the investigation shall determine the extent of these soils in the plan area of the building and shall determine the pre-consolidation pressure and consolidation parameters of the deposit using appropriate laboratory tests. The information shall be used in the building's foundation design.

1802.5Soil and rock sampling.The soil boring and sampling procedures and apparatus shall be in accordance with ASTM D 1586 and D 1587 and generally accepted engineering practice. Where liquefaction assessment is performed, the investigation shall be in accordance with ASTM D 6066. The rock coring, sampling procedure and apparatus shall be in accordance with ASTM D 2113 and generally accepted engineering practice. Rock cores shall be obtained with a double-tube core barrel with a minimum outside diameter of 2 7/8 inches (73 mm). With the approval of the engineer responsible for the investigation, smaller diameter double-tube core barrels may be used under special circumstances such as telescoping casing to penetrate boulders, or space limitations requiring the use of drill rigs incapable of obtaining large diameter cores.

1802.5.1Bedrock support.Where the foundation design relies on rock to support footings, piles or caisson sockets, a sufficient number of rock corings shall extend at least 10 feet (3 3048 mm) below the lowest level of bearing to provide assurance of the rock soundness. Where foundations are to rest on bedrock and such rock is exposed over a part or all of the area of the building, borings are not required in those areas where rock is exposed, provided the following requirements are met:

1. The presence of defects or the inclination of bedding planes in the rock are of such size and location so as not to affect stability of the foundation.

2. The foundation is not designed for bearing pressures exceeding those permitted in Table 1804.2.

1802.5.2Alternative investigative methods.The engineer responsible for the investigation may engage specialized technicians to conduct alternative investigative methods such as cone penetrometer probing. Data from these investigations may be used to: 1) supplement soil boring and rock coring information, provided there is a demonstrated correlation between the findings, and 2) determine material properties for static and seismic or liquefaction analyses. Subject to the approval of the commissioner, alternate exploration methods may replace borings on a two for one basis, but in no case shall there be less than two standard borings for every 10,000 square feet (930 m²) of footprint area. All the borings shall penetrate at least 100 feet (30 480 mm) below the curb grade or 5 feet (1524 mm) into rock when the average area load equals or exceeds one thousand pounds per square foot (48 kPa).

Other in-situ testing methods, such as geophysical, vane shear, and pressure meter may be used to determine engineering design parameters, but may not be used as a substitute for the required number of borings.

1802.5.3Material disposition.Soil and rock samples shall be maintained in an accessible location, by the permit holder or owner and made available to the engineer responsible for the investigation and to the department, until the foundation work has been completed and accepted, or until one year after the investigation is complete, whichever is longer.

1802.6Reports.The soil classification and design load-bearing capacity shall be shown on the construction documents. Where required by the commissioner, the engineer responsible for the investigation shall sign, seal and submit a written report of the investigation that includes, but need not be limited to, the following information:

1. A description of the planned structure
2. A plot showing the location of test borings and/or excavations.

3. A complete record of the soil sample descriptions.
4. A record of the soil profile.
5. Elevation of the water table, if encountered.
6. Results of in-situ or geophysical testing
7. Results of laboratory testing.
8. Recommendations for foundation type and design criteria, including but not limited to: bearing capacity of natural or compacted soil, mitigation of the effects of liquefaction (if applicable), differential settlement and varying soil strength; and the effects of adjacent loads.
9. Expected total and differential settlement.
10. Pile and pier foundation recommendations and installed capacities
11. Special design and construction provisions for footings or foundations founded on expansive soils, as necessary.
12. Compacted fill material properties and testing in accordance with Section 1803.5.

For pile or pier foundations, the report shall also include:

1. Special installation procedures.
2. Pier and pile load test requirements.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 18: SOILS AND FOUNDATIONS
SECTION BC 1803: EXCAVATION, GRADING AND FILL

NYC Administrative Code § 28-BC 1803

1803.1 Excavations near footings or foundations.

Excavations for any purpose shall not remove lateral support from any footing or foundation without first underpinning or protecting the footing or foundation against settlement or lateral translation.

1803.2 Placement of backfill. The excavation outside the foundation shall be backfilled with soil that is free of organic material, construction debris, cobbles and boulders or a controlled low-strength material (CLSM). The backfill shall be placed in lifts and compacted, in a manner that does not damage the foundation or the waterproofing or damp proofing material.

Exception: Controlled low-strength material need not be compacted.

1803.3 Site grading. The ground immediately adjacent to the foundation shall be sloped away from the building as needed, or an approved alternate method of diverting water away from the foundation shall be used, where surface water would detrimentally affect the foundation bearing soils. Site grading shall also comply with Section 1101.11 of the New York City Plumbing Code.

1803.3.1 Seepage. In an excavation where soil and ground water conditions are such that an inward or upward seepage might be produced in materials intended to provide vertical or lateral support for foundation elements or for adjacent foundations, excavating methods shall control or prevent the inflow of ground water to prevent disturbance of the soil material in the excavation or beneath existing buildings. No foundation shall be placed on soil that has been disturbed by seepage unless remedial measures have been taken.

1803.4 Grading and fill in floodways. Any floodway encroachment in areas of special flood hazard shall comply with Appendix G.

1803.5 Compacted fill material. Where footings will bear on compacted fill material, the compacted fill shall comply

with the provisions of a geotechnical report, prepared by, signed and sealed by the engineer, which shall contain the following:

1. Specifications for the preparation of the site prior to placement of compacted fill material.
2. Specifications for material to be used as compacted fill.
3. Test method to be used to determine the maximum dry density and optimum moisture content of the material to be used as compacted fill.
4. Maximum allowable thickness of each lift of compacted fill material.
5. Field test method for determining the in-place dry density of the compacted fill.
6. Minimum acceptable in-place dry density expressed as a percentage of the maximum dry density determined in accordance with Item 3.
7. Number and frequency of field tests required to determine compliance with Item 6.
8. Acceptable types of compaction equipment for the specified fill materials.

1803.6 Controlled low-strength material (CLSM). Where footings will bear on controlled low-strength material (CLSM), the CLSM shall comply with the provisions of a geotechnical report prepared by, signed and sealed by the engineer, which shall contain the following:

1. Specifications for the preparation of the site prior to placement of the CLSM.
2. Specifications for the CLSM.
3. Laboratory or field test method(s) to be used to determine the compressive strength or bearing capacity of the CLSM.
4. Test methods for determining the acceptance of the CLSM in the field.
5. Number and frequency of field tests required to determine compliance with Item 4.

1803.7 Artificially treated soils. After the treatment procedure, a minimum of one boring shall be made for every 1,600 square feet (149 m²) of that portion of the building that is supported on treated soil, and a sufficient number of samples shall be recovered from the treated soil to demonstrate the efficacy of the treatment.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1803.3 amended L.L. 8/2008 § 141, eff. July 1, 2008.



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Chapter 18: SOILS AND FOUNDATIONS

SECTION BC 1804: ALLOWABLE LOAD-BEARING VALUES OF SOILS

NYC Administrative Code § 28-BC 1804

1804.1 Design.

The presumptive load-bearing values provided in Table 1804.1 shall be used with the allowable stress design load combinations specified in Section 1605.3 and Section 1801.2. Table 1804.1 Allowable Bearing Pressures Class of Materials (Notes 1 and 3) Maximum Allowable Foundation Pressure (TSF) Maximum Allowable Foundation Pressure (kPa) 1. Bedrock (Notes 2 and 7) 1.a Hard sound rock-gneiss, diabase, schist 60 5,746 1.b Medium Hard Rock-marble, serpentine 40 3,830 1.c Intermediate Rock-shale, sandstone 20 1,915 1.d Soft Rock-weathered rock 8 766 2. Sandy Gravel and Gravel (GW, GP) (Notes 3, 4, 8, and 9) 2.a Dense 10 958 2.b Medium 6 575 3. Granular Soils (GC, GM, SW, SP, SM, and SC) (Notes 4, 5, 8, and 9) 3.a Dense 6 575 3.b Medium 3 287 4. Clays (SC, CL, and CH) (Notes 4, 6, 8, and 9) 4.a Hard 5 479 4.b Stiff 3 287 4.c Medium 2 192 5. Silts and Silty Soils (ML and MH) (Notes 4, 8, and 9) 5.a Dense 3 287 5.b Medium 1.5 144 6. Organic silts, organic clays, peats, soft clays, loose granular soils and varved silts. See 1804.2.1 See 1804.2.1 7. Controlled and Uncontrolled Fills. See 1804.2.2 or 1804.2.3 See 1804.2.2 or 1804.2.3 Notes: 1. Where there is doubt as to the applicable classification of a soil stratum, the allowable bearing pressure applicable to the lower Class of material to which the given stratum might conform shall apply. 2. The tabulated values of allowable bearing pressures apply only for massive rocks or for sedimentary or foliated rocks, where the strata are level or nearly so, and, then only if the area has ample lateral support. Tilted strata and their relation to nearby slopes or excavations shall receive special consideration. The tabulated values for Class 1a materials (Hard sound rock) may be increased by 25 percent provided the geotechnical engineer performs additional tests and/or analyses substantiating the increase. 3. For intermediate conditions, values of allowable bearing pressure shall be estimated by interpolation between indicated extremes. 4. Footing embedment in soils shall be in accordance with section 1805.2 and the width of the loaded area not less than 2 feet (610 mm), unless analysis demonstrates that the proposed construction will have a minimum factor of safety of 2.0 against shear failure of the soil. 5. Estimates of settlements shall govern the allowable bearing value, subject to the maximums given in this table, and as provided in Section 1804.2.6. The bearing capacity of clay soils shall be established on the basis of the strength of such soils as determined by field or laboratory tests and shall provide a factor of safety against failure of the soil of not less than 2.0 computed on the basis of a recognized procedure of soils analysis, shall account for probable settlements of the building and shall not exceed the tabulated maximum values. 7.

Increases in allowable bearing pressure due to embedment of the foundation: The allowable bearing values for intermediate to hard rock shall apply where the loaded area is on the surface of sound rock. Where the loaded area is below the adjacent rock surface and is fully confined by the adjacent rock mass and provided that the rock mass has not been shattered by blasting or otherwise is or has been rendered unsound, these values may be increased ten percent of the base value for each one foot (0.3 meters) of embedment below the surface of the adjacent rock surface in excess of one foot (0.3 meters), but shall not exceed 200 percent of the values.⁸ The allowable bearing values for soils of Classes 2, 3, 4, and 5 determined in accordance with notes three, four and five above, shall apply where the loaded area is embedded 4 feet (1219 mm) or less in the bearing stratum. Where the loaded area is embedded more than 4 feet (1219 mm) below the adjacent surface of the bearing stratum, and is fully confined by the weight of the adjacent soil, these values may be increased five percent of the base value for each 1-foot (305) of additional embedment, but shall not exceed twice the values. Increases in allowable bearing pressure due to embedment shall not apply to soft rock, clays, silts and soils of classes 6 and 7.⁹ The allowable bearing values for soils of Classes 2, 3, 4, and 5 determined in accordance with this table and the notes thereto, may be increased up to one third where the density of the bearing stratum below the bottom of the footings increases with depth and is not underlain by materials of a lower allowable bearing pressure. Such allowable bearing values shall be demonstrated by a recognized means of analysis that the probable settlement of the foundation due to compression, and/or consolidation does not exceed acceptable limits for the proposed building.¹⁰ The maximum toe pressure for eccentrically loaded footings may exceed the allowable bearing value by up to 25 per cent if it is demonstrated that the heel of the footing is not subjected to tension.

1804.2 Allowable foundation pressure. The allowable foundation pressure for supporting soils at or near the surface shall not exceed the values specified in Table 1804.1, unless data to substantiate the use of a higher value are developed and contained in the engineer's geotechnical report and subject to the commissioner's approval. Allowable bearing pressure shall be considered to be the pressure at the base of a foundation in excess of the stabilized overburden pressure existing at the same level prior to construction operations.



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Chapter 18: SOILS AND FOUNDATIONS
SECTION BC 1805: FOOTINGS AND FOUNDATIONS

NYC Administrative Code § 28-BC 1805

1805.1 General.

Footings and foundations shall be designed and constructed in accordance with Sections 1805.1 through 1805.9. Footings and foundations shall be built on undisturbed soil, compacted fill material or CLSM. Compacted fill material shall be placed in accordance with Section 1803.5. CLSM shall be placed in accordance with Section 1803.6.

The top surface of footings shall be level. The bottom surface of footings is permitted to have a slope not exceeding one unit vertical in 10 units horizontal (10-percent slope). Footings shall be stepped where it is necessary to change the elevation of the top surface of the footing or where the surface of the ground slopes more than one unit vertical in 10 units horizontal (10-percent slope).

1805.2Depth of footings.The minimum depth of footings below the undisturbed ground surface shall be 12 inches (305 mm). Where applicable, the depth of footings shall also conform to Sections 1805.2.1 through 1805.2.3.

1805.2.1Frost protection.Except where otherwise protected from frost, foundation walls, piers and other permanent supports of buildings and structures shall be protected from frost by one or more of the following methods:

1. Extending a minimum of 4 feet (1219 mm) below grade;
2. Constructing in accordance with ASCE-32; or
3. Erecting on solid rock.

Exception: Free-standing buildings meeting all of the following conditions are shall not required to be protected:

1. Classified in Structural Occupancy Category I (See Table 1604.5);
2. Area of 400 square feet (37 m2) or less; and

3. Eave height of 10 feet (3048 mm) or less.

Footings shall not bear on frozen soil unless such frozen condition is of a permanent character.

1805.3 Foundations at different levels. Where footings are supported at different levels, or are at different levels from the footings of adjacent structures, the influence of the pressures under the higher footings on the stability of the lower footings shall be considered in the design. The design shall consider the requirements for lateral support of the material supporting the higher footing, the additional load imposed on the lower footings, and assessment of the effects of dragdown on adjacent pile-supported buildings.

1805.4 Footings. Footings shall be designed and constructed in accordance with Sections 1805.4.1 through 1805.4.6.

1805.4.1 Design. Footings shall be so designed that the allowable bearing capacity of the soil is not exceeded, and that differential settlement is minimized. The minimum width of footings shall be 18 inches (457 mm).

1805.4.1.1 Design loads. Footings shall be designed for the most unfavorable effects due to the combinations of loads specified in Section 1605.3 and Section 1801.2. The dead load shall include the weight of foundations, footings and overlying fill. Reduced live loads, as specified in Section 1607.9, are permitted to be used in the design of footings.

1805.4.1.2 Vibratory loads. Where machinery operations or other vibrations are transmitted through the foundation, consideration shall be given in the footing design to prevent detrimental disturbances of the soil.

1805.4.2 Concrete footings. The design, materials and construction of concrete footings shall comply with Sections 1805.4.2.1 through 1805.4.2.6 and the provisions of Chapter 19.

1805.4.2.1 Concrete strength. Concrete in footings shall have a specified compressive strength (f'_c) of not less than 2,500 pounds per square inch (psi) (17 237 kPa) at 28 days.

1805.4.2.2 Footing seismic ties. Where a structure is assigned to Seismic Design Category D in accordance with Section 1616, individual spread footings founded on soil defined in Section 1615.1.1 as Site Class E or F shall be interconnected by ties. Ties shall be capable of carrying, in tension or compression, a force equal to the product of the larger footing load times the seismic coefficient SDS divided by 10 unless it is demonstrated that equivalent restraint is provided by reinforced concrete beams within slabs on grade or reinforced concrete slabs on grade.

1805.4.2.3 Plain concrete footings. The edge thickness of plain concrete footings supporting walls of other than light-frame construction shall not be less than 8 inches (203 mm) where placed on soil.

Exception: For plain concrete footings supporting Group R-3 occupancies, the edge thickness is permitted to be 6 inches (152 mm), provided that the footing does not extend beyond a distance greater than the thickness of the footing on either side of the supported wall.

1805.4.2.4 Placement of concrete. Concrete footings shall not be placed through water unless a tremie or other method approved by the commissioner is used. Where placed under or in the presence of water, the concrete shall be deposited by approved means to ensure minimum segregation of the mix and negligible turbulence of the water.

1805.4.2.5 Protection of concrete. No foundation shall be placed on frozen soil. No foundation shall be placed in freezing weather unless provision is made to maintain the underlying soil free of frost. Concrete footings shall be protected from freezing during depositing and for a period of not less than five days thereafter. Water shall not be allowed to flow through the deposited concrete.

1805.4.3 Masonry-unit footings. The design, materials and construction of masonry-unit footings shall comply with the provisions of Chapter 21.

1805.4.4 Steel grillage footings. Grillage footings of structural steel shapes shall be separated with approved steel spacers and be entirely encased in concrete with at least 6 inches (152 mm) on the bottom and at least 4 inches (102 mm) at all other points. The spaces between the shapes shall be completely filled with concrete or cement grout.

1805.4.5 Timber footings. Refer to Chapter 23.

1805.4.6 Wood foundations. Refer to Chapter 23.

1805.5 Foundation walls. Concrete and masonry foundation walls shall be designed in accordance with Chapter 19 or 21, respectively.

1805.5.1 Foundation wall thickness. The minimum thickness of concrete and masonry foundation walls shall comply with Section 1805.5.1.1.

1805.5.1.1 Thickness based on walls supported. The thickness of foundation walls shall not be less than the thickness of the wall supported, except that foundation walls of at least 8-inch (203 mm) nominal width are permitted to support brick-veneered frame walls and 10-inch-wide (254 mm) cavity walls.

1805.5.2 Foundation wall drainage. Foundation walls shall be designed to support the weight of the full hydrostatic pressure of undrained backfill unless a drainage system is installed in accordance with Sections 1807.4.2 and 1807.4.3.] Foundation walls shall be designed to support the earth pressures due to the backfill including full hydrostatic pressure of undrained backfill unless a drainage system is installed in accordance with Sections 1807.4.2 and 1807.4.3.

1805.5.3 Pier and curtain wall foundations. Except in Seismic Design Category D, pier and curtain wall foundations are permitted to be used to support light-frame construction not more than two stories in height, provided the following requirements are met:

1. All load-bearing walls shall be placed on continuous concrete footings bonded integrally with the exterior wall footings.

2. The minimum actual thickness of a load-bearing masonry wall shall not be less than 4 inches (102 mm) nominal or 3 5/8 inches (92 mm) actual thickness, and shall be bonded integrally with piers spaced 6 feet (1829 mm) on center (o.c.).

3. Piers shall be constructed in accordance with Chapter 21 and the following:

- 3.1. The unsupported height of the masonry piers shall not exceed 10 times their least dimension.

- 3.2. Where structural clay tile or hollow concrete masonry units are used for piers supporting beams and girders, the cellular spaces shall be filled solidly with concrete or Type M or S mortar.

Exception: Unfilled hollow piers are permitted where the unsupported height of the pier is not more than four times its least dimension.

4. The maximum height of a 4-inch (102mm) load-bearing masonry foundation wall supporting wood frame walls and floors shall not be more than 4 feet (1219 mm) in height.

5. The unbalanced fill for 4-inch (102 mm) foundation walls shall not exceed 24 inches (610 mm) for solid masonry, nor 12 inches (305mm) for hollow masonry.

1805.6 Reserved.

1805.7 Reserved.

1805.8 Reserved.

1805.9 Seismic requirements. See Section 1910 for additional requirements for footings and foundations of structures assigned to Seismic Design Category C or D. For structures assigned to Seismic Design Category D, provisions of ACI 318, Sections 21.10.1 to 21.10.3 shall apply when not in conflict with the provisions of Section 1805. Concrete shall have a specified compressive strength of not less than 3,000 psi (20.68 MPa) at 28 days.

Exceptions:

1. Group R or U occupancies of light-framed construction and two stories or less in height are permitted to use concrete with a specified compressive strength of not less than 2,500 psi (17.2 MPa) at 28 days.
2. One- and two-family dwellings not more than three stories in height are not required to comply with the provisions of ACI 318, Sections 21.10.1 to 21.10.3.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1805.2.1 amended L.L. 8/2008 § 142, eff. July 1, 2008.

1805.4.2.1 amended L.L. 8/2008 § 143, eff. July 1, 2008.



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Chapter 18: SOILS AND FOUNDATIONS

SECTION BC 1806: RETAINING WALLS AND OTHER RETAINING STRUCTURES

NYC Administrative Code § 28-BC 1806

1806.1 General.

Retaining walls shall be designed to ensure stability against overturning, sliding, excessive foundation pressure and water uplift. Retaining walls shall be designed for a safety factor of 1.5 against lateral sliding and overturning.

1806.2 Seismic loads on retaining walls and other retaining structures. Seismic foundation design shall comply with the requirements of ASCE 7, Section 9.7. The geotechnical analysis and design shall take into consideration the yielding characteristics of the retaining walls or other retaining structures.



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SECTION BC 1807: DAMPPROOFING AND WATERPROOFING

NYC Administrative Code § 28-BC 1807

1807.1 Where required.

Walls or portions thereof that retain earth and enclose interior spaces and floors below grade shall be waterproofed and dampproofed in accordance with this section, with the exception of those spaces containing occupancy groups other than residential and institutional where such omission is not detrimental to the building or occupancy. Ventilation for crawl spaces shall comply with Section 1203.3.

1807.1.1 Story above grade. Where a basement or cellar is considered a story above grade and the finished ground level adjacent to the basement or cellar wall is below the basement or cellar floor elevation for 25 percent or more of the perimeter, the floor and walls shall be dampproofed in accordance with Section 1807.2 and a foundation drain shall be installed in accordance with Section 1807.4.2. The foundation drain shall be installed around the portion of the perimeter where the basement or cellar floor is below ground level. The provisions of Sections 1807.3 and 1807.4.1 shall not apply in this case.

1807.1.2 Under-floor space. The finished ground level of an under-floor space such as a crawl space shall not be located below the bottom of the footings. Where there is evidence that the ground-water table rises to within 6 inches (152 mm) of the ground level at the outside building perimeter, or that the surface water does not readily drain from the building site, the ground level of the under-floor space shall be as high as the outside finished ground level, unless an approved drainage system is provided. The provisions of Sections 1802.2.3, 1807.2, 1807.3 and 1807.4 shall not apply in this case.

1807.1.2.1 Flood hazard areas. For buildings and structures in areas of special flood hazard, the finished ground level of an under-floor space such as a crawl space shall comply with Appendix G.

1807.1.3 Ground-water control. Where the ground-water table is lowered and maintained at an elevation not less than 6 inches (152 mm) below the bottom of the lowest floor, the floor and walls shall be dampproofed in accordance with Section 1807.2. The design of the system to lower the ground-water table shall be based on accepted principles of

engineering that shall consider, but not necessarily be limited to, permeability of the soil, rate at which water enters the drainage system, rated capacity of pumps, head against which pumps are to operate and the rated capacity of the disposal area of the system.

1807.2Dampproofing required. Where hydrostatic pressure will not occur as determined by Section 1802, floors and walls for other than wood foundation systems shall be dampproofed in accordance with this section. Wood foundation systems shall be constructed in accordance with AFPA TR7.

1807.2.1Floors. Dampproofing materials for floors shall be installed between the floor and the base course required by Section 1807.4.1, except where a separate floor is provided above a concrete slab. Where installed beneath the slab, dampproofing shall consist of not less than 6-mil (0.006 inch; 0.152 mm) polyethylene with joints lapped not less than 6 inches (152 mm), or other approved methods or materials. Where permitted to be installed on top of the slab, dampproofing shall consist of mopped-on bitumen, not less than 4-mil (0.004 inch; 0.102 mm) polyethylene, or other approved methods or materials. Joints in the membrane shall be lapped and sealed in accordance with the manufacturer's installation instructions.

1807.2.2Walls. Dampproofing materials for walls shall be installed on the exterior surface of the wall, and shall extend from the top of the footing to above ground level. Dampproofing shall consist of a bituminous material, 3 pounds per square yard (16 N/m²) of acrylic modified cement, 1/8-inch (3.2 mm) coat of surface-bonding mortar complying with ASTM C 887, any of the materials permitted for waterproofing by Section 1807.3.2 or other approved methods or materials.

1807.2.2.1Surface preparation of walls. Prior to application of dampproofing materials on concrete walls, holes and recesses resulting from the removal of form ties shall be sealed with a bituminous material or other approved methods or materials. Unit masonry walls shall be parged on the exterior surface below ground level with not less than 3/8 inch (9.5 mm) of portland cement mortar. The parging shall be coved at the footing.

Exception: Parging of unit masonry walls is not required where a material is approved for direct application to the masonry.

1807.3Waterproofing required. Where the investigation required by Section 1802 indicates that a hydro-static pressure condition exists, and the design does not include a ground-water control system as described in Section 1807.1.3, walls and floors shall be waterproofed in accordance with this section.

1807.3.1Floors. Floors required to be waterproofed shall be of concrete, designed and constructed to withstand the hydrostatic pressures to which the floors will be subjected. Waterproofing shall be accomplished by placing a membrane of rubberized asphalt, butyl rubber, or not less than 6-mil (0.006 inch; 0.152 mm) polyvinyl chloride with joints lapped not less than 6 inches (152 mm) or other approved materials under the slab. Joints in the membrane shall be lapped and sealed in accordance with the manufacturer's installation instructions.

1807.3.2Walls. Walls required to be waterproofed shall be of concrete or masonry and shall be designed and constructed to withstand the hydrostatic pressures and other lateral loads to which the walls will be subjected. Waterproofing shall be applied from the bottom of the wall to not less than 12 inches (305 mm) above the maximum elevation of the ground-water table. The remainder of the wall shall be dampproofed in accordance with Section 1807.2.2. Waterproofing shall consist of two-ply hot-mopped felts, not less than 6-mil (0.006 inch; 0.152 mm) polyvinyl chloride, 40-mil (0.040 inch; 1.02 mm) polymer-modified asphalt, 6-mil (0.006 inch; 0.152 mm) polyethylene or other approved methods or materials capable of bridging nonstructural cracks. Joints in the membrane shall be lapped and sealed in accordance with the manufacturer's installation instructions.

1807.3.2.1Surface preparation of walls. Prior to the application of waterproofing materials on concrete or masonry walls, the walls shall be prepared in accordance with Section 1807.2.2.1.

1807.3.3 Joints and penetrations. Joints in walls and floors, joints between the wall and floor and penetrations of the wall and floor shall be made water-tight utilizing approved methods and materials.

1807.4 Subsoil drainage system. Where a hydrostatic pressure is to be controlled by a subsoil drainage system, dampproofing, a floor base course, and subdrains around the foundation perimeter and under the floor shall be provided. A subsoil drainage system designed and constructed in accordance with Section 1807.1.3 shall be deemed adequate for lowering the ground-water table.

1807.4.1 Floor base course. Floors of basements or cellars, except as provided for in Section 1807.1.1, shall be placed over a floor base course not less than 4 inches (102 mm) in thickness that consists of gravel or crushed stone containing not more than 10 percent of material that passes through a No. 4 (4.75 mm) sieve.

Exception: Where a site is located in well-drained gravel or sand/gravel mixture soils, a floor base course is not required.

1807.4.2 Foundation drain. A drain that consists of gravel or crushed stone containing not more than 10-percent material that passes through a No. 4 (4.75 mm) sieve shall be placed around the perimeter of a foundation. The drain shall extend a minimum of 12 inches (305 mm) beyond the outside edge of the footing. The thickness shall be such that the bottom of the drain is not higher than the bottom of the base under the floor, and that the top of the drain is not less than 6 inches (152 mm) above the top of the footing. The top of the drain shall be covered with an approved filter membrane material. Where a drain tile or perforated pipe is used, the invert of the pipe or tile shall not be higher than the floor elevation. The top of joints or the top of perforations shall be protected with an approved filter membrane material. The pipe or tile shall be placed on not less than 2 inches (51 mm) of gravel or crushed stone complying with Section 1807.4.1, and shall be covered with not less than 6 inches (152 mm) of the same material.

1807.4.3 Drainage discharge. The floor base and foundation perimeter drain shall discharge by gravity or mechanical means into an approved drainage system that complies with the New York City Plumbing Code.

Exception: Where a site is located in well-drained gravel or sand/gravel mixture soils, a dedicated drainage system is not required.

1807.5 In-situ walls. Applied waterproofing or damp-proofing need not be applied to slurry walls, or walls constructed below the water table. In-situ walls shall be constructed with watertight joints between individual elements and sealed by grouting to achieve a uniform watertight surface. External drains and waterproofing are not required. In-situ walls constructed using tangent pile or secant pile may require waterproofing systems, because their joints cannot be sealed. For both instances, an under floor seepage collection system or pressure slab shall be provided.



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SECTION BC 1808: PIER AND PILE FOUNDATIONS

NYC Administrative Code § 28-BC 1808

1808.1 Definitions.

The following words and terms shall, for the purposes of this section, have the meanings shown herein.

FLEXURAL LENGTH. Flexural length is the length of the pile from the first point of zero lateral deflection to the underside of the pile cap or grade beam.

PIER FOUNDATIONS. Pier foundations consist of isolated masonry or cast-in-place concrete structural elements extending into firm materials. Piers are relatively short in comparison to their width, with lengths less than or equal to 12 times the least horizontal dimension of the pier. Piers derive their load-carrying capacity through skin friction, through end bearing, or a combination of both.

Belled piers. Belled piers are cast-in-place concrete piers constructed with a base that is larger than the diameter of the remainder of the pier. The belled base is designed to increase the load-bearing area of the pier in end bearing.

PILE FOUNDATIONS. Pile foundations consist of concrete, wood or steel structural elements either driven into the ground or cast in place. Piles are relatively slender in comparison to their length, with lengths exceeding 12 times the least horizontal dimension. Piles derive their load-carrying capacity through skin friction, through end bearing, or a combination of both.

Augered-cast-in-place piles. Augered-cast-in-place piles are constructed by pumping grout into an augered hole during the withdrawal of the auger. The pile is reinforced with a single reinforcing bar, a reinforcing steel cage or a structural steel section.

Caisson piles. Steel cased piles are constructed by driving a steel shell to a watertight seal at the top of rock and drilling of an uncased socket within the rock. The shell and socket is filled with a steel core section and concrete or grout.

Compacted Concrete Piles. Compacted concrete piles are constructed by filling a shaft with low strength concrete as the casing is withdrawn.

Concrete-filled steel pipe and tube piles. Concrete-filled steel pipe and tube piles are constructed by driving a steel pipe or tube section into the soil and filling the pipe or tube section with concrete. The steel pipe or tube section is left in place during and after the deposition of the concrete.

Driven uncased piles. Driven uncased piles are constructed by driving a steel shell into the soil to shore an unexcavated hole that is later filled with concrete. The steel casing is lifted out of the hole during the deposition of the concrete. These piles are allowed only if the concrete is placed under pressure.

Enlarged base piles. Enlarged base piles are cast-in-place concrete piles constructed with a base that is larger than the diameter of the remainder of the pile. The enlarged base is designed to increase the load-bearing area of the pile in end bearing. Enlarged base piles include piles installed by driving a pre-cast concrete tip or by compacting concrete into the base of the pile to form an enlarged base.

H-Piles. Steel H-piles are constructed by driving a steel H shaped section into the ground.

Steel-cased piles. Steel-cased piles are constructed by driving a steel shell into the soil to shore an unexcavated hole. The steel casing is left permanently in place and filled with concrete.

Jacked Piles. Steel pipe piles installed by hydraulically jacking the pile into the ground against a dead weight reaction. Piles installed by other static forces shall be considered in this category.

Micro-piles/mini-piles. Small diameter drilled steel cased piles, driven uncased piles or caisson piles.

Open End Pipe Pile. Steel pipe driven open ended that may or may not be filled with concrete or soil.

1808.2 Piers and piles-general requirements.

1808.2.1 Design. Piles are permitted to be designed in accordance with provisions for piers in Section 1808 and Sections 1812.3 through 1812.11 where either of the following conditions exists, subject to the approval of the commissioner:

1. Group R-3 and U occupancies not exceeding two stories of light-frame construction, or
2. Where the surrounding foundation materials furnish adequate lateral support for the pile.

1808.2.2 General. Pier and pile foundations shall be designed and installed on the basis of a foundation investigation as defined in Section 1802.

The investigation and report provisions of Section 1802 shall be expanded to include, but not be limited to, the following:

1. Recommended pier or pile types and installed capacities.
2. Recommended center-to-center spacing of piers or piles.
3. Driving criteria.
4. Installation procedures.
5. Field inspection and reporting procedures (to include procedures for verification of the installed bearing capacity where required).

6. Pier or pile load test requirements.
7. Durability of pier or pile materials.
8. Designation of bearing stratum or strata.
9. Reductions for group action, where necessary.

Pier and pile foundations shall be designed and installed under the direct control of an engineer knowledgeable in the field of geotechnical engineering and pier and pile foundations and shall be subject to special inspection performed under the direct control of such engineer. The engineer shall certify to the commissioner that the piers or piles as installed satisfy the design criteria.

1808.2.3Special types of piles.The use of types of piles not specifically mentioned herein is permitted, subject to the approval of the commissioner, upon the submission of acceptable test data, calculations and other information relating to the structural properties and load capacity of such piles. The allowable stresses shall not in any case exceed the limitations specified herein.

1808.2.4Pile caps.Pile caps shall be of reinforced concrete, and shall include all elements to which piles are connected, including grade beams and mats. The soil immediately below the pile cap shall not be considered as carrying any vertical load. The tops of piles shall be embedded not less than 3 inches (76 mm) into pile caps and the caps shall extend at least 4 inches (102 mm) beyond the edges of piles. The tops of piles shall be cut back to sound material before capping.

1808.2.5Stability.Piers or piles shall be braced to provide lateral stability in all directions. Three or more piles connected by a rigid cap shall be considered braced, provided that the piles are located in radial directions from the centroid of the group not less than 60 degrees (1 rad) apart. A two-pile group in a rigid cap shall be considered to be braced along the axis connecting the two piles. Methods used to brace piers or piles shall be subject to the approval of the commissioner. Piles supporting walls shall be driven alternately in lines spaced at least 1 foot (305 mm) apart and located symmetrically under the center of gravity of the wall load carried, unless effective measures are taken to provide for eccentricity and lateral forces, or the wall piles are adequately braced to provide for lateral stability. A single row of piles without lateral bracing is permitted for one- and two-family dwellings and lightweight construction not exceeding two stories or 35 feet (10 668 mm) in height, provided the centers of the piles are located within the width of the foundation wall.

1808.2.6Structural integrity.Piers or piles shall be installed in such a manner and sequence as to prevent distortion or damage to piles being installed or already in place to the extent that such distortion or damage affects the structural integrity of the piles.

1808.2.6.1Minimum spacing of piles.Piles shall be spaced to meet the following requirements:

1. Spacing of piles shall provide for adequate distribution of the load on the pile group to the supporting soil. In no case shall the minimum center-to-center spacing of piles be less than 24 inches (610 mm) nor less than the following for the specific types of piling indicated in this chapter.

2. Minimum spacing between enlarged base concrete piles shall be 4 feet 6 inches (1372 mm), center to center except that where the shafts of such piles are cased for their full length, this spacing may be reduced to 3 feet 6 inches (1067 mm). Where a question exists as to possible damage to adjacent previously driven piles, these minimums shall be increased. Minimum center-to-center spacing of piles at the bearing level shall be at least two and one half times the outside diameter of the shell.

3. Unless special measures are taken to assure that piles will penetrate sufficiently to meet the requirements of

1808.2.8 without interfering with or intersecting each other, the minimum center to center spacing of piles shall be twice the average diameter of the butt for round piles, one and three quarters times the diagonal for rectangular piles; or, for taper piles, twice the diameter at a level two thirds of the pile length measured up from the tip.

4. In cases of practical difficulty, the spacing of new piles from existing piles under an adjacent building may be less than the above values provided that the requirements relating to minimum embedment and pile interference are satisfied and that the soil under the proposed and existing buildings is not overloaded by the closer pile grouping.

1808.2.6.2 Piles located near a lot line. Piles located near a lot line shall be designed on the assumption that the adjacent lot will be excavated to a depth of 10 feet (3048 mm) below the nearest legally established curb level. Where such excavation would reduce the embedded length of the pile, the portion of the pile exposed shall be deemed to provide no lateral or vertical support, and the load carrying determination shall be made the resistance offered by the soil that is subject to potential excavation has been discounted.

1808.2.7 Splices. Splices shall be constructed so as to provide and maintain true alignment and position of the component parts of the pile during installation and subsequent thereto and shall be of adequate strength to transmit the vertical and lateral loads (including tensions) and the moments occurring in the pile section at the location of the splice without exceeding the allowable stresses for such materials as established in Section 1809. In all cases splices shall develop at least 50 percent of the capacity of the pile in bending. In all cases pile splices situated in the upper 10 feet (3048 mm) of the pile shall be capable of resisting (at allowable working stresses) the applied moments and shears or the moment and shear that would result from an assumed eccentricity of the pile load of 3 inches (76 mm), whichever is greater. For piles located near a lot line, the embedded length of such piles shall be determined on the basis that the adjacent site will be excavated to a depth of 10 feet (3048 mm) below the nearest established curb level as required in Section 1808.2.6.2.

1808.2.8 Allowable pier or pile loads. Allowable pier or pile loads shall be determined in accordance with Section 1808.2.8.1 through 1808.2.8.9.

1808.2.8.1 Determination of allowable loads. The allowable axial and lateral loads on piers or piles shall be determined by load tests or a recognized method of analysis. The allowable load shall be determined by a licensed engineer experienced in geotechnical engineering and shall be approved by the commissioner.

The allowable axial load on a pile shall be the least value permitted by consideration of the following factors (for battered piles, the axial load shall be computed from the resultant of all vertical loads and lateral forces occurring simultaneously):

1. The capacity of the pile as a structural member.
2. The allowable bearing pressure on soil strata underlying the pile tips.
3. The resistance to penetration of the piles, including resistance to driving, resistance to jacking, the rate of penetration, or other equivalent criteria.
4. The capacity as indicated by load test, where load tests are required.
5. The maximum loads prescribed in Section 1808.2.8.1.3.

1808.2.8.1.1 Bearing capacity. The allowable pile load shall be limited by the provision that the pressures in materials at and below the pile tips, produced by the loads on individual piles and by the aggregate of all piles in a group or foundation, shall not exceed the allowable bearing values established in Table 1804.1. The transfer of load from piles to soil shall be determined by a recognized method of analysis. As an alternative, for purposes of this section, piles or pile groups may be assumed to transfer their loads to the underlying materials by spreading the load uniformly

at an angle of sixty degrees with the horizontal, starting at a polygon circumscribing the piles, located as follows:

1. For piles embedded entirely in decomposed rock or granular soils, or in controlled fill materials, the polygon shall be circumscribed at a level located two-thirds of the embedded length of the pile, measured up from the tip.

2. For piles penetrating through silts and clays into bearing in decomposed rock or granular soils, the polygon shall be circumscribed at the bottom of the strata of silts or clays.

1808.2.8.1.2 Bearing stratum. The plans for the proposed work shall establish, in accordance with the requirements relating to allowable bearing pressure, the bearing stratum to which the piles in the various sections of the building must penetrate and the approximate elevations of the top of such bearing stratum. Where penetration of a given distance into the bearing strata is required for adequate distribution of the loads, such penetration shall be shown on the plans. The indicated elevations of the top of the bearing strata shall be modified by such additional data as may be obtained during construction. All piles shall penetrate to or into the designated bearing stratum.

1808.2.8.1.3 Maximum loads. Except as permitted by the provisions of Section 1808.2.8.3.1.6, the maximum allowable pile load shall not exceed the values specified in Table 1808.2.8.1.3. **Table 1808.2.8.1.3 Maximum Allowable Pile Loads**

Type of Pile	Maximum Allowable Pile Load (Tons)
Caisson Piles	No upper limit
Open-end pipe (or tube) piles bearing on rock of classes 1a, 1b, or 1c	18-in O.D. and greater 250
14-in to 18-in O.D.	200
12-in to 14-in	150
10-in to 12-in	100
8-in to 10-in	60
Closed-end pipe (or tube) piles, H-piles, cast-in-place concrete, enlarged base piles, and precast concrete piles bearing on rock of Classes 1a, 1b, or 1c	150
Piles (other than timber piles) bearing on soft rock of Class 1d	80
Piles (other than timber piles) that receive their principal support other than by direct bearing on rock of Class 1a. through 1d	75
Timber piles bearing on rock of Class 1a. through 1d	25
Timber piles bearing in suitable soils	40 tons maximum permissible with load test, 30 tons maximum without load test.

1808.2.8.1.4 Minimum pile penetrations. Piles shall penetrate the minimum distance required to develop the required load capacity of the pile as established by the required penetration resistance and load tests as applicable.

1808.2.8.1.5 Capacity as indicated by resistance to penetration. Where subsurface investigation and general experience in the area indicate that the soil that must be penetrated by the pile consists of glacial deposits containing boulders, or fills containing riprap, excavated detritus, masonry, concrete or other obstructions in sufficient numbers to present a hazard to the installation of the piles, the selection of type of pile and penetration criteria shall be subject to the approval of the commissioner but in no case shall the minimum penetration resistance be less than that stated in Tables 1808.2.8.1.5A and 1802.8.2.8.1.5B. **Table 1808.2.8.1.5A Minimum Driving Resistance and Minimum Hammer Energy for Steel H-Piles, Pipe Piles, Precast and Cast-in-Place Concrete Piles and Composite Piles (other than timber)**

Minimum Driving Resistance ^{a,c,d,e}	Pile Capacity (tons)	Hammer Energy ^b (ft. lbs.)	Friction Piles (blows/ft.)	Piles Bearing on Soft Rock (Class 1.d) (blows/ft.)	Piles Bearing on Rock (Class 1.a 1.b and 1.c)
Up to 20	15,000	19	48	19,000	15
27	24,000	11	16	30	15,000
30	15,000	30	72	19,000	23
40	24,000	18	26	40	15,000
44	96	19,000	32	53	24,000
24	34	5	Blows	50	15,000
72	120	per 19,000	49	80	1/4 inch
24,000	35	60	Minimum	32,000	24
40	hammer	60	15,000	96	240
energy of	19,000	63	150	15,000	24,000
44	100	ft. lbs.)	32,000	30	50
70	& 80	19,000			

5 Blows 24,000

per 32,000 1/4 inch (minimum Hammer energy of 19,000 ft. lbs.) Notes: a. Final driving resistance shall be the sum of tabulated values plus resistance exerted by non-bearing materials. The driving resistance of non-bearing materials shall be taken as the resistance experienced by the pile during driving, but which will be dissipated with time and may be approximated as described in Section 1808.2.8.1.5.1.b. The hammer energy indicated is the rated energy. c. Sustained driving resistance. Where piles are to bear in Soft Rock, the minimum driving resistance shall be maintained for the last six inches, unless a higher sustained driving resistance requirement is established by load test. Where piles are to bear in soil classes 2 through 5, the minimum driving resistance shall be maintained for the last twelve inches unless load testing demonstrates a requirement for higher sustained driving resistance. No pile need be driven to a resistance to

penetration (in blows per inch [blows per 25 mm]) more than twice the resistance indicated in this table, nor beyond the point at which there is no measurable net penetration under the hammer blow.d. The tabulated values assume that the ratio of total weight of pile to weight of striking part of the hammer does not exceed 3.5. If a larger ratio is to be used, or for other conditions for which no values are tabulated, the driving resistance shall be as approved by the commissioner.e. For intermediate values of pile capacity, minimum requirements for driving resistance may be determined by straight line interpolation.Table 1808.2.8.1.5B Minimum Driving Resistance and Hammer Energy for Timber Piles Pile Capacity (tons) Minimum Driving Resistance (blows-in.) to be added to driving resistance exerted by non-bearing materials 1,3,4 Hammer Energy (ft.-lbs.)2 Up to 20 7,500-12,000 Over 20 to 25 9,000-12,000

14,000-16,000 Over 25 to 30

Formula in Note 4 shall apply 12,000-16,000 (single-acting hammers) Greater than 30

15,000-20,000 (double-acting hammers) Notes:1. The driving resistance exerted by non-bearing materials is the resistance experienced by the pile during driving, but which will be dissipated with time and may be approximated as described in Section 1808.2.8.1.5.1.2. The hammer energy indicated is the rated energy.3. Sustained driving resistance. Where piles are to bear in soil classes Soft Rock, the minimum driving resistance shall be maintained for the last six inches, unless a higher sustained driving resistance requirement is established by load test. Where piles are to bear in soil classes 2 thru 5, the minimum driving resistance measured in blows per inch [blows per 25 mm] shall be maintained for the last twelve inches unless load testing demonstrates a requirement for higher sustained driving resistance. No pile need be driven to a resistance to penetration in blows per inch [blows per 25 mm] more than twice the resistance indicated in this table nor beyond the point at which there is no measurable net penetration under the hammer blow.4. The minimum driving resistance shall be determined by the following formula:
$$P = 2WhH \text{ or } P = 2E(S + 0.1)(S + 0.1)$$
Where: P = Allowable pile load in pounds. Wp = Weight of pile in pounds. Wh = Weight of striking part of hammer in pounds. H = Actual height of fall of striking part of hammer in feet. E = Rated energy delivered by the hammer per blow in foot lbs. S = Penetration of pile per blow, in inches, after the pile has been driven to a depth where successive blows produce approximately equal net penetration. The value Wp shall not exceed three times Wh.

1808.2.8.1.5.1 Piles installed by use of steam-powered, air-powered, diesel-powered or hydraulic impact hammers.

1. The minimum required driving resistance and the requirements for hammer energies for various types and capacities of piles are given in Tables 1808.2.8.1.5A and 1808.2.8.1.5.B. To obtain the required total driving resistance, the indicated driving resistances shall be added to any driving resistance experienced by the pile during installation, but which will be dissipated with time (resistance exerted by non-bearing materials or by materials which are to be excavated). For the purposes of this section, the resistance exerted by non-bearing materials may be approximated as the resistance to penetration of the pile recorded when the pile has penetrated to the bottom of the lowest stratum of nominally unsatisfactory bearing material (class 6 and uncontrolled fills, but not controlled fill) or to the bottom of the lowest stratum of soft or loose deposits of soils of class 4 or 5 but only where such strata are completely penetrated by the pile.

2. Alternate for similitude method-The requirement for installation of piling to the penetration resistances given in tables 1808.2.8.1.5A and 1808.2.8.1.5B may be waived where the following six conditions are satisfied:

2.1. The piles bear on, or in, soil of class 2 through class 5.

2.2. The stratigraphy, as defined by not less than one boring for every 1600 square feet (149 m2) of building area, shall be reasonably uniform or divisible into areas of uniform conditions.

2.3. Regardless of pile type or capacity, one load test, as described in Section 1808.2.8.1.5.3, shall be conducted in each area of uniform conditions, but not less than two typical piles for the entire foundation installation of the building or group of buildings on the site, nor less than one pile for every 15,000 square feet (1394 m2) of pile foundation area shall be load tested.

2.4. Except as permitted by the provisions of paragraph 6 below, all building piles within the area of influence of a given load-tested pile of satisfactory performance shall be installed to the same or greater driving resistance as the successful load-tested pile. The same or heavier equipment of the same type that was used to install the load-tested pile shall be used to install all other building piles, and the equipment shall be operated identically. Also, all other piles shall be of the same type, shape, external dimension, and equal or greater cross-section as the load-tested pile. All building piles within the area of influence represented by a given satisfactory load-tested pile shall bear in, or on the same bearing stratum as the load test pile.

2.5. A report by an engineer shall be submitted to the commissioner for review and approval establishing that the soil bearing pressures do not exceed the values permitted by Table 1804.1 and that the probable differential settlements will not cause stress conditions in the building in excess of those permitted by the provisions of this code.

2.6. Where the structure of the building or the spacing and length of the piling is such as to cause the building and its foundation to act as an essentially rigid body, the building piles may be driven to length and/or penetration into the bearing stratum without regard to penetration resistance, subject to the requirement of paragraph 5 above, relating to the submission and approval of a report.

1808.2.8.1.5.2 Piles installed by jacking or other static forces. The carrying capacity of a pile installed by jacking or other static forces shall be not more than 50 percent of the load or force used to install the pile to the required penetration, except for piles jacked into position for underpinning. The working load of each permanent underpinning pile shall not exceed the larger of the following values: two-thirds of the total jacking force used to obtain the required penetration if the load is held constant for seven hours without measurable settlement; or one-half of the total jacking force at final penetration if the load is held for a period of one hour without measurable settlement. The jacking resistance used to determine the working load shall not include the resistance offered by non-bearing materials which will be dissipated with time.

1808.2.8.1.5.3 Piles installed by use of vibratory hammer. The capacity of piles installed by vibratory hammer shall not exceed the value established on the principle of similitude, as follows:

1. Comparison piles, as required by the provisions of Item 4 below, shall be installed using an impact hammer and driving resistances corresponding to the proposed pile capacities as determined in paragraph (c) below or to tip elevations and driving resistances as determined by the engineer.

2. For each comparison pile, an identical index pile shall be installed by use of the vibratory hammer at a location at least 4 feet (1219 mm), but not more than 6 feet (1829 mm), from each comparison pile. The index piles shall be installed to the same tip elevation as the comparison pile, except that where the comparison piles bear on rock, the index piles shall bear in or on similar material. All driving data for the index pile shall be recorded.

3. The index piles shall be load tested in accordance with the provisions of Item 4 of this section. Should the specified load test criteria indicate inadequate capacity of the index piles, steps a, b, and c shall be repeated using longer, larger, or other types of piles.

4. All building piles within the area of influence of a given, satisfactorily tested index pile shall be installed to the same or lesser rate of penetration (inches per minute [mm per minute]) as the successful index pile. The same equipment that was used to install the index pile, identically operated in all aspects, shall be used to install the building piles. All building piles shall be of the same type size and shape as the index pile. All building piles within the area of influence as represented by a given satisfactorily tested index pile shall bear in, or on, the same bearing stratum as the index pile.

1808.2.8.2 Driving criteria. The allowable compressive load on steel and concrete piles, where determined solely by the application of an approved wave equation analyses, shall not exceed 40 tons (356 kN). The allowable compressive loads on timber piles, where determined solely by the wave equation analysis shall not exceed 30 tons. For allowable

loads greater than these values, the wave equation method of analysis may be used to establish initial driving criteria, but final driving criteria and the allowable load shall be verified by load tests. The delivered energy of the hammer to be used shall be the maximum consistent with the size, strength and weight of the driven piles. The use of a follower is permitted only with the approval of the engineer of record. The introduction of fresh hammer cushion or pile cushion material just prior to final penetration is not permitted.

1808.2.8.3 Load tests. Where design compressive loads per pier or pile are greater than 40 tons, (30 tons for timber piles) or where drilled or jacked piles are not installed in Class 1.a, 1.b or 1.c material, or where final penetration is by a vibratory hammer, or where the design load for any pier or pile foundation is in doubt, piers or piles shall be load tested in accordance with this section. At least one pier or pile shall be test loaded in each area of uniform subsoil conditions.

1808.2.8.3.1 Load test evaluation. It shall be permitted to evaluate pile load tests with any of the following methods:

1. Davisson Offset Limit.
2. Brinch-Hansen 90 percent Criterion.
3. Chin-Konder Extrapolation.
4. Other methods approved by the commissioner.

1808.2.8.3.1.1 Additional load tests. Where required by the commissioner, additional piers or piles shall be load tested where necessary to establish the allowable capacity. The load capacity shall be determined by an engineer in accordance with 1808.2.8.3. For friction piles where the actual production pile lengths vary more than twenty five per cent from that of the test pile, the engineer shall require an investigation to determine the adequacy of the piles.

1808.2.8.3.1.2 Load test requirements. Before any load test is made, the proposed apparatus and structure to be used in making the load test shall be satisfactory to the commissioner. The test shall be made under the responsible engineer's surveillance. A complete record of such tests shall be filed with the commissioner. Areas of the foundation site within which the subsurface soil conditions are substantially similar in character shall be established by the engineer. For piles installed by impact hammer, one load test shall be conducted in each area of substantially similar conditions, but not less than one typical pile for the entire foundation installation of the building or group of buildings on the site occupying a total area of 5,000 square feet (465 m²) or less; and not less than two load tests for a site having a footprint between 5,000 (465 m²) and 30,000 (2787 m²) square feet and one additional load test for each 20,000 (1860 m²) square feet of added footprint area.

1808.2.8.3.1.3 Load test procedures. Load tests shall be conducted in accordance with ASTM D 1143 standard procedures and the following conditions:

1. Dial extensometer gages shall provide readings to the nearest 0.001 inch (0.025 mm) Electrical transducers may be used to make settlement observations provided that backup measurements are made utilizing dial extensometers as described herein at sufficient times to validate the transducer readings. The total test load shall remain in place until the rate of settlement does not exceed 0.012 inches (0.305 mm) over a time period of twelve hours. The total load shall be removed in decrements not exceeding twenty five per cent of the total load at one hour intervals or longer. In addition to observations required by ASTM D 1143, settlement observations shall be performed at one-half minute, one minute, two minute and four minute intervals after application of each load increment, and twenty four hours after the entire test load has been removed.

2. Any temporary supporting capacity that the soil might provide to the pile during a load test, but which would be dissipated with time, shall be eliminated by casing off or by other suitable means, such as increasing the total test load to account for such temporary capacity.

1808.2.8.3.1.4Alternative test methods.Load test methods other than those described in Section 1808.2.8.3 may be used subject to the approval of the commissioner where three or more load tests are required. In such case, at least one alternative test shall be performed as a calibration on a static load tested pile or nearby pile driven to comparable resistance. No more than one half the required number of load tests may be performed by alternative methods. Alternative tests shall be performed under the supervision of an engineer experienced in the methods used. The number of alternative tests shall be at least twice the number of replaced static load tests.

1808.2.8.3.1.5Acceptance criteria.The allowable pile load shall be the lesser of the two values computed as follows:

1. Fifty percent of the applied load causing a net settlement of the pile of not more than one 1/100 of an inch per ton (0.25 mm per 8.9 kN) of applied load. Net settlement in this paragraph is defined as gross settlement due to the total test load minus the rebound after removing one hundred per cent of the test load.

2. Fifty percent of the applied load causing a net settlement of the pile of 3/4 of an inch (19 mm). Net settlement in this paragraph is defined as the gross settlement due to the total test load less the amount of elastic shortening in the pile section due to total test load. The elastic shortening shall be calculated as if the pile is designed as an end-bearing pile or as a friction pile. Alternatively, the net settlement may be measured directly using a telltale or other suitable instrumentation.

1808.2.8.3.1.6Substantiation of higher allowable loads.The pile capacities tabulated in Table 1808.2.8.1.3 may be exceeded where a higher value can be substantiated on the basis of load tests and analysis. The provisions of paragraphs 1808.2.8.3.1.2 and 1808.2.8.3.1.3 shall be supplemented, as follows:

The final load increment shall remain in place for a total of not less than twenty-four hours; single test piles shall be subjected to cyclical loading or suitably instrumented with telltales and strain gauges so that the movements of the pile tip and butt may be independently determined and load transfer to the soil evaluated. A complete record demonstrating satisfactory performance of the test shall be submitted to the commissioner.

1808.2.8.4Allowable frictional resistance.The assumed frictional resistance developed by any pier or uncased cast-in-place pile shall not exceed one-sixth of the bearing value of the soil material at minimum depth as set forth in Table 1804.1, up to a maximum of 500 psf (24 kPa), unless a greater value is allowed by the commissioner after a soil investigation as specified in Section 1802 is submitted. Frictional resistance and bearing resistance shall not be assumed to act simultaneously unless recommended by a soil investigation as specified in Section 1802.

1808.2.8.5Uplift capacity.Where required by the design, the uplift capacity of a single pier or pile shall be determined in accordance with accepted engineering practice based on a minimum factor of safety of three or by uplift load tests conducted in accordance with ASTM D 3689. The maximum allowable uplift load shall not exceed the ultimate load capacity divided by a factor of safety of two. The design uplift capacities of a pile group shall not exceed the sum of the design uplift capacities of the individual piles in the group, nor the uplift capacity calculating the group action of the pile in accordance with accepted engineering practice where the calculated ultimate group capacity is divided by a safety factor of 2.5.

1808.2.8.6Load-bearing capacity.Piers, individual piles and groups of piles shall develop ultimate load capacities of at least twice the design working loads in the designated load-bearing layers. Analysis shall show that no soil layer underlying the designated load-bearing layers causes the load-bearing capacity safety factor to be less than two and that settlements of strata within the influence of the pile groups and the average area load of the supported structure are tolerable for the structure.

1808.2.8.7Bent piers or piles.The load-bearing capacity of piers or piles discovered to have a sharp or sweeping bend shall be determined by an approved method of analysis in accordance with accepted engineering practice or by load testing a representative pier or pile.

1808.2.8.8Overloads on piers or piles.The maximum compressive load on any pier or pile due to mislocation shall not exceed 110 percent of the allowable design load. If the total load on any pile, so determined, is in excess of one hundred ten percent of the allowable load bearing capacity, correction shall be made by installing additional piles or by other methods of load distribution as required to reduce the maximum pile load to one hundred ten percent of the capacity.

1808.2.8.9More than one pile type, pile capacity, or method of pile installation.In the conditions described below, the several parts of the building supported on the different types, capacities, or modes of piling shall be separated by suitable joints providing for differential movement, or analysis shall be prepared by the engineer, establishing to the satisfaction of the commissioner that the proposed construction is adequate and safe, and showing that the probable settlements and differential settlements to be expected will be tolerable to the structure and not result in instability of the building. The load test requirements of 1808.2.8.3 shall apply separately and distinctly to each different type or capacity of piling, method of installation, or type or capacity of equipment used, except where analysis of the probable, comparative behavior of the different types or capacities of the piles or the methods of installation indicates that data on one type or capacity of pile permit a reliable extrapolation of the probable behavior of the piles of other types and capacities. The requirements of this section apply to the following proposed conditions:

1. Construction of a foundation for a building utilizing piles of more than one type or capacity; or
2. Modification of an existing foundation by the addition of piles of a type or capacity other than those of the existing piling; or
3. Construction or modification of a foundationutilizing different methods or more than one method of installation, or using different types or capacities of equipment (such as different types of hammers having markedly different striking energies or speeds); or
4. Support of part of a building on piles and part on footings.

1808.2.9Lateral support.

1808.2.9.1General.Any soil other than fluid soil shall be deemed to afford sufficient lateral support to the pier or pile to prevent buckling and to permit the design of the pier or pile in accordance with accepted engineering practice and the applicable provisions of this code.

1808.2.9.2Unbraced piles.Piles standing unbraced in air, water or in fluid soils shall be designed as columns in accordance with the provisions of this code. Such piles driven into firm ground can be considered fixed and laterally supported at 5 feet (1524 mm) below the ground surface and in soft material at 10 feet (3048 mm) below the ground surface unless otherwise prescribed by the engineer.

1808.2.9.3Allowable lateral load.Where required by the design, the lateral load capacity of a pier, a single pile or a pile group shall be determined by an approved method of analysis in accordance with accepted engineering practice or by lateral load tests in accordance with ASTM D 3966 to at least twice the proposed design working load. The resulting allowable load shall not be more than one-half of that test load that produces a gross lateral movement of 1 inch (25mm) at the ground surface.

In the absence of specific project requirements as determined by the engineer, the resulting allowable load shall not be more than one-half of that test load that produces a gross lateral movement of 1 inch (25 mm) at the ground surface. The maximum allowable lateral load of a pile shall be 1 ton (8.9 kN), unless verified by load test. Lateral capacities for pile groups shall be modified to account for group effects in accordance with accepted engineering practice.

1808.2.10Allowable stresses in piles and use of higher allowable pier or pile stresses.Allowable stresses for designing piles shall be as specified in Section 1809, 1810, and 1811. Allowable stresses greater than those specified for

piers or for each pile type in Sections 1809 and 1810 are permitted where supporting data justifying such higher stresses are filed and approved by the commissioner. Such substantiating data shall include:

1. A soils investigation in accordance with Section 1802.

2. Pier or pile load tests in accordance with Section 1808.2.8.3, regardless of the load supported by the pier or pile. The design and installation of the pier or pile foundation shall be under the direct supervision of an engineer knowledgeable in the field of soil mechanics and pier or pile foundations who shall certify to the commissioner that the piers or piles as installed satisfy the design criteria.

1808.2.11 Piles in subsiding areas. Where piles are driven through subsiding fills or other subsiding strata and derive support from underlying firmer materials, consideration shall be given to the downward frictional forces that may be imposed on the piles by the subsiding upper strata.

1808.2.12 Settlement analysis. The settlement of piers, individual piles or groups of piles shall be estimated based on approved methods of analysis. The predicted settlement shall cause neither harmful distortion of, nor instability in, the structure, nor cause any stresses to exceed allowable values.

1808.2.13 Preexcavation. The use of jetting, augering or other methods of preexcavation shall be subject to the approval of the commissioner. Where permitted, preexcavation shall be carried out in the same manner as used for piers or piles subject to load tests and in such a manner that will not impair the carrying capacity of the piers or piles already in place or damage adjacent structures. Pile tips shall be driven below the preexcavated depth until the required resistance or penetration is obtained.

1808.2.14 Installation sequence. Piles shall be installed in such sequence so as to avoid compacting the surrounding soil to the extent that other piles cannot be installed properly, and to prevent ground movements that are capable of damaging adjacent structures.

1808.2.14.1 Protection of adjacent property. Piles and piers shall be installed with adequate provision for the protection of adjacent buildings and property.

1808.2.15 Use of vibratory drivers. Vibratory drivers shall only be used to install piles where the pile is subsequently seated by an impact hammer to the final driving criteria established in accordance with Section 1808.2.8.2.

1808.2.16 Pile driveability. Pile cross sections shall be of sufficient size and strength to withstand driving stresses without damage to the pile, and to provide sufficient stiffness to transmit the required driving forces.

1808.2.17 Protection of pile materials. Where boring records or site conditions indicate possible deleterious action on pier or pile materials because of soil constituents, changing water levels or other factors, the pier or pile materials shall be adequately protected by materials, methods or processes approved by the engineer. Protective materials shall be applied to the piles so as not to be rendered ineffective by driving. The effectiveness of such protective measures for the particular purpose shall have been thoroughly established by satisfactory service records or other evidence. The following specific provisions shall apply:

1. Untreated timber piles shall not be used unless the top level of the pile is below the permanent water table. The permanent water table level shall not be assumed higher than the invert level of sewer, drain, or subsurface structure in the adjacent streets, nor higher than the water level at the site resulting from the lowest drawdown of wells or sumps, but in no case shall untreated timber piles be used where the cut-off level is less than 10 feet (3048 mm) below the adjacent legal grade. Where treated piles are required, preservative treatment shall consist of impregnation with creosote or a creosote solution or CCA treatment. For piles entirely embedded below grade, a pentachlorophenol solution may be used. Treatment shall be in accordance with all requirements of the AWP standards and as specified in Section 1809.1.2.

2. Piles installed in ash or garbage fills, cinder fills, and piles that are free-standing in or near a seawater environment, or that are used for the support of chemical plants, coal piles and piles under similar conditions of chemical seepage or aggressive action, or that are used for support of electrical generating plants, shall be investigated regarding the need for special protective treatment. Where special protective treatment is indicated by the engineer, such piles shall be protected against deterioration by encasement, coating, or other device acceptable to the engineer.

1808.2.17.1 Protection of piles during installation. Piling shall be handled and installed to the required penetration and resistance by methods that leave the piles' strength unimpaired and that develop and retain their required load bearing resistance. Any damaged pile shall be satisfactorily repaired or the pile shall be rejected. As an alternative and subject to the approval by the commissioner, damaged or misaligned piles or piles not reaching design tip elevation may be used at a reduced fraction of the design load based on an analysis by the engineer.

1808.2.17.2 Equipment. Equipment and methods of installation shall be such that piles are installed in their proper position and alignment, without damage. Equipment shall be maintained in good working order. The pile-driving hammer shall travel freely in the leads. The hammer shall deliver its rated energy and measurements shall be made of the fall of the ram or other suitable data shall be obtained at intervals necessary to verify the actual energy delivered during the final twenty blows of the hammer.

1808.2.17.3 Cushion or cap block. The cushion or cap block shall be a solid block of hardwood with its grains parallel to the axis of the pile and enclosed in a tight-fitting steel housing, or other accepted equivalent assembly. If laminated materials are used, their type and construction shall be such that their strength is equal to or greater than hardwood. Wood chips, pieces of rope, hose, shavings, automobile tires or similar materials shall not be used. Cap block cushions shall be replaced if burned, crushed, or otherwise damaged. Other cushion materials may be used subject to the approval of the engineer.

1808.2.17.4 Followers. Followers shall not be used unless permitted in writing by the engineer responsible for the pile driving operation. The required driving resistance shall account for the losses of driving energy transmitted to the pile because of the follower. The follower shall be a single length section, shall be provided with a socket or hood carefully fitted to the top of the pile to minimize loss of energy and to prevent damage to the pile, and shall have sufficient rigidity to prevent "whip" during driving.

1808.2.18 Use of existing piers or piles. Piers or piles left in place where a structure has been demolished shall not be used for the support of new construction unless the piles are load tested, original installation and testing records are available, or the new loads are no more than half the calculated previous loads on the piles. The engineer shall determine and certify that the piers or piles are sound and meet the requirements of this code. The design load applied to such piers or piles shall be the lowest allowable load as determined by tests, redriving data or calculations.

1808.2.19 Heaved piles. Piles that have heaved during the driving of adjacent piles shall be redriven as necessary to develop the required capacity and penetration, or the capacity of the pile shall be verified by load tests in accordance with Section 1808.2.8.3.

1808.2.20 Identification. All pier or pile materials shipped or delivered to the job site shall be identified for conformity to the specified grade and this identification shall be maintained continuously from the point of manufacture to the point of installation. Such shipment or delivery shall be accompanied by a certification from the material supplier or manufacturer indicating conformance with the construction documents. Such certification shall be made available to the engineer of record and the department. In the absence of adequate data, pier or pile materials shall be tested by an approved agency to determine conformity to the specified grade. The approved agency shall furnish a certification of compliance to the engineer of record, or upon request to the commissioner.

1808.2.21 Pier or pile location plan. A plan showing the location and designation of piers or piles by an identification system shall be filed with the commissioner prior to installation of such piers or piles. Detailed records for

piers or individual piles shall bear an identification corresponding to that shown on the plan.

1808.2.21.1 Tolerance in alignment of the pile axis. If the axis of any pile is installed out of plumb or deviates from the specified batter by more than four percent of the pile length, the design of the foundation shall be modified to resist the resulting vertical and lateral forces. In types of piles for which subsurface inspection is not possible, this determination shall be made on the exposed section of the pile, which section, at the time of checking axial alignment, shall not be less than 2 feet (610 mm) in length. In piles that can be checked for axial alignment below the ground surface, the sweep of the pile axis shall not exceed four percent of the embedded length.

1808.2.21.2 Tolerance in the location of the head of the pile. A tolerance of 3 inches (76 mm) from the designed location shall be permitted in the installation of each pile, without reduction in load capacity of the pile group. Where piles are installed out of position in excess of this amount, the true loading on such piles shall be analytically determined from a survey that defines the actual location of the piles as driven, and using the actual eccentricity in the pile group with respect to the line of action of the applied load.

1808.2.22 Special inspection. Special inspections in accordance with Sections 1704.8 and 1704.9 shall be provided for piles and piers, respectively.

1808.2.23 Seismic design of piers or piles. Seismic design of piers and piles shall be done in accordance with Section 1808.2.23.1 through 1808.2.23.2.

1808.2.23.1 Seismic design category C. Where a structure is assigned to Seismic Design Category C in accordance with Section 1616, individual pile caps, piers or piles shall be interconnected by ties. Ties shall be capable of carrying, in tension and compression, a force equal to the product of the larger pile cap or column load times the seismic coefficient, SDS, divided by 10 unless it can be demonstrated that equivalent restraint is provided by reinforced concrete beams within slabs on grade or reinforced concrete slabs on grade or confinement by competent rock, hard cohesive soils or very dense granular soils.

Exception: Piers supporting foundation walls, isolated interior posts detailed so the pier is not subject to lateral loads, and lightly loaded exterior decks and patios of Group R-3 and U occupancies not exceeding two stories of light-frame construction, are not subject to interconnection if it can be shown that the soils are of adequate stiffness, subject to the approval of the commissioner.

1808.2.23.1.1 Connection to pile cap. Concrete piles and concrete-filled steel pipe piles shall be connected to the pile cap by embedding the pile reinforcement or field-placed dowels anchored in the concrete pile and the pile cap for a distance equal to the development length. For deformed bars, the development length is the full development length for compression or tension, in the case of uplift, without reduction in length for excess area. Alternative measures for laterally confining concrete and maintaining toughness and ductile-like behavior at the top of the pile are permitted provided the design is such that any hinging occurs in the confined region.

Ends of hoops, spirals and ties shall be terminated with seismic hooks, as defined in Section 21.1 of ACI 318, turned into the confined concrete core. The minimum transverse steel ratio for confinement shall not be less than one-half of that required for columns.

For resistance to uplift forces, anchorage of steel pipe (round HSS sections), concrete-filled steel pipe or H-piles to the pile cap shall be made by means other than concrete bond to the bare steel section.

Exception: Anchorage of concrete-filled steel pipe piles is permitted to be accomplished using deformed bars developed into the concrete portion of the pile.

Splices of pile segments shall develop the full strength of the pile, but the splice need not develop the nominal strength of the pile in tension, shear and bending when it has been designed to resist axial and shear forces and moments

from the load combinations of Section 1605.4.

1808.2.23.1.2 Design details. Pier or pile moments, shears and lateral deflections used for design shall be established considering the nonlinear interaction of the shaft and soil, as recommended by the engineer. Where the ratio of the depth of embedment of the pile-to-pile diameter or width is less than or equal to six, the pile may be assumed to be rigid.

Pile group effects from soil on lateral pile nominal strength shall be included where pile center-to-center spacing in the direction of lateral force is less than eight pile diameters. Pile group effects on vertical nominal strength shall be included where pile center-to-center spacing is less than three pile diameters. The pile uplift soil nominal strength shall be taken as the pile uplift strength as limited by the frictional force developed between the soil and the pile.

Where a minimum length for reinforcement or the extent of closely spaced confinement reinforcement is specified at the top of the pier or pile, provisions shall be made so that those specified lengths or extents are maintained after pier or pile cutoff.

1808.2.23.2 Seismic design category D. Where a structure is assigned to Seismic Design Category D in accordance with Section 1616, the requirements for Seismic Design Category C given in Section 1808.2.23.1 shall be met. Provisions of ACI 318, Section 21.10.4, shall also apply when not in conflict with the provisions of Sections 1808 through 1812. Concrete shall have a specified compressive strength of not less than 3,000 psi (20.68 MPa) at 28 days.

Exceptions:

1. Group R or U occupancies of light-framed construction and two stories or less in height are permitted to use concrete with a specified compressive strength of not less than 2,500 psi (17.2 MPa) at 28 days.
2. Detached one- and two-family dwellings of light-frame construction and two stories or less in height are not required to comply with the provisions of ACI 318, Section 21.10.4.
3. Section 21.10.4.4(a) of ACI 318 shall not apply to concrete piles.

1808.2.23.2.1 Design details for piers, piles and grade beams. Piers or piles shall be designed and constructed to withstand maximum imposed curvatures from earthquake ground motions and structure response. Curvatures shall include free-field soil strains modified for soil-pile-structure interaction coupled with pier or pile deformations induced by lateral pier or pile resistance to structure seismic forces. Concrete piers or piles on Site Class E or F sites, as determined in Section 1615.1.1, shall be designed and detailed in accordance with Sections 21.4.4.1, 21.4.4.2 and 21.4.4.3 of ACI 318 within seven pile diameters of the pile cap and the interfaces of soft to medium stiff clay or liquefiable strata. For precast prestressed concrete piles, detailing provisions as given in Sections 1809.2.3.2.1 and 1809.2.3.2.2 shall apply.

Grade beams shall be designed as beams in accordance with ACI 318, Chapter 21. When grade beams have the capacity to resist the forces from the load combinations in Section 1605.4, they need not conform to ACI 318, Chapter 21.

1808.2.23.2.2 Connection to pile cap. For piles required to resist uplift forces or provide rotational restraint, design of anchorage of piles into the pile cap shall be provided considering the combined effect of axial forces due to uplift and bending moments due to fixity to the pile cap. Anchorage shall develop a minimum of 25 percent of the strength of the pile in tension. Anchorage into the pile cap shall be capable of developing the following:

1. In the case of uplift, the lesser of the nominal tensile strength of the longitudinal reinforcement in a concrete pile, or the nominal tensile strength of a steel pile, or the pile uplift soil nominal strength factored by 1.3 or the axial tension force resulting from the load combinations of Section 1605.4.

2. In the case of rotational restraint, the lesser of the axial and shear forces, and moments resulting from the load combinations of Section 1605.4 or development of the full axial, bending and shear nominal strength of the pile.

1808.2.23.2.3 Flexural strength. Where the vertical, lateral-force-resisting elements are columns, the grade beam or pile cap flexural strengths shall exceed the column flexural strength.

The connection between batter piles and grade beams or pile caps shall be designed to resist the nominal strength of the pile acting as a short column. Batter piles and their connections shall be capable of resisting forces and moments from the load combinations of Section 1605.4.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 18: SOILS AND FOUNDATIONS
SECTION BC 1809: DRIVEN PILE FOUNDATIONS

NYC Administrative Code § 28-BC 1809

1809.1 Timber piles.

Timber piles shall be designed in accordance with the AF & PA NDS.

1809.1.1 Materials. Round timber piles shall conform to ASTM D 25. Sawn timber piles shall conform to DOC PS-20.

1809.1.2 Preservative treatment. Timber piles used to support permanent structures shall be treated in accordance with this section unless it is established that the tops of the untreated timber piles will be below the lowest ground-water level assumed to exist during the life of the structure as specified in Section 1808.2.17. Preservative and minimum final retention shall be in accordance with AWPAC3 for round timber piles and AWPAC24 for sawn timber piles. Preservative-treated timber piles shall be subject to a quality control program administered by an approved agency. Pile cutoffs shall be treated in accordance with AWPACM4.

1809.1.3 End-supported piles. Any sudden decrease in driving resistance of an end-supported timber pile shall be investigated with regard to the possibility of damage. If the sudden decrease in driving resistance cannot be correlated to load-bearing data, the pile shall be removed for inspection or rejected.

1809.1.4 Sizes of piles. Piles shall be of adequate size to resist the applied loads without creating stresses in the pile material in excess of twelve hundred psi (8.27 MPa) for piles of southern pine, Douglas fir, oak, or other wood of comparable strength; or eight hundred psi (5.52 MPa) for piles of cedar, Norway pine, spruce or other wood of comparable strength. Piles of twenty-five tons (222.5 kN) capacity or more shall have a minimum 8-inch tip (203 mm) with uniform taper. Piles of less than 25 tons (222.5 kN) capacity shall have a minimum 6-inch (152 mm) tip with uniform taper. All piles, regardless of capacity, driven to end bearing on bedrock of classes 1a to 1d and compact gravels and sands of class 2a shall have a minimum 8-inch (203 mm) tip and a uniform taper. Any species of wood may be used that conforms to ASTM D 25 and that will stand the driving stresses.

1809.1.5Lagged or inverted piles.The use of lagged or inverted piles is permitted. Double lagging shall be adequately connected to the basic pile material to transfer the full pile load from the basic pile material to the lagging without exceeding values of allowable stress as established in Chapter 23. The connection for single lagging shall be proportioned for half the pile load. The diameter of any inverted pile at any section shall be adequate to resist the applied load without exceeding the stresses specified in Section 1809.1.4, but in no case shall it be less than 8 inches (203 mm).

1809.2Precast concrete piles.

1809.2.1General.The materials, reinforcement and installation of precast concrete piles shall conform to Sections 1809.2.1.1 through 1809.2.1.4.

1809.2.1.1Design and manufacture.Piles shall be designed and manufactured in accordance with accepted engineering practice to resist all stresses induced by handling, driving and service loads.

1809.2.1.2Minimum dimension.The minimum lateral dimension shall be 8 inches (203 mm). Corners of square piles shall be chamfered.

1809.2.1.3Reinforcement.Longitudinal steel shall be arranged in a symmetrical pattern and be laterally tied with steel ties or wire spiral spaced not more than 4 inches (102 mm) apart, center to center, for a distance of 2 feet (610 mm) from the ends of the pile; and not more than 6 inches (152 mm) elsewhere except that at the ends of each pile, the first five ties or spirals shall be spaced 1 inch (25mm) center to center. The gage of ties and spirals shall be as follows:

1. For piles having a diameter of 16 inches (406 mm) or less, wire shall not be smaller than 0.22 inch (5.6 mm) (No. 5 gage).

2. For piles having a diameter of more than 16 inches (406 mm) and less than 20 inches (508 mm), wire shall not be smaller than 0.238 inch (6 mm) (No. 4 gage).

3. For piles having a diameter of 20 inches (508 mm) and larger, wire shall not be smaller than 1/4 inch (6.4 mm) round or 0.259 inch (6.6 mm) (No. 3 gage).

1809.2.1.4Installation.Piles shall be handled and driven so as not to cause injury or overstressing in a manner that affects durability or strength.

1809.2.2Precast nonprestressed piles.Precast nonprestressed concrete piles shall conform to Sections 1809.2.2.1 through 1809.2.2.5.

1809.2.2.1Materials.Concrete shall have a 28-day specified compressive strength (f'_c) of not less than 3,000 psi (20.68 MPa).

1809.2.2.2Minimum reinforcement.The minimum amount of longitudinal reinforcement shall be 0.8 percent of the concrete section and shall consist of at least four bars.

1809.2.2.2.1Seismic reinforcement in seismic design category C.Where a structure is assigned to Seismic Design Category C in accordance with Section 1616, longitudinal reinforcement with a minimum steel ratio of 0.01 shall be provided throughout the length of precast concrete piles. Within three pile diameters of the bottom of the pile cap, the longitudinal reinforcement shall be confined with closed ties or spirals of a minimum 3/8-inch (9.5 mm) diameter. Ties or spirals shall be provided at a maximum spacing of eight times the diameter of the smallest longitudinal bar, not to exceed 6 inches (152 mm). Throughout the remainder of the pile, the closed ties or spirals shall have a maximum spacing of 16 times the smallest longitudinal-bar diameter, not to exceed 8 inches (203 mm).

1809.2.2.2.2Seismic reinforcement in seismic design category D.Where a structure is assigned to Seismic Design

Category D in accordance with Section 1616, the requirements for Seismic Design Category C in Section 1809.2.2.2.1 shall apply except as modified by this section. Transverse confinement reinforcement consisting of closed ties or equivalent spirals shall be provided in accordance with Sections 21.4.4.1, 21.4.4.2 and 21.4.4.3 of ACI 318 within three pile diameters of the bottom of the pile cap. For other than Site Class E or F, or liquefiable sites and where spirals are used as the transverse reinforcement, it shall be permitted to use a volumetric ratio of spiral reinforcement of not less than one-half that required by Section 21.4.4.1(a) of ACI 318.

1809.2.2.3 Allowable stresses. The allowable compressive stress in the concrete shall not exceed 33 percent of the 28-day specified compressive strength (f'_c) applied to the gross cross-sectional area of the pile. The allowable compressive stress in the reinforcing steel shall not exceed 40 percent of the yield strength of the steel (f_y) or a maximum of 30,000 psi (207 MPa). The allowable tensile stress in the reinforcing steel shall not exceed 50 percent of the yield strength of the steel (f_y) or a maximum of 24,000 psi (165 MPa).

1809.2.2.4 Installation. A precast concrete pile shall not be driven before the concrete has attained a compressive strength of at least 75 percent of the 28-day specified compressive strength (f'_c), but not less than the strength sufficient to withstand handling and driving forces.

1809.2.2.5 Concrete cover. Reinforcement for piles that are not manufactured under plant conditions shall have a concrete cover of not less than 2 inches (51 mm). Reinforcement for piles manufactured under plant control conditions shall have a concrete cover of not less than 1 1/4 inches (32 mm) for No. 5 bars and smaller, and not less than 1 1/2 inches (38 mm) for No. 6 through No. 11 bars except that longitudinal bars spaced less than 1 1/2 inches (38 mm) clear distance apart shall be considered bundled bars for which the minimum concrete cover shall be equal to that for the equivalent diameter of the bundled bars. Reinforcement for piles exposed to seawater shall have a concrete cover of not less than 3 inches (76 mm).

1809.2.3 Precast prestressed piles. Precast prestressed concrete piles shall conform to the requirements of Sections 1809.2.3.1 through 1809.2.3.5.

1809.2.3.1 Materials. Prestressing steel shall conform to ASTM A 416. Concrete shall have a 28-day specified compressive strength (f'_c) of not less than 5,000 psi (34.48 MPa).

1809.2.3.2 Design. Precast prestressed piles shall be designed to resist stresses induced by handling and driving as well as by loads. The effective prestress in the pile shall not be less than 400 psi (2.76 MPa) for piles up to 30 feet (9144 mm) in length, 550 psi (3.79 MPa) for piles up to 50 feet (15 240 mm) in length and 700 psi (4.83 MPa) for piles greater than 50 feet (15 240 mm) in length. Effective prestress shall be based on an assumed loss of 30,000 psi (207 MPa) in the prestressing steel. The tensile stress in the prestressing steel shall not exceed the values specified in ACI 318.

1809.2.3.2.1 Design in seismic design category C. Where a structure is assigned to Seismic Design Category C in accordance with Section 1616, the minimum volumetric ratio of spiral reinforcement shall not be less than 0.007 or the amount required by the following formula for the upper 20 feet (6096 mm) of the pile.

$$r_s = 0.12 f'_c f_{yh} \quad (\text{Equation 18-4})$$

where: f'_c = Specified compressive strength of concrete, psi (MPa) f_{yh} = Yield strength of spiral reinforcement ; ≤ 85,000 psi (586 MPa). r_s = Spiral reinforcement index (vol. spiral/vol. core).

At least one-half the volumetric ratio required by Equation 18-4 shall be provided below the upper 20 feet (6096 mm) of the pile.

The pile cap connection by means of dowels as indicated in Section 1808.2.23.1 is permitted. Pile cap connection by means of developing pile reinforcing strand is permitted provided that the pile reinforcing strand results in a ductile

connection.

1809.2.3.2.2 Design in seismic design category D. Where a structure is assigned to Seismic Design Category D in accordance with Section 1616, the requirements for Seismic Design Category C in Section 1809.2.3.2.1 shall be met, in addition to the following:

1. Requirements in ACI 318, Chapter 21, do not apply, unless specifically referenced.

2. Where the total pile length in the soil is 35 feet (10 668 mm) or less, the lateral transverse reinforcement in the ductile region shall occur through the length of the pile. Where the pile length exceeds 35 feet (10 668 mm), the ductile pile region shall be taken as the greater of 35 feet (10 668 mm) or the distance from the underside of the pile cap to the point of zero curvature plus three times the least pile dimension.

3. In the ductile region, the center-to-center spacing of the spirals or hoop reinforcement shall not exceed one-fifth of the least pile dimension, six times the diameter of the longitudinal strand, or 8 inches (203 mm), whichever is smaller.

4. Circular spiral reinforcement shall be spliced by lapping one full turn and bending the end of the spiral to a 90-degree hook or by use of a mechanical or welded splice complying with Sec. 12.14.3 of ACI 318.

5. Where the transverse reinforcement consists of circular spirals, the volumetric ratio of spiral transverse reinforcement in the ductile region shall comply with the following:
[SEE graphical material in printed version]

6. When transverse reinforcement consists of rectangular hoops and cross ties, the total cross-sectional area of lateral transverse reinforcement in the ductile region with spacings, and perpendicular to dimension, h_c , shall conform to:
[SEE graphical material in printed version]

The hoops and cross ties shall be equivalent to deformed bars not less than No. 3 in size. Rectangular hoop ends shall terminate at a corner with seismic hooks.

Outside of the length of the pile requiring transverse confinement reinforcing, the spiral or hoop reinforcing with a volumetric ratio not less than one-half of that required for transverse confinement reinforcing shall be provided.

1809.2.3.3 Allowable stresses. The maximum allowable design compressive stress, f_c , in concrete shall be determined as follows:

$$f_c = 0.33f'_c ; m_s 0.27f_{pc} \text{ (Equation 18-10)}$$

1809.2.3.4 Installation. A prestressed pile shall not be driven before the concrete has attained a compressive strength of at least 75 percent of the 28-day specified compressive strength (f'_c), but not less than the strength sufficient to withstand handling and driving forces.

1809.2.3.5 Concrete cover. Prestressing steel and pile reinforcement shall have a concrete cover of not less than 1 1/4 inches (32 mm) for square piles of 12 inches (305 mm) or smaller size and 1 1/2 inches (38 mm) for larger piles, except that for piles exposed to seawater, the minimum protective concrete cover shall not be less than 2 1/2 inches (64 mm).

1809.3 Structural steel piles. Structural steel piles shall conform to the requirements of Sections 1809.3.1 through 1809.3.4.

1809.3.1 Materials. Structural steel piles, steel pipe and fully welded steel piles fabricated from plates shall conform

to ASTM A36, ASTM A252, ASTM A283, ASTM A572, ASTM A 588 or ASTM A 913.

1809.3.2 Allowable stresses. The allowable axial stresses shall not exceed 35 percent of the minimum specified yield strength (F_y).

Exception: Where justified in accordance with Section 1808.2.10.1, the allowable axial stress is permitted to be increased above $0.35F_y$, but shall not exceed $0.5F_y$.

1809.3.3 Dimensions of H-piles. Sections of H-piles shall comply with the following:

1. The flange projections shall not exceed 14 times the minimum thickness of metal in either the flange or the web and the flange widths shall not be less than 80 percent of the depth of the section.
2. The nominal depth in the direction of the web shall not be less than 8 inches (203 mm).
3. Flanges and web shall have a minimum nominal thickness of $3/8$ inch (9.5 mm).

1809.3.4 Dimensions of steel pipe piles. Steel pipe piles driven open ended shall have a nominal outside diameter of not less than 8 inches (203 mm). The pipe shall have a minimum of 0.34 square inch (219 mm²) of steel in cross section to resist each 1,000 foot-pounds (1356 Nxm) of pile hammer energy or the equivalent strength for steels having a yield strength greater than 35,000 psi (241 MPa). Where pipe wall thickness less than 0.188 inch (4.8 mm) is driven open ended, a suitable cutting shoe shall be provided.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 18: SOILS AND FOUNDATIONS
SECTION 1810: CAST-IN-PLACE CONCRETE PILE FOUNDATIONS

NYC Administrative Code § 28-BC 1810

1810.1 General.

The materials, reinforcement and installation of cast-in-place concrete piles shall conform to Sections 1810.1.1 through 1810.1.3.

1810.1.1Materials. Concrete shall have a 28-day specified compressive strength (f'_c) of not less than 2,500 psi (17.24 MPa). Where concrete is placed through a funnel hopper at the top of the pile, the concrete mix shall be designed and proportioned so as to produce a cohesive workable mix having a slump of not less than 4 inches (102 mm) and not more than 6 inches (152 mm). Where concrete is to be pumped, the mix design including slump shall be adjusted to produce a pumpable concrete.

1810.1.2Reinforcement. Except for steel dowels embedded 5 feet (1524 mm) or less in the pile, reinforcement where required shall be placed in accordance with Section 1810.3.4 and shall be assembled and tied together and placed in the pile as a unit before the reinforced portion of the pile is filled with concrete except in augered uncased cast-in-place piles. Tied reinforcement in augered uncased cast-in-place piles shall be placed after piles are filled, while the grout is still in a semifluid state.

1810.1.2.1Reinforcement in seismic design category C. Where a structure is assigned to Seismic Design Category C in accordance with Section 1616, a minimum longitudinal reinforcement ratio of 0.0025 shall be provided for uncased cast-in-place concrete drilled or augered piles, piers or caissons in the top one-third of the pile length, a minimum length of 10 feet (3048 mm) below the ground or that required by analysis, whichever length is greatest. The minimum reinforcement ratio, but no less than that ratio required by rational analysis, shall be continued throughout the flexural length of the pile. There shall be a minimum of four longitudinal bars with closed ties (or equivalent spirals) of a minimum 3/8-inch (9 mm) diameter provided at 16-longitudinal-bar diameter maximum spacing. Transverse confinement reinforcing with a maximum spacing of the lesser of 6 inches (152 mm) or 8-longitudinal-bar diameters shall be provided within a distance equal to three times the least pile dimension of the bottom of the pile cap.

1810.1.2.2 Reinforcement in seismic design category D. Where a structure is assigned to Seismic Design Category D in accordance with Section 1616, the requirements for Seismic Design Category C given above shall be met. In addition, a minimum longitudinal reinforcement ratio of 0.005 shall be provided for uncased cast-in-place drilled or augered concrete piles, piers or caissons in the top one-half of the pile length, a minimum length of 10 feet (3048 mm) below ground or throughout the flexural length of the pile, whichever length is greatest. The flexural length shall be taken as the length of the pile to a point where the concrete section cracking moment strength multiplied by 0.4 exceeds the required moment strength at that point. There shall be a minimum of four longitudinal bars with transverse confinement reinforcing provided in the pile in accordance with Sections 21.4.4.1, 21.4.4.2 and 21.4.4.3 of ACI 318 within three times the least pile dimension of the bottom of the pile cap. Use of a transverse spiral reinforcing ratio of not less than one-half of that required in Section 21.4.4.1(a) of ACI 318 for other than Class E, F or liquefiable sites is allowed. Tie spacing throughout the remainder of the concrete section shall not exceed 12-longitudinal-bar diameters, one-half the least dimension of the section, nor 12 inches (305 mm). Ties shall be a minimum of No. 3 bars for piles with a least dimension up to 20 inches (508 mm), and No. 4 bars for larger piles.

1810.1.3 Concrete placement. Concrete shall be placed in such a manner as to ensure the exclusion of any foreign matter and to secure a full-sized shaft. Concrete shall not be placed through water except where a tremie or other approved method is used. When depositing concrete from the top of the pile, the concrete shall not be chuted directly into the pile but shall be poured in a rapid and continuous operation through a funnel hopper centered at the top of the pile. Grout for auger cast pile shall be pumped through a hollow stem auger and shall be maintained throughout placement.

1810.2 Enlarged base piles. Enlarged base piles shall conform to the requirements of Sections 1810.2.1 through 1810.2.5.

1810.2.1 Materials. The maximum size for coarse aggregate for concrete shall be 3/4 inch (19.1 mm). Concrete to be compacted shall have a zero slump.

1810.2.2 Allowable stresses. The maximum allowable design compressive stress for concrete not placed in a permanent steel casing shall be 25 percent of the 28-day specified compressive strength (f'_c). Where the concrete is placed in a permanent steel casing, the maximum allowable concrete stress shall be 33 percent of the 28-day specified compressive strength (f'_c).

1810.2.3 Installation. Enlarged bases formed either by compacting concrete or driving a precast base shall be formed in or driven into granular soils. Piles shall be constructed in the same manner as successful prototype test piles driven for the project. Pile shafts extending through peat or other organic soil shall be encased in a permanent steel casing. Where a cased shaft is used, the shaft shall be adequately reinforced to resist column action or the annular space around the pile shaft shall be filled sufficiently to re-establish lateral support by the soil. Where pile heave occurs, the pile shall be replaced unless it is demonstrated that the pile is undamaged and capable of carrying twice its design load.

1810.2.4 Load-bearing capacity. Pile load-bearing capacity shall be verified by load tests in accordance with Section 1808.2.8.3.

1810.2.5 Concrete cover. The minimum concrete cover shall be 2 1/2 inches (64 mm) for uncased shafts and 1 inch (25 mm) for cased shafts.

1810.3 Drilled or augered uncased piles. Drilled or augered uncased piles shall conform to Sections 1810.3.1 through 1810.3.5.

1810.3.1 Allowable stresses. The allowable design stress in the concrete of drilled uncased piles shall not exceed 33 percent of the 28-day specified compressive strength (f'_c). The allowable design stress in the concrete of augered cast-in-place piles shall not exceed 25 percent of the 28-day specified compressive strength (f'_c). The allowable compressive stress of reinforcement shall not exceed 34 percent of the yield strength of the steel or 25,500 psi (175.8

Mpa).

1810.3.2Dimensions. The minimum diameter of drilled or augered uncased piles shall be 12 inches (305 mm).

1810.3.3Installation. Where pile shafts are formed through unstable soils and concrete is placed in an open-drilled hole, a steel liner shall be inserted in the hole prior to placing the concrete. Where the steel liner is withdrawn during concreting, the level of concrete shall be maintained above the bottom of the liner at a sufficient height to offset any hydrostatic or lateral soil pressure. Where grout is placed by pumping through a hollow-stem auger, the auger shall be permitted to rotate in a clockwise direction during withdrawal. An initial head of grout shall be established and maintained on the auger flights before withdrawal. The auger shall be withdrawn in a continuous manner in increments of about 12 inches (305 mm) each. Grout pumping pressures shall be measured and maintained high enough at all times to offset hydrostatic and lateral earth pressures. Grout volumes shall be measured to ensure that the volume of grout placed in each pile is equal to or greater than the theoretical volume of the hole created by the auger. Where the installation process of any pile is interrupted or a loss of grout pressure occurs, the pile shall be re-drilled to 5 feet (1524 mm) below the elevation of the tip of the auger when the installation was interrupted or grout pressure was lost and reformed. Augered cast-in-place piles shall not be installed within six pile diameters center to center of a pile filled with concrete or grout less than 12 hours old, unless approved by the engineer. The level at which return of the grout occurs during withdrawal shall be recorded. If the grout level in any completed pile drops during installation of an adjacent pile, the pile shall be replaced. The installation shall be performed under the direct supervision of the engineer. The engineer shall certify to the commissioner that the piles were installed in compliance with the approved construction documents.

1810.3.4Reinforcement. For piles installed with a hollow-stem auger, where full-length longitudinal steel reinforcement is placed without lateral ties, the reinforcement shall be placed through ducts in the auger prior to filling the pile with concrete. All pile reinforcement shall have a concrete cover of not less than 2 1/2 inches (64 mm).

Exception: Where physical constraints do not allow the placement of the longitudinal reinforcement prior to filling the pile with concrete or where partial-length longitudinal reinforcement is placed without lateral ties, the reinforcement is allowed to be placed after the piles are completely concreted but while concrete is still in a semifluid state.

1810.3.5Reinforcement in seismic design category C or D. Where a structure is assigned to Seismic Design Category C or D in accordance with Section 1616, the corresponding requirements of Sections 1810.1.2.1 and 1810.1.2.2 shall be met.

1810.4Driven uncased piles. Driven uncased piles shall conform to Sections 1810.4.1 through 1810.4.4.

1810.4.1Allowable stresses. The allowable design stress in the concrete shall not exceed 25 percent of the 28-day specified compressive strength (f'c) applied to a cross-sectional area not greater than the inside area of the drive casing or mandrel.

1810.4.2Dimensions. The minimum diameter of the driven uncased pile shall be 12 inches (305 mm).

1810.4.3Installation. Piles shall not be driven within six pile diameters center to center in granular soils or within one-half the pile length in cohesive soils of a pile filled with concrete less than 48 hours old unless approved by the commissioner. If the concrete surface in any completed pile rises or drops, the pile shall be replaced. Piles shall not be installed in soils that could cause pile heave. The installation shall be performed under the direct supervision of the engineer, who shall certify to the commissioner that the piles were installed in compliance with the approved design

1810.4.4Concrete cover. Pile reinforcement shall have a concrete cover of not less than 2 1/2 inches (64 mm), measured from the inside face of the drive casing or mandrel.

1810.5Steel-cased piles. Steel-cased piles shall comply with the requirements of Sections 1810.5.1 through

1810.5.4.

1810.5.1Materials. Pile shells or casings shall be of steel and shall be sufficiently strong to resist collapse and sufficiently water tight to exclude any foreign materials during the placing of concrete. Steel shells shall have a sealed tip with a diameter of not less than 8 inches (203 mm).

1810.5.2Allowable stresses. The allowable design compressive stress in the concrete shall not exceed 33 percent of the 28-day specified compressive strength (f'_c). The allowable concrete compressive stress shall be 0.40 (f'_c) for that portion of the pile meeting the conditions specified in Sections 1810.5.2.1 through 1810.5.2.4.

1810.5.2.1Shell thickness. The thickness OF THE steel shell shall not be less than manufacturer's standard gage No. 14 gage (0.068 inch) (1.75 mm) minimum.

1810.5.2.2Shell type. The shell shall be seamless or provided with seams of strength equal to the basic material and be of a configuration that will provide confinement to the cast-in-place concrete.

1810.5.2.3Strength. The ratio of steel yield strength (f_y) to 28-day specified compressive strength (f'_c) shall not be less than six.

1810.5.2.4Diameter. The nominal pile diameter shall not be greater than 16 inches (406 mm).

1810.5.3Installation. Steel shells shall be mandrel driven their full length in contact with the surrounding soil. The steel shells shall be driven in such order and with such pacing as to ensure against distortion of or injury to piles already in place. A pile shall not be driven within four and one-half average pile diameters of a pile filled with concrete less than 24 hours old unless approved by the commissioner. Concrete shall not be placed in steel shells within heave range of driving.

1810.5.4Reinforcement. Reinforcement shall not be placed within 1 inch (25 mm) of the steel shell. Reinforcing shall be required for unsupported pile lengths or where the pile is designed to resist uplift or unbalanced lateral loads.

1810.5.4.1Seismic reinforcement. Where a structure is assigned to Seismic Design Category C or D in accordance with Section 1616, the reinforcement requirements for drilled or augered uncased piles in Section 1810.3.5 shall be met.

Exception: A spiral-welded metal casing of a thickness not less than manufacturer's standard gage No. 14 (0.068 inch) is permitted to provide concrete confinement in lieu of the closed ties or equivalent spirals required in an uncased concrete pile. Where used as such, the metal casing shall be protected against possible deleterious action due to soil constituents, changing water levels or other factors indicated by boring records of site conditions.

1810.6Concrete-filled steel pipe and tube piles. Concrete-filled steel pipe and tube piles shall conform to the requirements of Sections 1810.6.1 through 1810.6.5.

1810.6.1Materials. Steel pipe and tube sections used for piles shall conform to ASTM A 252 or ASTM A 283. Concrete shall conform to Section 1810.1.1. The maximum coarse aggregate size shall be 3/4 inch (19.1 mm).

1810.6.2Allowable stresses. The allowable design compressive stress in the concrete shall not exceed 33 percent of the 28-day specified compressive strength (f'_c). The allowable design compressive stress in the steel shall not exceed 35 percent of the minimum specified yield strength of the steel (F_y), provided F_y shall not be assumed greater than 36,000 psi (248 MPa) for computational purposes.

Exception: Where justified in accordance with Section 1808.2.10, the allowable stresses are permitted to be increased to 0.50 F_y .

1810.6.3Minimum dimensions. Piles shall have a nominal outside diameter of not less than 8 inches (203 mm) and a

minimum wall thickness in accordance with Section 1809.3.4. For mandrel-driven pipe piles, the minimum wall thickness shall be 1/10 inch (2.5 mm).

1810.6.4Reinforcement.Reinforcement steel shall conform to Section 1810.1.2. Reinforcement shall not be placed within 1 inch (25 mm) of the steel casing.

1810.6.4.1Seismic reinforcement.Where a structure is assigned to Seismic Design Category C or D in accordance with Section 1616, minimum reinforcement no less than 0.01 times the cross-sectional area of the pile concrete shall be provided in the top of the pile with a length equal to two times the required cap embedment anchorage into the pile cap, but not less than the tension development length of the reinforcement. The wall thickness of the steel pipe shall not be less than 3/16 inch (5 mm).

1810.6.5Placing concrete.The placement of concrete shall conform to Section 1810.1.3.

1810.7Caisson piles.Caisson piles shall conform to the requirements of Sections 1810.7.1 through 1810.7.9.

1810.7.1Construction.Caisson piles shall consist of a shaft section of concrete-filled pipe extending to bedrock with an uncased socket drilled into the bedrock and filled with concrete. The caisson pile shall have a full-length structural steel core or a stub core installed in the rock socket and extending into the pipe portion a distance equal to the socket depth.

1810.7.2Materials.Pipe and steel cores shall conform to the material requirements in Section 1809.3. Pipes shall have a minimum wall thickness of 3/8 inch (9.5 mm) and shall be fitted with a suitable steel-driving shoe welded to the bottom of the pipe. Concrete shall have a 28-day specified compressive strength (f'_c) of not less than 4,000 psi (27.58 MPa). The concrete mix shall be designed and proportioned so as to produce a cohesive workable mix with a slump of 4 inches to 6 inches (102 mm to 152 mm).

1810.7.3Design.The depth of the rock socket shall be sufficient to develop the full load-bearing capacity of the caisson pile with a minimum safety factor of two, but the depth of the socket in class 1c rock or better below the shoe shall not be less than 3 feet of the outside diameter of the pipe. The minimum outside diameter of the caisson pile shall be 7 inches (194 mm), and the diameter of the rock socket shall be approximately equal to the inside diameter of the pile.

1810.7.4Structural core.The gross cross-sectional area of the structural steel core shall not exceed 30 percent of the gross area of the caisson. The minimum clearance between the structural core and the pipe shall be 2 inches (51 mm). Where cores are to be spliced, the ends shall be milled or ground to provide full contact and shall be full-depth welded.

1810.7.5Allowable stresses.The allowable design compressive stresses shall not exceed the following: concrete, 0.33 f'_c ; steel pipe, 0.35 F_y and structural steel core, 0.50 F_y .

1810.7.6Installation.The rock socket and pile shall be thoroughly cleaned of foreign materials before filling with concrete. Steel cores shall be set 1 inch above the base of the rock socket. Concrete shall not be placed through water except where a tremie or other method approved by the commissioner is used.

1810.7.7Dimensions of caisson piles.Caisson piles shall consist of concrete pipe piles that are socketed into rock and constructed with steel reinforcement, and in which the socket is observed before the concrete is poured. Steel reinforcement shall be covered with at least 1 1/2 inches (38 mm) of concrete. The minimum diameter of caisson piles shall be 7 inches (178 mm). A suitable steel driving shoe shall be welded to the bottom of each caisson pile. The center-to-center spacing of caisson sockets shall be at least two and one-half times the outside diameter of the shell but not less than 4 feet (1219 mm).

1810.7.8Inspection.All rock sockets shall be inspected to verify rock quality. Inspection may be accomplished by

direct observation or by video methods or by a core boring performed prior to the drilling of the socket. Load tests performed in accordance with 1808.2.8.3 may be substituted for inspection of rock sockets.

1810.7.9 Caisson piles in soil. Caisson piles as described in Sections 1810.7 may be installed in soil provided that the socket is formed entirely in soil of class 4 or better and the concrete is placed under pressure exceeding 1.5 times the existing total overburden pressure. The socket shall be formed by extending the casing to the bottom of the socket and withdrawing the casing while the concrete is being pumped under pressure. Piles shall be installed in accordance with the provisions of Section 1810.3 and 1810.7. For diameters less than 12 inches (305 mm), the casing above the socket shall remain in place permanently. Reinforcing to the socket shall be placed in the casing to the depth of the socket prior to placing concrete.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1810.3.1 amended L.L. 8/2008 § 144, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 18: SOILS AND FOUNDATIONS
SECTION BC 1811: COMPOSITE PILES

NYC Administrative Code § 28-BC 1811

1811.1 General.

Composite piles shall conform to the requirements of Sections 1811.2 through 1811.5.

1811.2Design.Composite piles consisting of two or more approved pile types shall be designed to meet the conditions of installation.

1811.3Limitation of load.The maximum allowable load shall be limited by the capacity of the weakest section incorporated in the pile.

1811.4Splices.Splices between concrete and steel or wood sections shall be designed to prevent separation both before and after the concrete portion has set, and to ensure the alignment and transmission of the total pile load. Splices shall be designed to resist uplift caused by upheaval during driving of adjacent piles, and shall develop the full compressive strength and not less than 50 percent of the tension and bending strength of the weaker section.

1811.5Seismic reinforcement.Where a structure is assigned to Seismic Design Category C or D, in accordance with Section 1616 and where concrete and steel are used as part of the pile assembly, the concrete reinforcement shall comply with Sections 1810.1.2.1 and 1810.1.2.2 and the steel section shall comply with Section 1809.3.45 or 1810.6.4.1.



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Chapter 18: SOILS AND FOUNDATIONS
SECTION BC 1812: PIER FOUNDATIONS

NYC Administrative Code § 28-BC 1812

1812.1 General.

Isolated and multiple piers used as foundations shall conform to the requirements of Sections 1812.2 through 1812.11, as well as the applicable provisions of Section 1808.2.

1812.2 Lateral dimensions and height. The minimum dimension of isolated piers used as foundations shall be 2 feet (610 mm), and the height shall not exceed 12 times the least horizontal dimension.

1812.3 Materials. Concrete shall have a 28-day specified compressive strength (f'_c) of not less than 2,500 psi (17.24 MPa). Where concrete is placed through a funnel hopper at the top of the pier, the concrete mix shall be designed and proportioned so as to produce a cohesive workable mix having a slump of not less than 4 inches (102 mm) and not more than 6 inches (152 mm). Where concrete is to be pumped, the mix design including slump shall be adjusted to produce a pumpable concrete.

1812.4 Reinforcement. Except for steel dowels embedded 5 feet (1524 mm) or less in the pier, reinforcement where required shall be assembled and tied together and shall be placed in the pier hole as a unit before the reinforced portion of the pier is filled with concrete.

Exception: Reinforcement is permitted to be wet set and the 2 1/2 inch (64 mm) concrete cover requirement permitted to be reduced to 2 inches (51 mm) for Group R-3 and U occupancies not exceeding two stories of light-frame construction, provided the construction method is approved by the commissioner.

Reinforcement shall conform to the requirements of Sections 1810.1.2.1 and 1810.1.2.2.

Exceptions:

1. Isolated piers supporting posts of Group R-3 and U occupancies not exceeding two stories of light-frame construction are permitted to be reinforced as required by rational analysis but not less than a minimum of one No. 4

bar, without ties or spirals, when detailed so the pier is not subject to lateral loads and the soil is determined to be of adequate stiffness.

2. Isolated piers supporting posts and bracing from decks and patios appurtenant to Group R-3 and U occupancies not exceeding two stories of light-frame construction are permitted to be reinforced as required by rational analysis but not less than one No. 4 bar, without ties or spirals, when the lateral load, E , to the top of the pier does not exceed 200 pounds (890 N) and the soil is determined to be of adequate stiffness.

3. Piers supporting the concrete foundation wall of Group R-3 and U occupancies not exceeding two stories of light-frame construction are permitted to be reinforced as required by rational analysis but not less than two No. 4 bars, without ties or spirals, when it can be shown the concrete pier will not rupture when designed for the maximum seismic load, E_m , and the soil is determined to be of adequate stiffness.

4. Closed ties or spirals where required by Section 1810.1.2.2 are permitted to be limited to the top 3 feet (914 mm) of the piers 10 feet (3048 mm) or less in depth supporting Group R-3 and U occupancies of Seismic Design Category D, not exceeding two stories of light-frame construction.

1812.5Concrete placement. Concrete shall be placed in such a manner as to ensure the exclusion of any foreign matter and to secure a full-sized shaft. Concrete shall not be placed through water except where a tremie or other approved method is used. When depositing concrete from the top of the pier, the concrete shall not be chuted directly into the pier but shall be poured in a rapid and continuous operation through a funnel hopper centered at the top of the pier.

1812.6Belled bottoms. Where pier foundations are belled at the bottom, the edge thickness of the bell shall not be less than that required for the edge of footings. Where the sides of the bell slope at an angle less than 60 degrees (1 rad) from the horizontal, the effects of vertical shear shall be considered.

1812.7Reserved.

1812.8Concrete. Where adequate lateral support is not provided, and the ratio of unsupported height to least lateral dimension does not exceed three, piers of plain concrete shall be designed and constructed as pilasters in accordance with ACI 318. Where the unsupported height to least lateral dimension exceeds three, piers shall be constructed of reinforced concrete, and shall conform to the requirements for columns in ACI 318.

Exception: Where adequate lateral support is furnished by the surrounding materials as defined in Section 1808.2.9, piers are permitted to be constructed of plain or reinforced concrete. The requirements of ACI 318 for bearing on concrete shall apply.

1812.9Steel shell. Where concrete piers are entirely encased with a circular steel shell, and the area of the shell steel is considered reinforcing steel, the steel shall be protected under the conditions specified in Section 1808.2.17. Horizontal joints in the shell shall be spliced to comply with Section 1808.2.7.

1812.10Dewatering. Where piers are carried to depths below water level, the piers shall be constructed by a method that will provide accurate preparation and inspection of the bottom in dry conditions.

1812.11Method of construction. Methods of construction shall conform to ACI 336.1 "Standard Specification for the Construction of Drilled Piers."



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 Chapter 18: SOILS AND FOUNDATIONS
 SECTION BC 1813: LIQUEFACTION ANALYSIS

NYC Administrative Code § 28-BC 1813

1813.1 General.

An assessment of the liquefaction potential shall be determined for each building site. The evaluation of liquefaction potential shall include the following considerations:

1. Non-cohesive soils below ground water table and less than 50 feet (15 240 mm) below the ground surface shall be considered to have potential for liquefaction.
2. The potential for liquefaction on level ground shall be determined on the basis of the Structural Occupancy Categories associated with the uncorrected Standard Penetration Resistance (N) at the site, as defined in Figure 1813.1, or a site specific analysis performed by an engineer with specific expertise in the evaluation of liquefaction.
 [SEE graphical material in printed version]

Figure 1813.1 Liquefaction Assessment Diagram

1813.2Site-specific analyses.In evaluating liquefaction potential, the analysis shall consider the following parameters: ground surface acceleration, earthquake magnitude, magnitude scaling factor, effective overburden pressure, hammer energy, cone penetration resistance (where applicable), and fines content. If a site response analysis is conducted, bedrock acceleration time histories and a shear wave velocity profile based on in-situ measurements may be utilized. These analyses may consider the results of laboratory cyclic shear tests.

1813.3Foundation design analysis.The foundation design analysis shall consider an assessment of potential consequences of any liquefaction and soil strength loss including estimation of differential settlement, lateral movement or reduction in foundation soil bearing capacity, and may incorporate the potential benefits of any proposed mitigation measures. Such measures may be given consideration in the design of the structure and can include, but are not limited to, ground improvement, pore pressure dissipation, selection of appropriate foundation type and depths, selection of appropriate structural systems to accommodate anticipated displacements, or any combination of these measures.

In evaluating the potential for liquefaction, the effect of settlements induced by seismic motions and loss of soil strength shall be considered. The analysis performed shall incorporate the effects of peak ground acceleration, appropriate earthquake magnitudes and duration consistent with the design earthquake ground motions as well as uncertainty and variability of soil properties across the site. Peak ground acceleration, seismically induced cyclic stress ratios and pore pressure development may be determined from a site-specific study taking into account soil amplification effects and ground motions appropriate for the seismic hazard. Other recognized methods of analysis may be used in the evaluation process subject to the approval of the commissioner. Effects of pore water pressure buildup shall be considered in the design except for the following conditions:

1. The calculated cyclic shear demand is equal to or less than 75 percent of the calculated cyclic shear strength for Structural Occupancy Category I, II, and III structures.
2. The calculated cyclic shear demand is equal to or less than 85 percent of the calculated cyclic shear strength for Structural Occupancy Category IV structures.

1813.4 Design considerations. At sites where liquefaction is determined to be probable, the following considerations shall be in the design:

1. Liquefiable soils shall be considered to have no passive (lateral) resistance or bearing capacity value during an earthquake, unless shown otherwise by accepted methods of analysis. The engineer shall submit an analysis for review and approval by the commissioner, demonstrating that the proposed construction is safe against the effects of soil liquefaction.
2. Where liquefiable soils are present in sloped ground or over sloped non-liquefiable substrata and where lateral displacement is possible, the engineer shall submit a stability analysis for review and approval by the commissioner, demonstrating that the proposed construction is safe against failure of the soil and that the effect of potential lateral displacements are acceptable.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

1813.1 item 2 amended L.L. 8/2008 § 145, eff. July 1, 2008.

1813.3 items 1, 2 amended L.L. 8/2008 § 146, eff. July 1, 2008.



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 SECTION BC 1814: UNDERPINNING

NYC Administrative Code § 28-BC 1814

1814.1 General.

Where the protection and/or support of adjacent structures is required, an engineer shall prepare a preconstruction report summarizing the condition of the structure as determined from examination of the structure, the review of available design documents and if necessary, the excavation of test pits. The engineer shall determine the requirements for underpinning and protection and prepare site-specific plans, details, and sequence of work for submission to the commissioner. Such support may be provided by underpinning, sheeting, and bracing, or by other means acceptable to the commissioner. Underpinning piers, walls, piles, and footings shall be designed and installed in accordance with provisions of this chapter and Chapter 33 and shall be inspected in accordance with provisions of Chapter 17.

1814.1.1 Underpinning and bracing. Where underpinning is used for the support of adjacent structures, the piers, wall piles or footings shall be installed in such manner so as to prevent the lateral or vertical displacement of the adjacent structure, to prevent deterioration of the foundations or other effects that would disrupt the adjacent structure. The sequence of installation and the requirements for sheeting, preloading, wedging with steel wedges, jacking or dry packing shall be identified in the design.

1814.2 Use of rock support in lieu of underpinning. Existing structures founded at a level above the level of adjacent new construction may be supported on Class 1a and 1b rock in lieu of underpinning, sheeting and bracing or retaining walls, provided that a report by the engineer substantiates the safety of the proposed construction. The engineer shall also certify that he or she has inspected the exposed rock and the jointing therein and has determined whether supplemental support of the rock face is required.

1814.3 Monitoring of influenced structures. A land surveyor or engineer shall monitor the behavior of influenced structures during construction and for as long as necessary after construction concludes, as determined by the commissioner.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 19: CONCRETE
SECTION BC 1901: GENERAL

NYC Administrative Code § 28-BC 1901

1901.1 Scope.

The provisions of this chapter shall govern the materials, quality control, design and construction of concrete used in structures.

1901.2 Plain and reinforced concrete. Structural concrete shall be designed and constructed in accordance with the requirements of this chapter and ACI 318 as amended in Section 1908 of this code. Except for the provisions of Sections 1904 and 1911, the design and construction of slabs on grade shall not be governed by this chapter unless they transmit vertical loads or lateral forces from other parts of the structure to the soil.

1901.3 Source and applicability. Sections 1902 through 1907 of this chapter are derived from the provisions for structural concrete in ACI 318. Where sections within Chapters 2 through 7 of ACI 318 are referenced in other chapters and appendices of ACI 318, the provisions of Sections 1902 through 1907 of this code shall apply.

1901.4 Construction documents. The construction documents for structural concrete construction shall include:

1. Specified compressive strength of concrete at the stated ages or stages of construction for which each concrete element is designed.
2. Specified strength or grade of reinforcement.
3. Size and location of structural elements, reinforcement, and anchors.
4. Provision for dimensional changes resulting from creep, shrinkage and temperature.
5. Magnitude and location of prestressing forces.
6. Anchorage length of reinforcement and location and length of lap splices.

7. Type and location of mechanical and welded splices of reinforcement.
 8. Details and location of contraction or isolation joints specified for plain concrete.
 9. Minimum concrete compressive strength at time of posttensioning.
 10. Stressing sequence for posttensioning tendons.
 11. For structures assigned to Seismic Design Category D, a statement if slab on grade is designed as a structural diaphragm (see Section 21.10.3.4 of ACI 318).
 12. Freezing and thawing and deicing chemical exposure classifications (see Section 1904.2).
 13. Sulfate exposure classification (see Section 1904.3).
 14. Maximum water soluble chloride ion (CI) concentrations (see Section 1904.4).
- 1901.5Special inspection. The special inspection of concrete elements of buildings and structures and concreting operations shall be in accordance with Chapter 17.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 19: CONCRETE
SECTION BC 1902: DEFINITIONS

NYC Administrative Code § 28-BC 1902

1902.1 General.

The following words and terms shall have the meanings shown herein.

ADMIXTURE. Material other than water, aggregate or hydraulic cement, used as an ingredient of concrete and added to concrete before or during its mixing to modify its properties.

AGGREGATE. Granular material, such as sand, gravel, crushed stone and iron blast-furnace slag, used with a cementing medium to form a hydraulic cement concrete or mortar.

AGGREGATE, LIGHTWEIGHT. Aggregate with a dry, loose weight of 70 pounds per cubic foot (pcf) (1120 kg/m³) or less.

CEMENTITIOUS MATERIALS. Materials as specified in Section 1903 that have cementing value when used in concrete either by themselves, such as portland cement, blended hydraulic cements and expansive cement, or such materials in combination with fly ash, other raw or calcined natural pozzolans, silica fume, and/or ground granulated blast-furnace slag.

COLUMN. A member with a ratio of height-to-least-lateral dimension exceeding three, used primarily to support axial compressive load.

CONCRETE. A mixture of portland cement or any other hydraulic cement, fine aggregate, coarse aggregate and water, with or without admixtures.

CONCRETE, SPECIFIED COMPRESSIVE STRENGTH OF, (f'_c). The compressive strength of concrete used in design and evaluated in accordance with the provisions of Section 1905, expressed in pounds per square inch (psi) (MPa). Whenever the quantity f'_c is under a radical sign, the square root of the numerical value only is intended, and the result has units of psi (MPa).

CONTRACTION JOINT. Formed, sawed or tooled groove in a concrete structure to create a weakened plane and regulate the location of cracking resulting from the dimensional change of different parts of the structure.

DEFORMED REINFORCEMENT. Deformed reinforcing bars, bar mats, deformed wire, welded plain wire fabric and welded deformed wire fabric conforming to ACI 318, Section 3.5.3.

DUCT. A conduit (plain or corrugated) to accommodate prestressing steel for postensioned installation.

EFFECTIVE DEPTH OF SECTION (d). The distance measured from extreme compression fiber to the centroid of tension reinforcement.

ISOLATION JOINT. A separation between adjoining parts of a concrete structure, usually a vertical plane, at a designed location such as to interfere least with performance of the structure, yet to allow relative movement in three directions and avoid formation of cracks elsewhere in the concrete and through which all or part of the bonded reinforcement is interrupted.

PEDESTAL. An upright compression member with a ratio of unsupported height-to-average-least-lateral dimension of three or less.

PLAIN CONCRETE. Structural concrete with no reinforcement or with less reinforcement than the minimum amount specified for reinforced concrete.

PLAIN REINFORCEMENT. Reinforcement that does not conform to the definition of "Deformed reinforcement" (see ACI 318, Section 3.5.4).

POSTTENSIONING. Method of prestressing in which prestressing steel is tensioned after concrete has hardened.

PRECAST CONCRETE. A structural concrete element cast elsewhere than its final position in the structure.

PRESTRESSED CONCRETE. Structural concrete in which internal stresses have been introduced to reduce potential tensile stresses in concrete resulting from loads.

PRESTRESSING STEEL. High-strength steel element such as wire, bar or strand, or a bundle of such elements, used to impart prestress forces to concrete.

PRETENSIONING. Method of prestressing in which prestressing steel is tensioned before concrete is placed.

REINFORCED CONCRETE. Structural concrete reinforced with no less than the minimum amounts of prestressing steel or nonprestressed reinforcement specified in ACI 318, Chapters 1 through 21 and ACI 318 Appendices A through C.

REINFORCEMENT. Material that conforms to Section 1903.5, excluding prestressing steel unless specifically included.

RESHORES. Shores placed snugly under a concrete slab or other structural member after the original forms and shores have been removed from a larger area, thus requiring the new slab or structural member to deflect and support its own weight and existing construction loads applied prior to the installation of the reshores.

SHORES. Vertical or inclined support members designed to carry the weight of the formwork, concrete and construction loads above.

SPIRAL REINFORCEMENT. Continuously wound reinforcement in the form of a cylindrical helix.

STRIPPING OPERATIONS. Removal on the floor of any parts of the concrete formwork including shoring, bracing and other supports.

STIRRUP. Reinforcement used to resist shear and torsion stresses in a structural member; typically bars, wires or welded wire fabric (plain or deformed) either single leg or bent into L, U or rectangular shapes and located perpendicular, or at an angle to, longitudinal reinforcement. (The term "stirrups" is usually applied to lateral reinforcement in flexural members and the term "ties" to those in compression members.)

STRUCTURAL CONCRETE. Concrete used for structural purposes, including plain and reinforced concrete.

TENDON. In pretensioning applications, the tendon is the prestressing steel. In posttensioned applications, the tendon is a complete assembly consisting of anchorages, prestressing steel and sheathing with coating for unbonded applications or ducts with grout for bonded applications.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 19: CONCRETE
SECTION BC 1903: SPECIFICATIONS FOR TESTS AND MATERIALS

NYC Administrative Code § 28-BC 1903

1903.1 General.

Materials used to produce concrete and testing thereof shall comply with the applicable standards listed in ACI 318 and this section. Tests of concrete and the materials used in concrete shall be in accordance with ACI 318, Section 3.8. Where required, special inspections and tests shall be in accordance with Chapter 17.

1903.2Cement.Cement used to produce concrete shall comply with ACI 318, Section 3.2.

1903.3Aggregates.Aggregates used in concrete shall comply with ACI 318, Section 3.3.

1903.4Water.Water used in mixing concrete shall be clean and free from injurious amounts of oils, acids, alkalis, salts, organic materials or other substances that are deleterious to concrete or steel reinforcement and shall comply with ACI 318, Section 3.4.

1903.5Steel reinforcement.Reinforcement and welding of reinforcement to be placed in concrete construction shall conform to the requirements of this section.

1903.5.1Reinforcement type.Reinforcement shall be deformed reinforcement, except plain reinforcement is permitted for spirals or prestressing steel, and reinforcement consisting of structural steel, steel pipe or steel tubing is permitted where specified in ACI 318. Reinforcement shall comply with ACI 318, Section 3.5.

1903.5.2Welding.Welding of reinforcing bars shall conform to AWS D1.4. Type and location of welded splices and other required welding of reinforcing bars shall be indicated on the construction documents or in the project specifications. The ASTM reinforcing bar specifications, except for ASTM A 706, shall be supplemented to require a report of material properties necessary to conform to the requirements in AWS D1.4. A written welding procedure shall be provided to the registered design professional of record for approval prior to any welding. All welding shall be subject to special inspection by an approved agency.

1903.6Admixtures.Admixtures to be used in concrete shall be subject to prior approval by the registered design professional of record and shall comply with ACI 318, Section 3.6.

1903.7Storage of materials.The storage of materials for use in concrete shall comply with the provisions of Sections 1903.7.1 and 1903.7.2.

1903.7.1Manner of storage.Cementitious materials and aggregates shall be stored in such a manner as to prevent deterioration or intrusion of foreign matter.

1903.7.2Unacceptable material.Any material that has deteriorated or has been contaminated shall not be used for concrete.

1903.8Glass fiber reinforced concrete.Glass fiber reinforced concrete (GFRC) and the materials used in such concrete shall be in accordance with the PCI MNL 128 standard.



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 SECTION BC 1904: DURABILITY REQUIREMENTS

NYC Administrative Code § 28-BC 1904

1904.1 Water-cementitious materials ratio.

The water-cementitious materials ratios specified in Tables 1904.2.2 and 1904.3 shall be calculated using the weight of cement meeting ASTM C 150, ASTM C 595, ASTM C 845 or ASTM C 1157, plus the weight of fly ash and other pozzolans meeting ASTM C 618, slag meeting ASTM C 989 and silica fume meeting ASTM C 1240, if any, except that where concrete is exposed to deicing chemicals, Section 1904.2.3 further limits the amount of fly ash, pozzolans, silica fume, slag or the combination of these materials.

1904.2 Freezing and thawing exposures. Concrete that will be exposed to freezing and thawing or deicing chemicals shall comply with Sections 1904.2.1 through 1904.2.3.

1904.2.1 Air entrainment. Normal-weight and lightweight concrete exposed to freezing and thawing or deicing chemicals shall be air entrained in accordance with Table 1904.2.1. Tolerance of air content as delivered shall be (+/-) 1.5 percent. For specified compressive strength (f'_c) greater than 5,000 psi (34.47 MPa), reduction of air content indicated in Table 1904.2.1 by 1.0 percent is permitted. Table 1904.2.1 Total Air Content for Frost-Resistant Concrete

Nominal Maximum Aggregate Size	Severe exposure	Moderate exposure
3/8	7 1/2	6 1/2
1/2	7 1/2	6 1/2
3/4	6 5/8	5 7/8
1	6 1/2	5 1/2
1 1/2	5 1/2	4 1/2
2	4 1/2	3 1/2
2 1/2	4 1/2	3 1/2
3	4 1/2	3 1/2
3 1/2	4 1/2	3 1/2
4	4 1/2	3 1/2
4 1/2	4 1/2	3 1/2
5	4 1/2	3 1/2
5 1/2	4 1/2	3 1/2
6	4 1/2	3 1/2
6 1/2	4 1/2	3 1/2
7	4 1/2	3 1/2
7 1/2	4 1/2	3 1/2
8	4 1/2	3 1/2
9	4 1/2	3 1/2
10	4 1/2	3 1/2
11	4 1/2	3 1/2
12	4 1/2	3 1/2
15	4 1/2	3 1/2
19	4 1/2	3 1/2
24	4 1/2	3 1/2
29	4 1/2	3 1/2
35	4 1/2	3 1/2
42	4 1/2	3 1/2
48	4 1/2	3 1/2
56	4 1/2	3 1/2
63	4 1/2	3 1/2
75	4 1/2	3 1/2
84	4 1/2	3 1/2
96	4 1/2	3 1/2
108	4 1/2	3 1/2
119	4 1/2	3 1/2
132	4 1/2	3 1/2
147	4 1/2	3 1/2
165	4 1/2	3 1/2
186	4 1/2	3 1/2
210	4 1/2	3 1/2
238	4 1/2	3 1/2
270	4 1/2	3 1/2
306	4 1/2	3 1/2
346	4 1/2	3 1/2
391	4 1/2	3 1/2
441	4 1/2	3 1/2
496	4 1/2	3 1/2
566	4 1/2	3 1/2
642	4 1/2	3 1/2
724	4 1/2	3 1/2
812	4 1/2	3 1/2
906	4 1/2	3 1/2
1016	4 1/2	3 1/2
1142	4 1/2	3 1/2
1284	4 1/2	3 1/2
1442	4 1/2	3 1/2
1616	4 1/2	3 1/2
1806	4 1/2	3 1/2
2012	4 1/2	3 1/2
2234	4 1/2	3 1/2
2472	4 1/2	3 1/2
2726	4 1/2	3 1/2
3006	4 1/2	3 1/2
3302	4 1/2	3 1/2
3614	4 1/2	3 1/2
3942	4 1/2	3 1/2
4286	4 1/2	3 1/2
4646	4 1/2	3 1/2
5022	4 1/2	3 1/2
5414	4 1/2	3 1/2
5822	4 1/2	3 1/2
6246	4 1/2	3 1/2
6686	4 1/2	3 1/2
7142	4 1/2	3 1/2
7614	4 1/2	3 1/2
8102	4 1/2	3 1/2
8606	4 1/2	3 1/2
9126	4 1/2	3 1/2
9662	4 1/2	3 1/2
10214	4 1/2	3 1/2
10782	4 1/2	3 1/2
11366	4 1/2	3 1/2
11966	4 1/2	3 1/2
12582	4 1/2	3 1/2
13214	4 1/2	3 1/2
13862	4 1/2	3 1/2
14526	4 1/2	3 1/2
15206	4 1/2	3 1/2
15902	4 1/2	3 1/2
16614	4 1/2	3 1/2
17342	4 1/2	3 1/2
18086	4 1/2	3 1/2
18846	4 1/2	3 1/2
19622	4 1/2	3 1/2
20414	4 1/2	3 1/2
21222	4 1/2	3 1/2
22046	4 1/2	3 1/2
22886	4 1/2	3 1/2
23742	4 1/2	3 1/2
24614	4 1/2	3 1/2
25502	4 1/2	3 1/2
26406	4 1/2	3 1/2
27326	4 1/2	3 1/2
28262	4 1/2	3 1/2
29214	4 1/2	3 1/2
30182	4 1/2	3 1/2
31166	4 1/2	3 1/2
32166	4 1/2	3 1/2
33182	4 1/2	3 1/2
34214	4 1/2	3 1/2
35262	4 1/2	3 1/2
36326	4 1/2	3 1/2
37406	4 1/2	3 1/2
38502	4 1/2	3 1/2
39614	4 1/2	3 1/2
40742	4 1/2	3 1/2
41886	4 1/2	3 1/2
43046	4 1/2	3 1/2
44222	4 1/2	3 1/2
45414	4 1/2	3 1/2
46622	4 1/2	3 1/2
47846	4 1/2	3 1/2
49086	4 1/2	3 1/2
50342	4 1/2	3 1/2
51614	4 1/2	3 1/2
52902	4 1/2	3 1/2
54206	4 1/2	3 1/2
55526	4 1/2	3 1/2
56862	4 1/2	3 1/2
58214	4 1/2	3 1/2
59582	4 1/2	3 1/2
60966	4 1/2	3 1/2
62366	4 1/2	3 1/2
63782	4 1/2	3 1/2
65214	4 1/2	3 1/2
66662	4 1/2	3 1/2
68126	4 1/2	3 1/2
69606	4 1/2	3 1/2
71102	4 1/2	3 1/2
72614	4 1/2	3 1/2
74142	4 1/2	3 1/2
75686	4 1/2	3 1/2
77246	4 1/2	3 1/2
78822	4 1/2	3 1/2
80414	4 1/2	3 1/2
82022	4 1/2	3 1/2
83646	4 1/2	3 1/2
85286	4 1/2	3 1/2
86942	4 1/2	3 1/2
88614	4 1/2	3 1/2
90302	4 1/2	3 1/2
92006	4 1/2	3 1/2
93726	4 1/2	3 1/2
95462	4 1/2	3 1/2
97214	4 1/2	3 1/2
98982	4 1/2	3 1/2
100766	4 1/2	3 1/2
102566	4 1/2	3 1/2
104382	4 1/2	3 1/2
106214	4 1/2	3 1/2
108062	4 1/2	3 1/2
109926	4 1/2	3 1/2
111806	4 1/2	3 1/2
113702	4 1/2	3 1/2
115614	4 1/2	3 1/2
117542	4 1/2	3 1/2
119486	4 1/2	3 1/2
121446	4 1/2	3 1/2
123422	4 1/2	3 1/2
125414	4 1/2	3 1/2
127422	4 1/2	3 1/2
129446	4 1/2	3 1/2
131486	4 1/2	3 1/2
133542	4 1/2	3 1/2
135614	4 1/2	3 1/2
137702	4 1/2	3 1/2
139806	4 1/2	3 1/2
141926	4 1/2	3 1/2
144062	4 1/2	3 1/2
146214	4 1/2	3 1/2
148382	4 1/2	3 1/2
150566	4 1/2	3 1/2
152766	4 1/2	3 1/2
154982	4 1/2	3 1/2
157214	4 1/2	3 1/2
159462	4 1/2	3 1/2
161726	4 1/2	3 1/2
164006	4 1/2	3 1/2
166302	4 1/2	3 1/2
168614	4 1/2	3 1/2
170942	4 1/2	3 1/2
173286	4 1/2	3 1/2
175646	4 1/2	3 1/2
178022	4 1/2	3 1/2
180414	4 1/2	3 1/2
182822	4 1/2	3 1/2
185246	4 1/2	3 1/2
187686	4 1/2	3 1/2
190142	4 1/2	3 1/2
192614	4 1/2	3 1/2
195102	4 1/2	3 1/2
197606	4 1/2	3 1/2
200126	4 1/2	3 1/2
202662	4 1/2	3 1/2
205214	4 1/2	3 1/2
207782	4 1/2	3 1/2
210366	4 1/2	3 1/2
212966	4 1/2	3 1/2
215582	4 1/2	3 1/2
218214	4 1/2	3 1/2
220862	4 1/2	3 1/2
223526	4 1/2	3 1/2
226206	4 1/2	3 1/2
228902	4 1/2	3 1/2
231614	4 1/2	3 1/2
234342	4 1/2	3 1/2
237086	4 1/2	3 1/2
239846	4 1/2	3 1/2
242622	4 1/2	3 1/2
245414	4 1/2	3 1/2
248222	4 1/2	3 1/2
251046	4 1/2	3 1/2
253886	4 1/2	3 1/2
256742	4 1/2	3 1/2
259614	4 1/2	3 1/2
262502	4 1/2	3 1/2
265406	4 1/2	3 1/2
268326	4 1/2	3 1/2
271262	4 1/2	3 1/2
274214	4 1/2	3 1/2
277182	4 1/2	3 1/2
280166	4 1/2	3 1/2
283166	4 1/2	3 1/2
286182	4 1/2	3 1/2
289214	4 1/2	3 1/2
292262	4 1/2	3 1/2
295326	4 1/2	3 1/2
298406	4 1/2	3 1/2
301502	4 1/2	3 1/2
304614	4 1/2	3 1/2
307742	4 1/2	3 1/2
310886	4 1/2	3 1/2
314046	4 1/2	3 1/2
317222	4 1/2	3 1/2
320414	4 1/2	3 1/2
323622	4 1/2	3 1/2
326846	4 1/2	3 1/2
330086	4 1/2	3 1/2
333342	4 1/2	3 1/2
336614	4 1/2	3 1/2
339902	4 1/2	3 1/2
343206	4 1/2	3 1/2
346526	4 1/2	3 1/2
349862	4 1/2	3 1/2
353214	4 1/2	3 1/2
356582	4 1/2	3 1/2
359966	4 1/2	3 1/2
363366	4 1/2	3 1/2
366782	4 1/2	3 1/2
370214	4 1/2	3 1/2
373662	4 1/2	3 1/2
377126	4 1/2	3 1/2
380606	4 1/2	3 1/2
384102	4 1/2	3 1/2
387614	4 1/2	3 1/2
391142	4 1/2	3 1/2
394686	4 1/2	3 1/2
398246	4 1/2	3 1/2
401822	4 1/2	3 1/2
405414	4 1/2	3 1/2
409022	4 1/2	3 1/2
412646	4 1/2	3 1/2
416286	4 1/2	3 1/2
419942	4 1/2	3 1/2
423614	4 1/2	3 1/2
427302	4 1/2	3 1/2
431006	4 1/2	3 1/2
434726	4 1/2	3 1/2
438462	4 1/2	3 1/2
442214	4 1/2	3 1/2
445982	4 1/2	3 1/2
449766	4 1/2	3 1/2
453566	4 1/2	3 1/2
457382	4 1/2	3 1/2
461214	4 1/2	3 1/2

1904.2.2 Concrete properties. Concrete that will be subject to the exposures given in Table 1904.2.2(1) shall conform to the corresponding maximum water-cementitious materials ratios and minimum specified concrete compressive strength requirements of that table. In addition, concrete that will be exposed to deicing chemicals shall conform to Section 1904.2.3.

Exception: For Group R and accessory occupancies that are in buildings less than four stories in height, normal-weight aggregate concrete that is subject to freezing and thawing or deicer chemicals shall comply with the requirements of Table 1904.2.2(2). Table 1904.2.2(1) Requirements for Special Exposure Conditions Exposure Condition Maximum Water- Cementitious Materials Ratio, by Weight, Normal- Weight Aggregate Concrete Minimum f'c, Normal- Weight and Lightweight Aggregate Concrete (psi) Concrete intended to have low permeability when exposed to water 0.50 4,000 Concrete exposed to freezing and thawing in a moist condition or to deicing chemicals 0.45 4,500 For corrosion protection of reinforcement in concrete exposed to chlorides from deicing chemicals, salt, saltwater, brackish water, seawater or spray from these sources 0.40 5,000 For SI: 1 pound per square inch = 0.00689 MPa. Table 1904.2.2(2) Minimum Specified Compressive Strength (f'c) (As Revised) Type or Location of Concrete Construction Minimum Specified Compressive Strength (f'c at 28 days, psi) Basement walls c and foundations not exposed to the weather 2,500 a Basement slabs and interior slabs on grade, except garage floor slabs 2,500 a Basement walls c, foundation walls, exterior walls and other vertical concrete surfaces exposed to the weather 3,000 b Driveways, curbs, walks, patios, porches, carport slabs, steps and other flatwork exposed to the weather, and garage floor slabs 3,500 b For SI: 1 pound per square inch = 0.00689 MPa. a. Concrete in these locations that can be subjected to freezing and thawing during construction shall be of air-entrained concrete in accordance with Table 1904.2.1.b. Concrete shall be air entrained in accordance with Table 1904.2.1.c. Structural plain concrete basement walls are exempt from the requirements for special exposure conditions of Section 1904.2.2 (see Section 1909.1.1).

1904.2.3 Deicing chemicals. For concrete exposed to deicing chemicals, the maximum weight of fly ash, other pozzolans, silica fume or slag that is included in the concrete shall not exceed the percentages of the total weight of cementitious materials given in Table 1904.2.3. Table 1904.2.3 Requirements for Concrete Exposed to Deicing Chemicals Cementitious Materials Maximum Percent of Total Cementitious Materials by Weight a, b Fly ash or other pozzolans conforming to ASTM C 618 25 Slag conforming to ASTM C 989 50 Silica fume conforming to ASTM C 1240 10 Total of fly ash or other pozzolans, slag and silica fume 50 c Total of fly ash or other pozzolans and silica fume 35 c a. The total cementitious material also includes ASTM C 150, ASTM C 595, ASTM C 845 and ASTM C 1157 cement. b. The maximum percentages shall include: b. 1. Fly ash or other pozzolans present in Type IP or I(PM) blended cement, ASTM C 595, or ASTM C 1157. b. 2. Slag used in the manufacture of an IS or I(SM) blended cement, ASTM C 595, or ASTM C 1157. b. 3. Silica fume, ASTM C 1240, present in a blended cement. c. Fly ash or other pozzolans and silica fume shall constitute no more than 25 and 10 percent, respectively, of the total weight of the cementitious materials.

1904.3 Sulfate exposures. Where concrete will be exposed to sulfate-containing solutions, it shall comply with the provisions of Sections 1904.3.1 and 1904.3.2.

1904.3.1 Concrete quality. Concrete to be exposed to sulfate-containing solutions or soils shall conform to the requirements of Table 1904.3 or shall be concrete made with a cement that provides sulfate resistance and that has a maximum water-cementitious materials ratio and minimum compressive strength as set forth in Table 1904.3.

1904.3.2 Calcium chloride. Calcium chloride as an admixture shall not be used in concrete to be exposed to those severe or very severe sulfate-containing solutions defined in Table 1904.3.
[SEE graphical material in printed version]

1904.4 Corrosion protection of reinforcement. Reinforcement in concrete shall be protected from corrosion and exposure to chlorides as provided by Sections 1904.4.1 and 1904.4.2.

1904.4.1 General. For corrosion protection of reinforcement in concrete, the maximum water-soluble chloride ion

concentrations in hardened concrete at ages from 28 to 42 days contributed from the ingredients including water, aggregates, cementitious materials and admixtures shall not exceed the limits of Table 1904.4.1. When testing is performed to determine water-soluble chloride ion content, test procedures shall conform to ASTM C 1218. Table 1904.4.1 Maximum Chloride Ion Content for Corrosion Protection of Reinforcement Type of Member Maximum Water Soluble Chloride Ion (CI) in Concrete, Percent by Weight of Cement Prestressed concrete 0.06 Reinforced concrete exposed to chloride in service 0.15 Reinforced concrete that will be dry or protected from moisture in service 1.00 Other reinforced concrete construction 0.30

1904.4.2 Exposure to chlorides. Where concrete with reinforcement will be exposed to chlorides from deicing chemicals, salt, saltwater, brackish water, seawater or spray from these sources, the requirements of Table 1904.2.2(1) for water-cementitious materials ratio and concrete strength, and the minimum concrete cover requirements of Section 1907.7, shall be satisfied. For corrosion protection of unbonded tendons compliance with ACI 318, Section 18.16 shall be required. The limits on acid-soluble and water-soluble chlorides in fresh concrete that contains reinforcing steel or other metals shall conform to the requirements of ACI 222, Section 3.2.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 19: CONCRETE
SECTION BC 1905: CONCRETE QUALITY, MIXING AND PLACING

NYC Administrative Code § 28-BC 1905

1905.1 General.

The required strength and durability of concrete shall be governed by compliance with the proportioning, testing, mixing and placing provisions of Sections 1905.1.1 through 1905.13.

1905.1.1Strength. Concrete shall be proportioned to provide an average compressive strength in accordance with Section 1905.3, and shall satisfy the durability criteria of Section 1904. Concrete shall be produced to minimize the frequency of strengths below f'_c in compliance with Section 1905.6.3.3. For concrete designed and constructed in accordance with this chapter, f'_c shall not be less than 2,500 psi (17.22 MPa). No maximum specified compressive strength shall apply unless restricted by a specific provision of this code or ACI 318.

1905.1.2Cylinder tests. Requirements for f'_c shall be based on tests of cylinders made and tested in accordance with Section 1905.6.3.

1905.1.3Basis of f'_c . Unless otherwise specified, f'_c shall be based on 28-day tests. If other than 28 days, test age for f'_c shall be as indicated in construction documents. If at any time during the concrete operations, the concrete is not in conformance with ASTM C 94 or is otherwise compromised, it shall be rejected. If it is placed, the location of the load shall be recorded and a pair of cylinders shall be molded from the load per ASTM C 31 and included in the average f'_c .

1905.1.4Lightweight aggregate concrete. Where design criteria in ACI 318, Sections 9.5.2.3, 11.2 and 12.2.4, provide for use of a splitting tensile strength value of concrete (f_{ct}), laboratory tests shall be made in accordance with ASTM C 330 to establish the value of f_{ct} corresponding to the specified value of f'_c .

1905.1.5Field acceptance. Splitting tensile strength tests shall not be used as a basis for field acceptance of concrete.

1905.2Selection of concrete proportions. Concrete proportions shall be determined in accordance with the provisions of Sections 1905.2.1 through 1905.2.3.

1905.2.1 General. Proportions of materials for concrete shall be established to provide:

1. Workability and consistency to permit concrete to be worked readily into forms and around reinforcement under the conditions of placement to be employed, without segregation or excessive bleeding.
2. Resistance to special exposures as required by Section 1904.
3. Conformance with the strength test requirements of Section 1905.6.

1905.2.2 Different materials. Where different materials are to be used for different portions of proposed work, each combination shall be evaluated.

1905.2.3 Basis of proportions. Concrete proportions shall be established in accordance with Section 1905.3 or Section 1905.4, and shall comply with the applicable requirements of Section 1904.

1905.3 Proportioning on the basis of field experience and/or trial mixtures. Concrete proportioning determined on the basis of field experience or trial mixtures shall be done in accordance with ACI 318, Section 5.3. If the required f'_c is obtained for trial batch mixes prior to the date specified, the trial mix design may be approved. All mixes shall be approved by the registered design professional of record, prior to construction.

1905.4 Proportioning without field experience or trial mixtures. Concrete proportioning determined without field experience or trial mixtures shall be done in accordance with ACI 318, Section 5.4. This method of proportioning shall not be permitted for load carrying structural concrete or concrete mix proportions that are required to conform with Section 1904.

1905.5 Average strength reduction. As data become available during construction, it is permissible to reduce the amount by which the average compressive strength (f'_c) is required to exceed the specified value of f'_c in accordance with ACI 318, Section 5.5.

1905.6 Evaluation and acceptance of concrete. The criteria for evaluation and acceptance of concrete shall be as specified in Sections 1905.6.2 through 1905.6.5.5.

1905.6.1 Qualified technicians. Concrete shall be tested in accordance with the requirements in Sections 1905.6.2 through 1905.6.5. An approved agency shall perform tests on fresh concrete at the job site, prepare specimens required for curing under field conditions, prepare specimens required for testing in the laboratory and record the temperature of the fresh concrete when preparing specimens for strength tests. All field sampling and testing, including the testing of aggregates, concrete mixes, and strength testing of specimens, shall be subject to special inspection by an approved agency. All testing laboratories shall be approved testing agencies and shall employ qualified special inspectors to perform all required laboratory tests. Test results shall be promptly distributed by the testing laboratory to the registered design professional of record, concrete producer, owner, and contractor.

1905.6.2 Frequency of testing. The frequency of conducting strength tests of concrete shall be as specified in Sections 1905.6.2.1 through 1905.6.2.4.

1905.6.2.1 Minimum frequency. Samples for strength tests of each class of concrete placed each day shall be taken not less than once a day, nor less than once for each 50 cubic yards (38 m³) of concrete nor less than once for each 5,000 square feet (465 m²) of surface area for slabs or walls. For concrete mixes proportioned for durability requirements specified in Section 1904, the registered design professional of record shall specify additional field testing of the concrete for unit weight, air, and water content. At the discretion of the registered design professional of record, the frequency of testing may be reduced, but not less than once for each 150 cubic yards (115 m³).

1905.6.2.2 Minimum number. On a given project, if the total volume of concrete is such that the frequency of testing

required by Section 1905.6.2.1 would provide less than five strength tests for a given class of concrete, tests shall be made from at least five randomly selected batches or from each batch if fewer than five batches are used.

1905.6.2.3 Small volume. When the total volume of a given class of concrete is less than 50 cubic yards (38 m³), and the concrete is non-structural and is not subject to the durability requirements of Section 1904, testing may be waived by the registered design professional of record.

1905.6.2.4 Strength test. A strength test shall be the average of the strengths of two cylinders made from the same sample of concrete and tested at 28 days or at the test age designated for the determination of f'_c . Consideration shall be given specifying an f'_c at 56 days or later for concrete utilizing pozzolans in the mix proportions. At the discretion of the registered design professional of record or the approved agency performing the testing, additional pairs of test cylinders may be taken at the time of sampling for testing at a later date. The additional cylinders may be tested at a later date should the strength at the specified date not meet the required f'_c .

1905.6.3 Laboratory-cured specimens. Laboratory-cured specimens shall comply with the provisions of Sections 1905.6.3.1 through 1905.6.3.4.

1905.6.3.1 Sampling. Samples for strength tests shall be taken in accordance with ASTM C 172.

1905.6.3.2 Cylinders. Cylinders for strength tests shall be molded and laboratory-cured in accordance with ASTM C 31. The Contractor shall be responsible for providing the specified field storage curing facility and for monitoring the temperature as defined in ASTM C 31. The cylinders shall be tested in accordance with ASTM C 39.

1905.6.3.3 Acceptance of results. The strength level of an individual class of concrete shall be considered satisfactory if both of the following requirements are met:

1. Every arithmetic average of any three consecutive strength tests equals or exceeds f'_c .
2. No individual strength test (average of two cylinders) falls below f'_c by more than 500 psi (3.45 MPa) when f'_c is 5,000 psi (34.5 MPa) or less, or by more than 0.10 f'_c when f'_c is more than 5,000 psi (34.5 MPa).

1905.6.3.4 Correction. If either of the requirements of Section 1905.6.3.3 is not met, steps shall be taken to increase the average of subsequent strength test results. The requirements of Section 1905.6.5 shall govern if the requirement of Section 1905.6.3.3, subsection 2 is not met.

1905.6.4 Field-cured specimens. Field-cured specimens shall comply with the provisions of Sections 1905.6.4.1 through 1905.6.4.4.

1905.6.4.1 When required. Where required by the commissioner, the results of strength tests of cylinders cured under field conditions shall be provided to the department.

1905.6.4.2 Curing. Field-cured cylinders shall be cured under field conditions in accordance with ASTM C 31.

1905.6.4.3 Sampling. Field-cured test cylinders shall be molded at the same time and from the same samples as laboratory-cured test cylinders.

1905.6.4.4 Correction. Procedures for protecting and curing concrete shall be improved when the strength of field-cured cylinders at the test age designated for determination of f'_c is less than 85 percent of that of companion laboratory-cured cylinders. The 85-percent limitation shall not apply if the field-cured strength exceeds f'_c by more than 500 psi (3.45 MPa).

1905.6.5 Low-strength test results. The investigation of low-strength test results shall be in accordance with the provisions of Sections 1905.6.5.1 through 1905.6.5.5.

1905.6.5.1Precaution.If any strength test of laboratory-cured cylinders performed in accordance with Section 1905.6.2.4 falls below the specified value of f'_c by more than the values given in Section 1905.6.3.3, subsection 2, or if tests of field-cured cylinders performed in accordance with Section 1905.6.4.4 indicate deficiencies in protection and curing, steps shall be taken to assure that the load-carrying capacity of the structure is not jeopardized.

1905.6.5.2Core tests.Where calculations indicate that load-carrying capacity is significantly reduced, tests of cores drilled from the area in question in accordance with ASTM C 42 shall be permitted. In such cases, three cores shall be taken for each strength test that falls below the values given in Section 1905.6.3.3, subsection 2.

1905.6.5.3Condition of cores.Cores shall be prepared for transport and storage by wiping drilling water from their surfaces and placing the cores in water-tight bags or containers immediately after drilling. Cores shall be tested not earlier than 48 hours nor later than seven days after coring unless approved by the registered design professional of record.

1905.6.5.4Test results.Concrete in an area represented by core tests shall be considered structurally adequate if the average of three cores is equal to at least 85 percent of f'_c and if no single core is less than 75 percent of f'_c . Additional testing of cores extracted from locations represented by erratic core strength results is permitted.

1905.6.5.5Strength evaluation.If the criteria of Section 1905.6.5.4 are not met and the structural adequacy remains in doubt, the commissioner may order a strength evaluation in accordance with ACI 318, Chapter 20, for the questionable portion of the structure, or take other appropriate action. The registered design professional of record shall present to the commissioner a complete analysis showing the final safe load-carrying capacity of the questionable portion of the structure including any proposed remedial actions necessary for review and approval.

1905.7Preparation of equipment and place of deposit.Preparation before concrete placement shall include the following:

1. Equipment for mixing and transporting concrete shall be clean.
2. Debris and ice shall be removed from spaces to be occupied by concrete.
3. Forms shall be properly coated.
4. Masonry filler units that will be in contact with concrete shall be well drenched.
5. Reinforcement shall be thoroughly clean of ice or other deleterious coatings.
6. Water shall be removed from the place of deposit before concrete is placed unless a tremie is to be used or unless otherwise permitted by the commissioner.
7. Laitance and other unsound material shall be removed before additional concrete is placed against hardened concrete.

1905.8Mixing.Mixing of concrete shall be performed in accordance with Sections 1905.8.1 through 1905.8.3.

1905.8.1General.Concrete shall be mixed until there is a uniform distribution of materials and shall be discharged completely before the mixer is recharged.

1905.8.2Ready-mixed concrete.Ready-mixed concrete shall be mixed and delivered in accordance with the requirements of ASTM C 94 or ASTM C 685. Concrete plants shall be certified by the National Ready Mixed Concrete Association (NRMCA) and shall comply with the rules of the department. Concrete producers shall have their plants inspected quarterly and have their scales and trucks certified. In fulfilling this certification requirement, the concrete producer may present certification by either a New York City government agency, or by the New York State

Department of Transportation subject to the approval of the commissioner. Concrete ready-mix truck drivers shall be certified by the NRMCA and shall comply with the rules of the department.

If required by the registered design professional of record, batch tickets shall accompany every load of concrete delivered to a site. The batch ticket shall contain the information given below:

1. Plant Name and Location;
2. Contract Number and Project;
3. Mix Designation as to Type and Strength;
4. Each material in the load along with quantities of each by weight; and
5. The total amount of mix proportion water approved, quantity of water added at the plant and in transit, and the remaining water that can be added on site.

1905.8.3Job-mixed concrete. Job-mixed concrete shall comply with ACI 318, Section 5.8.3.

1905.9Conveying. The method and equipment for conveying concrete to the place of deposit shall comply with Sections 1905.9.1 and 1905.9.2.

1905.9.1Method of conveyance. Concrete shall be conveyed from the mixer to the place of final deposit by methods that will prevent separation or loss of materials that may alter the properties of the concrete delivered. Cylinders shall be made at the truck to determine the quality of concrete delivered to the site. Cylinders shall be made at the point of placement to determine the quality of concrete in-place.

1905.9.2Conveying equipment. The conveying equipment shall be capable of providing a supply of concrete at the site of placement without separation of ingredients and without interruptions sufficient to permit the loss of plasticity between successive increments.

1905.10Depositing. The depositing of concrete shall comply with the provisions of Sections 1905.10.1 through 1905.10.8.

1905.10.1Segregation. Concrete shall be deposited as nearly as practicable to its final position to avoid segregation due to rehandling or flowing.

1905.10.2Placement timing. Concreting operations shall be carried on at such a rate that the concrete is at all times plastic and flows readily into spaces between reinforcement.

1905.10.3Unacceptable concrete. Concrete that has partially hardened or been contaminated by foreign materials shall not be deposited in the structure.

1905.10.4Retempering. Retempered concrete or concrete that has been remixed after initial set shall not be used unless approved by the registered design professional.

1905.10.5Continuous operation. After concreting has started, it shall be carried on as a continuous operation until placing of a panel or section, as defined by its boundaries or predetermined joints, is completed, except as permitted or prohibited by Section 1906.8.

1905.10.6Placement in vertical lifts. The top surfaces of vertically formed lifts shall be generally level.

1905.10.7Construction joints. When construction joints are required, they shall be made in accordance with Section

1906.8.

1905.10.8 Consolidation. Concrete shall be thoroughly consolidated by suitable means during placement and shall be thoroughly worked around reinforcement and embedded fixtures and into corners of the forms.

1905.11 Curing. The curing of concrete shall be in accordance with Sections 1905.11.1 through 1905.11.3.

1905.11.1 Regular. Concrete (other than high early strength) shall be maintained above 50(degrees)F (10(degrees)C) and in a moist condition for at least the first seven days after placement, except when cured in accordance with Section 1905.11.3.

1905.11.2 High-early-strength. High-early-strength concrete shall be maintained above 50(degrees)F (10(degrees)C) and in a moist condition for at least the first three days, except when cured in accordance with Section 1905.11.3.

1905.11.3 Accelerated curing. Accelerated curing of concrete shall comply with ACI 318, Section 5.11.3.

1905.12 Cold weather requirements. Concrete that is to be placed during freezing or near-freezing weather shall comply with the following:

1. Adequate equipment shall be provided for heating concrete materials and protecting concrete during freezing or near-freezing weather.
2. Concrete materials and reinforcement, forms, fillers and ground with which concrete is to in contact shall be free from frost.
3. Frozen materials or materials containing ice shall not be used.

1905.13 Hot weather requirements. During hot weather, proper attention shall be given to ingredients, production methods, handling, placing, protection and curing to prevent excessive concrete temperatures or water evaporation that could impair the required strength or serviceability of the member or structure.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 19: CONCRETE
SECTION BC 1906: FORMWORK, EMBEDDED PIPES AND CONSTRUCTION JOINTS

NYC Administrative Code § 28-BC 1906

1906.1 General requirements.

The design, fabrication and erection of forms shall comply with the requirements of section 1906.1.1 through 1906.1.6.

1906.1.1 Safe support of loads. Formwork, including all related braces, shoring, framing, and auxiliary construction shall be proportioned, erected, supported, braced, and maintained so that it will safely support all vertical and lateral loads that might be applied until such loads can be supported by the permanent construction.

1906.1.2 Vertical and lateral loads. Vertical and lateral loads shall be carried to the ground by the formwork system, by the new construction after it has attained adequate strength for that purpose, or by existing structures. Forms and their supports shall be designed so as not to damage previously placed structures.

1906.1.3 Bracing. Forms shall be properly braced or tied together so as to maintain position and shape, and shall conform to the sizes and shapes of members as shown on the design drawings.

1906.1.4 Ramps, runways, and platforms. Ramps, runways, and platforms shall meet the requirements of Section 3315.

1906.1.5 Design. Design of formwork shall comply with ACI 318, Section 6.1.5.

1906.1.6 Forms for pre-stressed and post-tensioned concrete. Forms for pre-stressed and post-tensioned concrete members shall be designed and constructed to permit movement of the member without damage during application of the pre-stressing force.

1906.2 Inspection. Formwork, including shores, reshores, braces, and other supports, shall be inspected prior to placement of reinforcing steel to verify that the sizes of the concrete members that are being formed conform to the construction documents and form design drawings. Such inspections shall be performed by a qualified person designated by the contractor. Subsequently, inspections shall be performed by such person periodically during the

placement of concrete. During and after concreting, the elevations, camber, and vertical alignment of formwork systems shall be inspected using tell-tale devices. A record of all such inspections shall be kept at the site available to the commissioner. The names of the persons responsible for such inspections and the foreman in charge of the formwork shall be posted in the field office.

1906.3 Design of concrete formwork. Wherever the shore height exceeds 14 feet (4267 mm) or the total load on the forms exceeds 150 pounds per square foot (732 kg/m²), or wherever power buggies or two-stage shores are used, the forms, including shoring foundation, shall be designed by a registered design professional and shall be constructed in conformance with such design. A copy of the design drawings and any construction drawings and specifications shall be kept on the job site available to the commissioner.

1906.3.1 Vertical loads. Vertical loads shall include the total dead and live loads. Dead load shall include the weight of the formwork plus the weight of the reinforcement and fresh concrete. Live load shall allow for the weight of the workers and equipment, with allowance for impact, but in no case shall be less than 20 pounds per square foot (98 kg/m²).

1906.3.2 Lateral concrete pressure. Design of forms, ties, and bracing shall satisfy the minimum lateral pressures of fresh concrete specified in Table 1906.3.2. Table 1906.3.2 Minimum Lateral Pressures to be Assumed for Fresh Concrete Weighing 150 Pounds Per Cubic Foot Type of Work Minimum Lateral Pressure Assumed (psf) Limitations Columns: Ordinary work with normal internal vibration

Maximum 3,000 psf or 150h, whichever is less Walls: Rate of placement at 7 ft. per hr. or less

Maximum 2,000 psf or 150h, whichever is less Walls: Rate of placement at greater than 7 ft. per hr.

T

;

Maximum 2,000 psf or 150h, whichever is less Slabs None Where: a. R = rate of placement, ft. per hr. T = temperature of concrete in the forms, deg. Fh = height of fresh concrete above point considered, ft. a. Allowances for change in lateral pressure shall be made for concrete weighting other than one hundred fifty pcf; for concrete containing pozzolanic additions or cements other than type I, for concrete having slumps greater than six in., or for concrete consolidated by revibration or external vibration of forms. b. Where retarding admixtures are employed under hot weather conditions an effective value of temperature less than that of the concrete in the forms shall be used in the above formulae. c. If retarding admixtures are used in cold weather, the lateral pressure may be assumed as that exerted by a fluid weighting one hundred fifty pcf.

1906.3.3 External lateral loads. Braces and shores shall be designed to resist all external lateral loads including but not limited to wind, cable tensions, inclined supports, dumping of concrete, and starting and stopping of equipment. In no case shall the assumed value of lateral load due to wind, dumping of concrete, and equipment acting in any direction at each floorline be less than 100 plf edge or 2 percent of total dead load of the floor, whichever is greater. Except for foundation walls that are poured against a rigid backing, wall forms shall be designed for a minimum lateral load of 10 pounds per square foot (49 kg/m²), and bracing for wall forms shall be designed for a lateral load of at least 100 plf of wall, applied at the top. The lateral load acting on walls greater than 14 feet (4267 mm) high shall be determined by analysis of conditions applicable to the site and building.

1906.3.4 Special loads. The formwork shall be designed for any special conditions of construction likely to occur, such as unsymmetrical placement of concrete, impact of machine-delivered concrete, uplift, and concentrated loads.

1906.3.5 Shoring and bracing. Shoring and bracing shall comply with sections 1906.3.5.1 through 1906.3.5.4.

1906.3.5.1 Approval. When patented or commercial devices that are not susceptible to design are used for shoring, bracing, or splicing, they shall be approved by the commissioner.

1906.3.5.2 Splices. Splices shall develop the full strength of the spliced members.

1906.3.5.3 Bracing. Where shore height exceeds 10 feet (3048 mm), or when necessary to provide structural stability, diagonal bracing shall be provided. Struts, anchored into masonry or to panel joints of adjacent braced bays, may be used to prevent buckling of individual members not supported by the diagonal bracing; but, bracing an entire tier of shores with struts without diagonal bracing shall be prohibited unless the system can be demonstrated to be braced by other rigid construction.

1906.3.5.4 Unbraced length of shores. The unbraced length of shores shall not exceed the maximum length determined in accordance with the requirements of this code for the structural material used.

1906.3.6 Foundations. Foundations for shores more than 10 feet (3048 mm) high and supported on the ground shall be designed by a registered design professional.

1906.3.7 Settlement. Formwork shall be so constructed that vertical adjustments can be made to compensate for take-up and settlements. Wedges, jacks, or other positive means shall be provided for this purpose.

1906.3.8 Structural ramps, runways and platforms. Structural runways, ramps, and platforms shall comply with Section 3315 in addition to the requirements of Section 1906.3.

1906.4 Construction. Construction of concrete formwork shall comply with the requirements of Section 1906.4.1 through 1906.4.4.

1906.4.1 Field constructed lap splices. Field constructed lap splices, other than approved devices, shall not be used more often than for every other shore under slabs or for every third shore under beams, and shall develop the full strength of the members. Such spliced shores shall be uniformly distributed throughout the work. Splices shall not be located near the midheight of the shores unless lateral support is provided, nor midway between points of lateral support.

1906.4.2 Vertical shores. Vertical shores for multifloor forms shall be set plumb and in alignment with lower tiers so that loads from upper tiers are transferred directly to the lower tiers, or adequate transfer members shall be provided. Provision shall be made to transfer the lateral loads to the ground or to completed construction of adequate strength. Vertical shores shall be so erected that they cannot tilt, and shall have firm bearing. Inclined shores and the bearing ends of all shores shall be braced against slipping or sliding. The bearing surfaces shall be cut square and have a tight fit at splices.

1906.4.3 Runways. Runways for moving equipment shall be provided with struts or legs as required, and shall be supported directly on the formwork or structural member and not on the reinforcement.

1906.4.4 Unsafe conditions. Any unsafe condition or necessary adjustment revealed by inspection shall be remedied immediately. If, during construction, any weakness develops and the formwork shows any undue settlement or distortion, the work shall be stopped, the affected construction removed if permanently damaged, and the formwork strengthened.

1906.5 Removal of forms and shoring. The removal of forms and shoring shall comply with the requirements of Section 1906.5.1 through 1906.5.6.

1906.5.1 Removal schedule. Before starting construction, the contractor shall develop a procedure and schedule for removal of shores and installation of reshores and for calculating the loads transferred to the structure during the

process.

1906.5.1.1 Data and analysis. The structural analysis and concrete strength data used in planning and implementing form removal and reshoring shall be furnished by the registered design professional responsible for the removal schedule to the commissioner when so requested.

1906.5.1.2 Support and removal. No construction loads shall be supported on, nor any shoring removed from, any part of the structure under construction except when that portion of the structure in combination with the remaining forming and shoring system has sufficient strength to support safely its weight and the loads placed thereon.

1906.5.1.3 Concrete strength. Sufficient strength shall be demonstrated by structural analysis of the proposed loads, the strength of the forming and shoring system, and concrete strength data. Concrete strength data shall be based on tests of field-cured cylinders or, when approved by the commissioner, on other procedures for evaluating concrete strength.

1906.5.2 Construction loads. No construction loads exceeding the combination of superimposed dead load plus specified live load shall be supported on any unshored portion of the structure under construction, unless analysis indicates adequate strength to support such additional loads.

1906.5.3 Prestressed members. Form supports for prestressed concrete members shall not be removed until sufficient prestressing has been applied to prestressed members to carry their dead load and anticipated construction loads.

1906.5.4 Manner of removal. Forms shall be removed in such a manner as to assure the complete safety of the structure and workers.

1906.5.5 Shores support. Where the structure as a whole is supported on shores, beam and girder sides, columns, and similar vertical forms may be removed after the concrete is sufficiently hard to withstand damage from the removal. In no case shall the supporting forms or shoring be removed until the members have acquired sufficient strength to support safely their weight and the load thereon.

1906.5.6 Control tests and alternate methods. The results of control tests, including concrete cylinder specimens prepared in accordance with ANSI/ASTM C31, 2003a, cast-in-place cores, or other device that will produce test specimens representative of the condition of the concrete in place, of suitable size and proportions, and approved by the registered design professional of record shall be evidence that the concrete has attained sufficient strength or the strength as may be specified on the drawings. The contractor may submit alternate methods of stripping, reshoring, and strength control for approval by the registered design professional of record, subject to review by the commissioner.

1906.6 Reshoring. Reshoring shall be provided to support the construction where forms and shores are stripped before the concrete has attained sufficient strength to support the superimposed loads due to construction above. Reshoring shall comply with Section 1906.6.1 through 1906.6.7.

1906.6.1 Reshores limitations. Reshores shall comply with the requirements of section 1906.6.1.1 through 1906.6.1.7.

1906.6.1.1 Secureness of reshores. Reshores of wood or metal shall be screw adjusted or jacked and locked and wedged to make them secure. Reshores shall not be jacked or screwed so tight that they preload the floor below or remove the normal deflection of the slab above.

1906.6.1.2 Reshores in proximity to facades. Reshores within 10 feet (3048 mm) of the facade of a building shall be secured to prevent them from falling off the building.

1906.6.1.3 Wedges. Wedges shall not be used within 10 feet (3048 mm) of the facade or at such other locations as

determined by the commissioner.

1906.6.1.4Stresses.In no case shall shores be so located as to alter the pattern of stresses determined in the original structural analysis or to induce tensile stresses where reinforcing bars are not provided.

1906.6.1.5Angle to surface.Reshores shall be perpendicular to the surface that they are supporting.

1906.6.1.6Adjusting devices.Adjusting devices shall not be used if heavily rusted, bent, dented, rewelded or having broken weldments or other defects.

1906.6.1.7Metal shoring and accessory parts.Metal shoring and accessory parts shall be fully operative when in use.

1906.6.2Site safety provisions.Reshoring shall comply with all of the requirements of Chapter 33 regarding safeguards during construction and the requirements of Sections 1906.6.2.1 through 1906.6.2.3.

1906.6.2.1Emergency.Extra shores or material and equipment that might be needed in an emergency shall be furnished.

1906.6.2.2Stripping.Care shall be taken while stripping is underway to insure that material does not fall off the building.

1906.6.2.3Building materials.Building materials shall be properly piled and tied or contained.

1906.6.3Bracing.Lateral bracing shall be provided during reshoring operations, and reshores shall be located as close as practical to the same position on each floor to provide continuous support from floor to floor.

1906.6.4Reshoring beam and girder construction.Where reshoring of beam and girder construction is required, the forms shall not be removed from more than one girder at a time, and the girder shall be reshored before any other supports are removed. After the supporting girders are reshored, the form shall be removed from one beam with its adjacent slabs and the beam shall be reshored before any other supports are removed. Slabs spanning 10 feet (3048 mm) or more shall be reshored along the center line of the span.

1906.6.5Reshoring flat slabs.Where reshoring of flat slab construction is required, the formwork cannot be stripped until the concrete has acquired sufficient strength to safely support its weight and the load thereon, or temporary reshores are provided supporting the slab at intervals of no more than 8 feet (2438 mm) on center to be replaced by reshores prior to placing concrete on the floor above. Reshores must be installed and remain in place until the concrete reaches full or sufficient strength to sustain the superimposed loads to which the concrete will be subjected.

1906.6.6Stripping operation.Waste debris as a result of stripping operations shall be immediately contained and removed at reasonable intervals. Stripping operations on concrete structures shall not be performed more than three stories below the story being formed.

1906.6.7Prestressed construction.Solid safety shields shall be provided at end anchorages of prestressing beds, or where necessary, for protection against breakage of prestressing strands, cables, or other assemblies during prestressing or casting operations.

1906.7Conduits and pipes embedded in concrete.Conduits, pipes and sleeves of any material not harmful to concrete and within the limitations of ACI 318, Section 6.3, are permitted to be embedded in concrete with approval of the registered design professional of record.

1906.8Construction joints.Construction joints shall comply with the provisions of Sections 1906.8.1 through 1906.8.6.

1906.8.1 Surface cleaning. The surface of concrete construction joints shall be cleaned and laitance removed.

1906.8.2 Joint treatment. Immediately before new concrete is placed, construction joints shall be wetted and standing water removed.

1906.8.3 Location for force transfer. Construction joints shall be so made and located as not to impair the strength of the structure. Provision shall be made for the transfer of shear and other forces through construction joints in accordance with ACI 318, Section 11.7.9.

1906.8.4 Location in slabs, beams and girders. Construction joints in floors shall be located within the middle third of spans of slabs, beams and girders. Joints in girders shall be offset a minimum distance of two times the width of intersecting beams.

1906.8.5 Vertical support. Beams, girders or slabs supported by columns or walls shall not be cast or erected until concrete in the vertical support members is no longer plastic.

1906.8.6 Monolithic placement. Beams, girders, haunches, drop panels and capitals shall be placed monolithically as part of a slab system, unless otherwise shown in the design drawings or specifications.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 19: CONCRETE
SECTION BC 1907: DETAILS OF REINFORCEMENT

NYC Administrative Code § 28-BC 1907

1907.1 Hooks.

Standard hooks on reinforcing bars used in concrete construction shall comply with ACI 318, Section 7.1.

1907.2 Minimum bend diameters. Minimum reinforcement bend diameters utilized in concrete construction shall comply with ACI 318, Section 7.2.

1907.3 Bending. The bending of reinforcement shall comply with Sections 1907.3.1 and 1907.3.2.

1907.3.1 Cold bending. Reinforcement shall be bent cold, unless otherwise permitted by the registered design professional of record.

1907.3.2 Embedded reinforcement. Reinforcement partially embedded in concrete shall not be field bent, except as shown on the construction documents or permitted by the registered design professional of record.

1907.4 Surface conditions of reinforcement. The surface conditions of reinforcement shall comply with the provisions of Sections 1907.4.1 through 1907.4.3.

1907.4.1 Coatings. At the time concrete is placed, reinforcement shall be free from mud, oil or other nonmetallic coatings that decrease bond. Epoxy coatings of steel reinforcement in accordance with ACI 318, Sections 3.5.3.7 and 3.5.3.8, are permitted.

1907.4.2 Rust or mill scale. Except for prestressing steel, steel reinforcement with rust, mill scale or a combination of both, shall be permitted, provided the minimum dimensions, including height of deformations and weight of a hand-wire-brushed test specimen, comply with applicable ASTM specifications specified in Section 1903.5.

1907.4.3 Prestressing steel. Prestressing steel shall be clean and free of oil, dirt, scale, pitting and excessive rust. A light coating of rust is permitted.

1907.5 Placing reinforcement. The placement of concrete reinforcement shall comply with the provisions of Sections 1907.5.1 through 1907.5.4.

1907.5.1 Support. Reinforcement, including tendons, and posttensioning ducts shall be accurately placed and adequately supported before concrete is placed, and shall be secured against displacement within tolerances permitted in Section 1907.5.2. Where approved by the registered design professional of record, embedded items (such as dowels or inserts) that either protrude from precast concrete members or remain exposed for inspection are permitted to be embedded while the concrete is in a plastic state, provided the following conditions are met:

1. Embedded items are maintained in the correct position while the concrete remains plastic.
2. The concrete is properly consolidated around the embedded item. Embedded items are not required to be hooked or tied to reinforcement within the concrete.

1907.5.2 Tolerances. Unless otherwise specified by the registered design professional of record, reinforcement, including tendons, and posttensioning ducts shall be placed within the tolerances specified in Sections 1907.5.2.1 and 1907.5.2.2.

1907.5.2.1 Depth and cover. Tolerance for depth, d , and minimum concrete cover in flexural members, walls and compression members shall be as shown in Table 1907.5.2.1, except that tolerance for the clear distance to formed soffits shall be minus 1 inch (6.4 mm) and tolerance for cover shall not exceed minus one-third the minimum concrete cover required in the design drawings or specifications. Table 1907.5.2.1 Tolerances

Depth (d) (inches)	Tolerance on d (inch)	Minimum Concrete Cover d	Tolerance on Minimum Concrete Cover d
$d \leq 8$	$(+/-) 3/8$	d	$(+/-) 1/2$
$d > 8$	$(+/-) 1/2$	d	$(+/-) 1/2$

1907.5.2.2 Bends and ends. Tolerance for longitudinal location of bends and ends of reinforcement shall be $(+/-) 2$ inches $(+/-) 51$ mm) except the tolerance shall be $(+/-) 1/2$ inch $(+/-) 12.7$ mm) at the discontinuous ends of brackets and corbels, and $(+/-) 1$ inch (25 mm) at the discontinuous ends of other members. The tolerance for minimum concrete cover of Section 1907.5.2.1 shall also apply at discontinuous ends of members.

1907.5.3 Welded wire fabric. Welded wire fabric with wire size not greater than W5 or D5 used in slabs not exceeding 10 feet (3048 mm) in span is permitted to be curved from a point near the top of the slab over the support to a point near the bottom of the slab at midspan, provided such reinforcement is either continuous over, or securely anchored at support.

1907.5.4 Welding. Welding of crossing bars shall not be permitted for assembly of reinforcement unless authorized by the registered design professional of record.

1907.6 Spacing limits for reinforcement. The clear distance between reinforcing bars, bundled bars, tendons and ducts shall comply with ACI 318, Section 7.6.

1907.7 Concrete protection for reinforcement. The minimum concrete cover for reinforcement shall comply with Sections 1907.7.1 through 1907.7.7.

1907.7.1 Cast-in-place concrete (nonprestressed). Minimum concrete cover shall be provided for reinforcement in nonprestressed, cast-in-place concrete construction in accordance with Table 1907.7.1, but shall not be less than required by Sections 1907.7.5 and 1907.7.7. Table 1907.7.1 Minimum Concrete Cover

Concrete Exposure	Minimum Concrete Cover (inches)
1. Concrete cast against and permanently exposed to earth	3
2. Concrete exposed to earth or weather	2
3. Concrete not exposed to weather or in contact with ground	1 1/2

Slabs, walls, joists: 3.

No. 14 and No. 18 bars $1\frac{1}{2}$ 3.

No. 11 bar and smaller $\frac{3}{4}$ 3. Beams, columns: 3.

Primary reinforcement, ties, stirrups, spirals $1\frac{1}{2}$ 3. Shells, folded plate members: 3.

No. 6 bar and larger $\frac{3}{4}$ 3.

No. 5 bar, W31 or D31 wire, and smaller $\frac{1}{2}$ For SI: 1 inch = 25.4 mm.

1907.7.2 Cast-in-place concrete (prestressed). The minimum concrete cover for prestressed and nonprestressed reinforcement, ducts and end fittings in cast-in-place prestressed concrete shall comply with ACI 318, Section 7.7.2.

1907.7.3 Precast concrete (manufactured under plant control conditions). The minimum concrete cover for prestressed and nonprestressed reinforcement, ducts and end fittings in precast concrete manufactured under plant control conditions shall comply with ACI 318, Section 7.7.3.

1907.7.4 Bundled bars. The minimum concrete cover for bundled bars shall comply with ACI 318, Section 7.7.4.

1907.7.5 Corrosive environments. In corrosive environments or other severe exposure conditions, prestressed and nonprestressed reinforcement shall be provided with additional protection in accordance with ACI 318, Section 7.7.5.

1907.7.6 Future extensions. Exposed reinforcement, inserts and plates intended for bonding with future extensions shall be protected from corrosion.

1907.7.7 Fire protection. When this code requires a thickness of cover for fire protection greater than the minimum concrete cover specified in Section 1907.7, such greater thickness shall be used.

1907.8 Special reinforcement details for columns. Offset bent longitudinal bars in columns and load transfer in structural steel cores of composite compression members shall comply with the provisions of ACI 318, Section 7.8.

1907.9 Connections. Connections between concrete framing members shall comply with the provisions of ACI 318, Section 7.9.

1907.10 Lateral reinforcement for compression members. Lateral reinforcement for compression members shall comply with the provisions of ACI 318, Section 7.10.

1907.11 Lateral reinforcement for flexural members. Lateral reinforcement for compression reinforcement in flexural members shall comply with the provisions of ACI 318, Section 7.11.

1907.12 Shrinkage and temperature reinforcement. Reinforcement for shrinkage and temperature stresses in concrete members shall comply with the provisions of ACI 318, Section 7.12.

1907.13 Requirements for structural integrity. The detailing of reinforcement and connections between concrete members shall comply with the provisions of ACI 318, Section 7.13.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008

1907.5.2.1 Table amended L.L. 8/2008 § 147, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 19: CONCRETE
SECTION BC 1908: MODIFICATIONS TO ACI 318

NYC Administrative Code § 28-BC 1908

1908.1 General.

The text of ACI 318 shall be modified as indicated in Sections 1908.1.1 through 1908.1. 7.

1908.1.1ACI 318, Section 21.1.Modify existing definitions and add the following definitions to ACI 318, Section 21.1.

DESIGN DISPLACEMENT. Total lateral displacement expected for the design-basis earthquake, as specified by Section 9.5.5.7 of ASCE 7 or 1617.5.4 of this code.

STORY DRIFT RATIO. The design displacement over a story divided by the story height.

WALL PIER. A wall segment with a horizontal length-to-thickness ratio of at least 2.5, but not exceeding six, whose clear height is at least two times its horizontal length.

1908.1.2ACI 318, Section 21.2.1.Modify Sections 21.2.1.2, 21.2.1.3 and 21.2.1.4 to read as follows:

21.2.1.2 For structures assigned to Seismic Design Category B, provisions of Chapters 1 through 18 and 22 shall apply except as modified by the provisions of this chapter. Where the seismic design loads are computed using provisions for intermediate or special concrete systems, the requirements of Chapter 21 for intermediate or special systems, as applicable, shall be satisfied.

21.2.1.3 For structures assigned to Seismic Design Category C, intermediate or special moment frames, or ordinary or special reinforced concrete structural walls shall be used to resist seismic forces induced by earthquake motions. Where the design seismic loads are computed using provisions for special concrete systems, the requirements of Chapter 21 for special systems, as applicable, shall be satisfied.

21.2.1.4 For structures assigned to Seismic Design Category D, E or F, special moment frames, special reinforced

concrete structural walls, diaphragms and trusses and foundations complying with Sections 21.2 through 21.10 shall be used to resist forces induced by earthquake motions when special systems are required. Intermediate moment frames and ordinary reinforced concrete walls, where allowed, shall comply with Chapter 21. Frame members not proportioned to resist earthquake forces shall comply with Section 21.11.

1908.1.3ACI 318, Section 21.2.5. Modify ACI 318, Section 21.2.5, by renumbering as Section 21.2.5.1 and adding new Sections 21.2.5.2, 21.2.5.3 and 21.2.5.4 to read as follows:

21.2.5 Reinforcement in members resisting earthquake-induced forces.

21.2.5.1 Except as permitted in Sections 21.2.5.2 through 21.2.5.4, reinforcement resisting earthquake-induced flexural and axial forces in frame members and in structural wall boundary elements shall comply with ASTM A 706. ASTM 615, Grades 40 and 60 reinforcement, shall be permitted in these members if (a) the actual yield strength based on mill tests does not exceed the specified yield strength by more than 18,000 psi (retests shall not exceed this value by more than an additional 3,000 psi), and (b) the ratio of the actual ultimate tensile strength to the actual tensile yield strength is not less than 1.25.

21.2.5.2 Prestressing steel shall be permitted in flexural members of frames, provided the average prestress, f_{pc} , calculated for an area equal to the member's shortest cross-sectional dimension multiplied by the perpendicular dimension shall be the lesser of 700 psi (4.83MPa) or $f'_c/6$ at locations of nonlinear action where prestressing steel is used in members of frames.

21.2.5.3 Unless the seismic-force-resisting frame is qualified for use through structural testing as required by the ACI Provisional Standard ITG/T1.1, for members in which prestressing steel is used together with mild reinforcement to resist earthquake-induced forces, prestressing steel shall not provide more than one-quarter of the strength for either positive or negative moments at the nonlinear action location and shall be anchored at the exterior face of the joint or beyond.

21.2.5.4 Anchorages for tendons must be demonstrated to perform satisfactorily for seismic loadings. Anchorage assemblies shall withstand, without failure, a minimum of 50 cycles of loading ranging between 40 and 85 percent of the minimum specified tensile strength of the prestressing steel.

1908.1.4ACI 318, Section 21.7. Modify ACI 318, Section 21.7, by adding a new Section 21.7.10 to read as follows:

21.7.10 Wall piers and wall segments.

21.7.10.1 Wall piers not designed as a part of a special moment frame shall have transverse reinforcement designed to satisfy the requirements in Section 21.7.10.2.

Exceptions:

1. Wall piers that satisfy Section 21.11.
2. Wall piers along a wall line within a story where other shear wall segments provide lateral support to the wall piers, and such segments have a total stiffness of at least six times the sum of the stiffness of all the wall piers.

21.7.10.2 Transverse reinforcement shall be designed to resist the shear forces determined from Sections 21.3.4.2 and 21.4.5.1. Where the axial compressive force, including earthquake effects, is less than $Agf'_c/20$, transverse reinforcement in wall piers is permitted to have standard hooks at each end in lieu of hoops. Spacing of transverse reinforcement shall not exceed 6 inches (152 mm). Transverse reinforcement shall be extended beyond the pier clear height for at least the development length of the largest longitudinal reinforcement in the wall pier.

21.7.10.3 Wall segments with a horizontal length-to-thickness ratio less than 2.5 shall be designed as columns.

1908.1.5ACI 318, Section 21.10.1.1.Modify ACI 318, Section 21.10.1.1, to read as follows:

21.10.1.1 Foundations resisting earthquake-induced forces or transferring earthquake-induced forces between a structure and the ground shall comply with the requirements of Section 21.10 and other applicable provisions of ACI 318 unless modified by Chapter 18 of this code.

1908.1.6ACI 318, Section 21.11.Modify ACI Sections 21.11.1 and 21.11.2.2 and add Sections 21.11.5 through 21.11.7 as follows:

21.11.1 Frame members assumed not to contribute to lateral resistance shall be detailed according to Section 21.11.2 or 21.11.3 depending on the magnitude of moments induced in those members when subjected to the design displacement. If effects of design displacements are not explicitly checked, it shall be permitted to apply the requirements of Section 21.11.3. Slab-column connections shall comply with Sections 21.11.5 through 21.11.7. Conformance to Section 21.11 satisfies the deformation compatibility requirements of Section 9.5.2.2.4.3 of ASCE 7.

21.11.2.2 Members with factored gravity axial forces exceeding ($A_g f'_c/10$) shall satisfy Sections 21.4.3, 21.4.4.1(c), 21.4.4.3 and 21.4.5. The maximum longitudinal spacing of ties shall be, S_o , for the full column height. The spacing, S_o , shall not be more than six diameters of the smallest longitudinal bar enclosed or 6 inches (152 mm), whichever is smaller. Lap splices of longitudinal reinforcement in such members need not satisfy Section 21.4.3.2 in structures where the seismic force-resisting system does not include special moment frames.

21.11.5 Reinforcement to resist punching shear shall be provided in accordance with Sections 21.11.5.1 and 21.11.5.2 at slab column connections where story drift ratio exceeds $[0.035 ; \text{ms } 0.05 (V_u/FV_c)]$ except that Sections 21.11.5.1 and 21.11.5.2 need not be satisfied where V_u/FV_c is less than 0.2 or where the story drift ratio is less than 0.005. V_u equals the factored punching shear from gravity load excluding shear stress from unbalanced moment. V_u is calculated for the load combination $1.2D + 1.0L + 0.2S$. The load factor on L is permitted to be reduced to 0.5 in accordance with Section 9.2.1(a). In no case shall shear reinforcement be less than that required in Section 11.12 for loads without consideration of seismic effects.

21.11.5.1-The slab shear reinforcement shall provide V_s not less than $3.5r_f'c$.

21.11.5.2-Slab shear reinforcement shall extend not less than five times the slab thickness from the face of column.

21.11.6-Bottom bars or wires within the column strip shall conform to Section 13.3.8.5 except that splices shall be Class B.

21.11.7-Within the effective slab width defined in Section 13.5.3.2, the ratio of nonprestressed bottom reinforcement to gross concrete area shall not be less than 0.004. Where bottom reinforcement is not required to be continuous, such reinforcement shall extend a minimum of five times the slab thickness plus one development length beyond the face of the column or terminated at the slab edge with a standard hook.

1908.1.7ACI 318, Section 21.13.2.Modify ACI 318, Section 21.13.2, to read as follows:

21.13.2 In connections between wall panels, or between wall panels and the foundation, yielding shall be restricted to reinforcement.

1908.2General.The text of ACI 318 shall be modified as indicated in Sections 1908.2.1 through 1908.2.4.

1908.2.1ACI 318, Section 10.15. Modify ACI 318 by adding Section 10.15.4 to read as follows:

10.15.4 When the specified compressive strength of concrete in a column is greater than 1.4 times that specified for a floor system, the following additional requirements shall be adhered to:

1. All of the design provisions of Section 10.15 (unmodified) are adhered to.

2. The concrete construction is supervised and inspected continuously by a full-time professional engineer responsible for the concrete placement special inspection. Such professional engineer shall not delegate this responsibility to any subordinates.

1908.2.2ACI 318, Section 16.3.Modify ACI 318 by adding Section 16.3.3 to read as follows:

16.3.3-Lifting devices shall have a capacity sufficient to support four times the appropriate portion of the member's dead weight. The inclination of the lifting force shall be considered.

1908.2.3ACI 318, Section 21.12.3.Modify ACI 318, Section 21.12.3 to read as follows:

20.11.3

Design shear strength of beams and columns resisting earthquake effect shall not be less than either 1 or 2:

1. The sum of the shear associated with development of nominal moment strengths of the member at each restrained end of the clear span and the shear calculated for factored gravity loads;

2. The maximum shear obtained from design load combinations that include earthquake effect E, with E assumed to be twice that prescribed by this code for earthquake-resistant design.

1908.2.4ACI 318, Section 21.12.6.8.Modify ACI 318, Section 21.12.6.8 to read as follows:

21.12.6.8 At the critical sections for columns defined in 11.12.1.2, two-way shear caused by factored gravity loads shall not exceed $0.4f_v c$, where V_c shall be calculated as defined in 11.12.2.1. for nonprestressed slabs and in 11.12.2.2. for prestressed slabs. For slabs with shear reinforcing, it shall be permitted to waive this requirement if the contribution of the earthquake-induced factored two way shear stress transferred by eccentricity of shear in accordance with 11.12.6.1 and 11.12.6.2 at the point of maximum stress does not exceed one-half of the stress $f_v n$ permitted by 11.12.6.2.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 19: CONCRETE
SECTION BC 1909: STRUCTURAL PLAIN CONCRETE

NYC Administrative Code § 28-BC 1909

1909.1 Scope.

The design and construction of structural plain concrete, both cast-in-place and precast, shall comply with the minimum requirements of Section 1909 and ACI 318, Chapter 22.

1909.1.1 Special structures. For special structures, such as arches, underground utility structures, gravity walls and shielding walls, the provisions of Section 1909 shall govern where applicable.

1909.2 Limitations. The use of structural plain concrete columns and structural plain concrete footings on piles is not permitted. In addition to the limitations set forth in Section 1910 of this chapter, the use of structural plain concrete shall otherwise be limited to:

1. Members that are continuously supported by soil, such as walls and footings, or by other structural members capable of providing continuous vertical support.
2. Members for which arch action provides compression under all conditions of loading.
3. Walls and pedestals.

1909.3 Joints. Contraction or isolation joints shall be provided to divide structural plain concrete members into flexurally discontinuous elements in accordance with ACI 318, Section 22.3.

1909.4 Design. Structural plain concrete walls, footings and pedestals shall be designed for adequate strength in accordance with ACI 318, Sections 22.4 through 22.8.

Exception: For Group R-3 occupancies and buildings of other occupancies less than two stories in height of light-frame construction, the required edge thickness of ACI 318 is permitted to be reduced to 6 inches (152 mm), provided that the footing does not extend more than 4 inches (102 mm) on either side of the supported wall.

1909.5 Precast members. The design, fabrication, transportation and erection of precast, structural plain concrete elements shall be in accordance with ACI 318, Section 22.9.

1909.6 Walls. In addition to the requirements of this section, structural plain concrete walls shall comply with the applicable requirements of ACI 318, Chapter 22.

1909.6.1 Basement walls. The thickness of exterior basement walls and foundation walls shall be not less than 7 1/2 inches (191 mm). Structural plain concrete exterior basement walls shall be exempt from the requirements for special exposure conditions of Section 1904.2.2.

1909.6.2 Other walls. Except as provided in Section 1909.6.1, the thickness of bearing walls shall be not less than 1/24 the unsupported height or length, whichever is shorter, but not less than 5 1/2 inches (140 mm).

1909.6.3 Openings in walls. Not less than two No. 5 bars shall be provided around window and door openings. Such bars shall extend at least 24 inches (610 mm) beyond the corners of openings.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 19: CONCRETE
SECTION BC 1910: SEISMIC DESIGN PROVISIONS

NYC Administrative Code § 28-BC 1910

1910.1 General.

The design and construction of concrete components that resist seismic forces shall conform to the requirements of this section and to ACI 318 as modified by Section 1908.

1910.2 Classification of shear walls. Structural concrete shear walls that resist seismic forces shall be classified in accordance with Sections 1910.2.1 through 1910.2.4.

1910.2.1 Ordinary plain concrete shear walls. Ordinary plain concrete shear walls are walls conforming to the requirements of Chapter 22 of ACI 318.

1910.2.2 Detailed plain concrete shear walls. Detailed plain concrete shear walls are walls conforming to the requirements for ordinary plain concrete shear walls and shall have reinforcement as follows: Vertical reinforcement of at least 0.20 square inch (129 mm²) in cross-sectional area shall be provided continuously from support to support at each corner, at each side of each opening and at the ends of walls. The continuous vertical bar required beside an opening is permitted to substitute for one of the two No. 5 bars required by Section 22.6.6.5 of ACI 318. Horizontal reinforcement at least 0.20 square inch (129 mm²) in cross-sectional area shall be provided:

1. Continuously at structurally connected roof and floor levels and at the top of walls;
2. At the bottom of load-bearing walls or in the top of foundations where doweled to the wall; and
3. At a maximum spacing of 120 inches (3048 mm).

Reinforcement at the top and bottom of openings, where used in determining the maximum spacing specified in Item 3 above, shall be continuous in the wall.

1910.2.3 Ordinary reinforced concrete shear walls. Ordinary reinforced concrete shear walls are walls conforming to

the requirements of ACI 318 for ordinary reinforced concrete structural walls.

1910.2.4Special reinforced concrete shear walls.Special reinforced concrete shear walls are walls conforming to the requirements of ACI 318 for special reinforced concrete structural walls or special precast structural walls.

1910.3Seismic Design Category B.Structures assigned to Seismic Design Category B, as determined in accordance with Section 1616, shall conform to the requirements for Seismic Design Category A and to the additional requirements for Seismic Design Category B of this section.

1910.3.1Ordinary moment frames.In flexural members of ordinary moment frames forming part of the seismic-force-resisting system, at least two main flexural reinforcing bars shall be provided continuously top and bottom throughout the beams, through or developed within exterior columns or boundary elements.

1910.3.1.1Shear.Columns of ordinary moment frames having a clear height-to-maximum-plan-dimension ratio of five or less shall be designed for shear in accordance with Section 21.12.3 of ACI 318.

1910.4Seismic Design Category C.Structures assigned to Seismic Design Category C, as determined in accordance with Section 1616, shall conform to the requirements for Seismic Design Category B and to the additional requirements for Seismic Design Category C of this section.

1910.4.1Seismic-force-resisting systems.Moment frames used to resist seismic forces shall be intermediate moment frames or special moment frames. Shear walls used to resist seismic forces shall be ordinary reinforced concrete shear walls or special reinforced concrete shear walls. Ordinary reinforced concrete shear walls constructed of precast concrete elements shall comply with the additional requirements of Section 21.13 of ACI 318 for intermediate precast concrete structural walls, as modified by Section 1908.1.7.

1910.4.2Discontinuous members.Columns supporting reactions from discontinuous stiff members, such as walls, shall be designed for the special load combinations in Section 1605.4 and shall be provided with transverse reinforcement at the spacing, So, as defined in Section 21.12.5.2 of ACI 318 over their full height beneath the level at which the discontinuity occurs. This transverse reinforcement shall be extended above and below the column as required in Section 21.4.4.5 of ACI 318.

1910.4.3Plain concrete.Structural plain concrete members in structures assigned to Seismic Design Category C shall conform to ACI 318 and with Sections 1910.4.3.1 through 1910.4.3.3.

1910.4.3.1Walls.Structural plain concrete walls are not permitted in structures assigned to Seismic Design Category C.

Exception: Structural plain concrete basement, foundation or other walls below the base are permitted in detached one- and two-family dwellings constructed with stud-bearing walls. Such walls shall have reinforcement in accordance with Section 22.6.6.5 of ACI 318.

1910.4.3.2Footings.Isolated footings of plain concrete supporting pedestals or columns are permitted provided the projection of the footing beyond the face of the supported member does not exceed the footing thickness.

Exception: In detached one- and two-family dwellings three stories or less in height, the projection of the footing beyond the face of the supported member is permitted to exceed the footing thickness.

1910.4.3.2.1Reinforcing bars.Plain concrete footings supporting walls shall be provided with not less than two continuous longitudinal reinforcing bars. Bars shall not be smaller than No. 4 and shall have a total area of not less than 0.002 times the gross cross-sectional area of the footing. For footings which exceed 8 inches (203 mm) in thickness, a minimum of one bar shall be provided at the top and bottom of the footing. For foundation systems consisting of a plain

concrete footing and a plain concrete stem wall, a minimum of one bar shall be provided at the top of the stem wall and at the bottom of the footing. Continuity of reinforcement shall be provided at corners and intersections.

Exceptions:

1. In detached one- and two-family dwellings three stories or less in height and constructed with stud-bearing walls, plain concrete footings supporting walls are permitted without longitudinal reinforcement.

2. Where a slab-on-ground is cast monolithically with the footing, one No. 5 bar is permitted to be located at either the top or bottom of the footing.

1910.4.3.3 Pedestals. Plain concrete pedestals shall not be used to resist lateral seismic forces.

1910.5 Seismic Design Category D. Structures assigned to Seismic Design Category D, as determined in accordance with Section 1616, shall conform to the requirements for Seismic Design Category C and to the additional requirements of this section.

1910.5.1 Seismic-force-resisting systems. Moment frames used to resist seismic forces shall be special moment frames. Shear walls used to resist seismic forces shall be special reinforced concrete shear walls.

1910.5.2 Frame members not proportioned to resist forces induced by earthquake motions. Frame components assumed not to contribute to lateral force resistance shall conform to ACI 318, Section 21.11, as modified by Section 1908.1. 6 of this chapter.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 19: CONCRETE
SECTION BC 1911: MINIMUM SLAB PROVISIONS

NYC Administrative Code § 28-BC 1911

1911.1 General.

The thickness of concrete floor slabs supported directly on the ground shall not be less than 3 1/2 inches (89 mm). A 6-mil (0.006 inch; 0.152 mm) polyethylene vapor retarder with joints lapped not less than 6 inches (152 mm) shall be placed between the base course or subgrade and the concrete floor slab, or other acceptable equivalent methods or materials shall be used to retard vapor transmission through the floor slab.

Exception: A vapor retarder is not required:

1. For detached structures accessory to occupancies in Group R-3, such as garages, utility buildings or other unheated facilities.
2. For unheated storage rooms having an area of less than 70 square feet (6.5 m²) and carports attached to occupancies in Group R-3.
3. For buildings of other occupancies where migration of moisture through the slab from below will not be detrimental to the intended occupancy of the building.
4. For drive ways, walks, patios and other flat work that will not be enclosed at a later date.
5. Where approved based on local site conditions.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 19: CONCRETE
SECTION BC 1912: ANCHORAGE TO CONCRETE-ALLOWABLE STRESS DESIGN

NYC Administrative Code § 28-BC 1912

1912.1 Scope.

The provisions of this section shall govern the allowable stress design of headed bolts and headed stud anchors cast in normal-weight concrete for purposes of transmitting structural loads from one connected element to the other. These provisions do not apply to anchors installed in hardened concrete or where load combinations include earthquake loads or effects. The bearing area of headed anchors shall be not less than one and one-half times the shank area. Where strength design is used, or where load combinations include earthquake loads or effects, the design strength of anchors shall be determined in accordance with Section 1913. Bolts shall conform to ASTM A 307 or an acceptable equivalent.

1912.2 Allowable service load. The allowable service load for headed anchors in shear or tension shall be as indicated in Table 1912.2. Where anchors are subject to combined shear and tension, the following relationship shall be satisfied:

[SEE graphical material in printed version]

[SEE graphical material in printed version]

1912.3 Required edge distance and spacing. The allowable service loads in tension and shear specified in Table 1912.2 are for the edge distance and spacing specified. The edge distance and spacing are permitted to be reduced to 50 percent of the values specified with an equal reduction in allowable service load. Where edge distance and spacing are reduced less than 50 percent, the allowable service load shall be determined by linear interpolation.

1912.4 Reserved.

1912.5 Increase for special inspection. Where special inspection is provided for the installation of anchors, a 100-percent increase in the allowable tension values of Table 1912.2 is permitted. No increase in shear value is permitted.



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SECTION BC 1913: ANCHORAGE TO CONCRETE-STRENGTH DESIGN

NYC Administrative Code § 28-BC 1913

1913.1 Scope.

The provisions of this section shall govern the strength design of anchors installed in concrete for purposes of transmitting structural loads from one connected element to the other. Headed bolts, headed studs and hooked (J- or L-) bolts cast in concrete and expansion anchors and undercut anchors installed in hardened concrete shall be designed in accordance with Appendix D of ACI 318, provided they are within the scope of Appendix D.

Exception: Where the basic concrete breakout strength in tension of a single anchor, N_b , is determined in accordance with Equation (D-7), the concrete breakout strength requirements of Section D.4.2.2 shall be considered satisfied by the design procedures of Sections D.5.2 and D.6.2 for anchors exceeding 2 inches (51 mm) in diameter or 25 inches (635 mm) tensile embedment depth.

1913.1.1 Anchors outside scope of Appendix D. The strength design of anchors that are not within the scope of Appendix D of ACI 318, as modified by this code, shall be in accordance with a procedure subject to the approval of the commissioner.



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SECTION BC 1914: SHOTCRETE

NYC Administrative Code § 28-BC 1914

1914.1 General.

Shotcrete is mortar or concrete that is pneumatically projected at high velocity onto a surface. Except as specified in this section, shotcrete shall conform to the requirements of this chapter for plain or reinforced concrete.

1914.2Proportions and materials.Shotcrete proportions shall be selected that allow suitable placement procedures using the delivery equipment selected and shall result in finished in-place hardened shotcrete meeting the strength requirements of this code.

1914.3Aggregate.Coarse aggregate, if used, shall not exceed 3 inch (19.1 mm).

1914.4Reinforcement.Reinforcement used in shotcrete construction shall comply with the provisions of Sections 1914.4.1 through 1914.4.4.

1914.4.1Size.The maximum size of reinforcement shall be No. 5 bars unless it is demonstrated by preconstruction tests that adequate encasement of larger bars will be achieved.

1914.4.2Clearance.When No. 5 or smaller bars are used, there shall be a minimum clearance between parallel reinforcement bars of 21 inches (64 mm). When bars larger than No. 5 are permitted, there shall be a minimum clearance between parallel bars equal to six diameters of the bars used. When two curtains of steel are provided, the curtain nearer the nozzle shall have a minimum spacing equal to 12 bar diameters and the remaining curtain shall have a minimum spacing of six bar diameters.

Exception: Subject to the approval of the commissioner, required clearances shall be reduced where it is demonstrated by preconstruction tests that adequate encasement of the bars used in the design will be achieved.

1914.4.3Splices.Lap splices of reinforcing bars shall utilize the noncontact lap splice method with a minimum clearance of 2 inches (51 mm) between bars. The use of contact lap splices necessary for support of the reinforcing is

permitted when approved by the commissioner, based on satisfactory preconstruction tests that show that adequate encasement of the bars will be achieved, and provided that the splice is oriented so that a plane through the center of the spliced bars is perpendicular to the surface of the shotcrete.

1914.4.4Spirally tied columns.Shotcrete shall not be applied to spirally tied columns.

1914.5Preconstruction tests.When required by the commissioner, a test panel shall be shot, cured, cored or sawn, examined and tested prior to commencement of the project. The sample panel shall be representative of the project and simulate job conditions as closely as possible. The panel thickness and reinforcing shall reproduce the thickest and most congested area specified in the structural design. It shall be shot at the same angle, using the same nozzleman and with the same concrete mix design that will be used on the project. The equipment used in preconstruction testing shall be the same equipment used in the work requiring such testing, unless substitute equipment is approved by the commissioner.

1914.6Rebound.Any rebound or accumulated loose aggregate shall be removed from the surfaces to be covered prior to placing the initial or any succeeding layers of shotcrete. Rebound shall not be used as aggregate.

1914.7Joints.Except where permitted herein, unfinished work shall not be allowed to stand for more than 30 minutes unless edges are sloped to a thin edge. For structural elements that will be under compression and for construction joints shown on the approved construction documents, square joints are permitted. Before placing additional material adjacent to previously applied work, sloping and square edges shall be cleaned and wetted.

1914.8Damage.In-place shotcrete that exhibits sags, sloughs, segregation, honeycombing, sand pockets or other obvious defects shall be removed and replaced. Shotcrete above sags and sloughs shall be removed and replaced while still plastic.

1914.9Curing.During the curing periods specified herein, shotcrete shall be maintained above 40(degrees)F (4(degrees)C) and in moist condition.

1914.9.1Initial curing.Shotcrete shall be kept continuously moist for 24 hours after shotcreting is complete or shall be sealed with an approved curing compound.

1914.9.2Final curing.Final curing shall continue for seven days after shotcreting, or for three days if high-early-strength cement is used, or until the specified strength is obtained. Final curing shall consist of the initial curing process or the shotcrete shall be covered with an approved moisture-retaining cover.

1914.9.3Natural curing.Natural curing shall not be used in lieu of that specified in this section unless the relative humidity remains at or above 85 percent, and is authorized by the registered design professional of record and approved by the commissioner.

1914.10Strength tests.Strength tests for shotcrete shall be made by an approved agency on specimens that are representative of the work and that have been water soaked for at least 24 hours prior to testing. When the maximum-size aggregate is larger than 3/8 inch (9.5 mm), specimens shall consist of not less than three 3-inch-diameter (76 mm) cores or 3-inch (76 mm) cubes. When the maximum-size aggregate is 3/8 inch (9.5 mm) or smaller, specimens shall consist of not less than 2-inch-diameter (51 mm) cores or 2-inch (51 mm) cubes.

1914.10.1Sampling.Specimens shall be taken from the in-place work or from test panels, and shall be taken at least once each shift, but not less than one for each 50 cubic yards (38.2 m3) of shotcrete.

1914.10.2Panel criteria.When the maximum-size aggregate is larger than 3/8 inch (9.5 mm), the test panels shall have minimum dimensions of 18 inches by 18 inches (457 mm by 457 mm). When the maximum size aggregate is 3/8 inch (9.5 mm) or smaller, the test panels shall have minimum dimensions of 12 inches by 12 inches (305 mm by 305

mm). Panels shall be shot in the same position as the work, during the course of the work and by the nozzle men doing the work. The conditions under which the panels are cured shall be the same as the work.

1914.10.3 Acceptance criteria. The average compressive strength of three cores from the in-place work or a single test panel shall equal or exceed 0.85 f'c with no single core less than 0.75 f'c. The average compressive strength of three cubes taken from the in-place work or a single test panel shall equal or exceed f'c with no individual cube less than 0.88 f'c. To check accuracy, locations represented by erratic core or cube strengths shall be retested.



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SECTION BC 1915: REINFORCED GYPSUM CONCRETE

NYC Administrative Code § 28-BC 1915

1915.1 General.

Reinforced gypsum concrete shall comply with the requirements of ASTM C 317 and ASTM C 956.

1915.2 Minimum thickness. The minimum thickness of reinforced gypsum concrete shall be 2 inches (51 mm) except the minimum required thickness shall be reduced to 1 1/2 inches (38 mm), provided the following conditions are satisfied:

1. The overall thickness, including the formboard, is not less than 2 inches (51 mm).
2. The clear span of the gypsum concrete between supports does not exceed 33 inches (838 mm).
3. Diaphragm action is not required.
4. The design live load does not exceed 40 pounds per square foot (psf) (1915 Pa).

1915.3 Limitations of use. Reinforced gypsum concrete shall not be used where exposed directly to the weather or where subject to frequent or continuous wetting. Precast units shall be protected by coverings or coatings from the weather and from contact with moisture during shipment and during storage at the work site.



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Chapter 19: CONCRETE
SECTION BC 1916: CONCRETE-FILLED PIPE COLUMNS

NYC Administrative Code § 28-BC 1916

1916.1 General.

Concrete-filled pipe columns shall be manufactured from standard, extra-strong or double-extra-strong steel pipe or tubing that is filled with concrete so placed and manipulated as to secure maximum density and to ensure complete filling of the pipe without voids.

1916.2Design. The safe supporting capacity of concrete-filled pipe columns shall be computed in accordance with ACI 318 and AISC-LRFD or AISC 335 or as determined by a test approved by the commissioner.

1916.3Connections. Caps, base plates and connections shall be in accordance with ACI 318 and AISC-LRFD or AISC 335 and shall be positively attached to the shell and anchored to the concrete core. Welding of brackets without mechanical anchorage shall be prohibited. Where the pipe is slotted to accommodate webs of brackets or other connections, the integrity of the shell shall be restored by welding to ensure hooping action of the composite section.

1916.4Reinforcement. Steel reinforcement shall be in the form of rods, structural shapes or pipe embedded in the concrete core in accordance with ACI 318 and AISC-LRFD or AISC 335 with sufficient clearance to ensure the composite action of the section, but not nearer than 1 inch (25 mm) to the exterior steel shell. Structural shapes used as reinforcement shall be milled to ensure bearing on cap and base plates.

1916.5Fire-resistance-rating protection. Pipe columns shall be of such size or so protected as to develop the required fire-resistance ratings specified in Table 601. Where an outer steel shell is used to enclose the fire-resistant covering, the shell shall not be included in the calculations for strength of the column section. The minimum diameter of pipe columns shall be 4 inches (102 mm) except that in structures of Type V construction not exceeding three stories or 40 feet (12 192 mm) in height, pipe columns used in the basement and as secondary steel members shall have a minimum diameter of 3 inches (76 mm).

1916.6Approvals. Details of column connections and splices shall be shop fabricated in accordance with ACI 318

and AISC-LRFD or AISC 335. Shop-fabricated concrete-filled pipe columns shall be inspected by an approved agency pursuant to Chapter 17 of this code.



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 SECTION BC 1917: STRUCTURAL INTEGRITY REQUIREMENTS

NYC Administrative Code § 28-BC 1917

1917.1 General.

Reinforced concrete structures shall meet all the requirements of sections 1917.1 through 1917.3. Concrete slabs on metal deck shall be governed by the provisions of Chapter 22. Reinforcement provided for gravity, seismic and wind forces or for other purposes may be regarded as forming part of, or the whole of, these requirements. Reinforcing provided for one requirement may be counted towards the other requirements.

1917.2Continuity and ties.The structural integrity requirements of ACI 318, Section 7.13, shall apply. In addition, the following requirements shall be met.

1917.2.1Slab reinforcement.At all floor and roof levels, slabs shall have a mat of bottom reinforcement in two perpendicular (or roughly perpendicular) directions. Reinforcement in this bottom mat shall be made continuous with lap, mechanical or welded tension splices.

1917.2.1.1Bottom mat reinforcement.In each direction, the bottom mat reinforcement shall be not less than, the steel required for temperature reinforcement. The bottom mat reinforcement shall be anchored at discontinuous edges within the column strip, re-entrant corners, elevation changes and anywhere else the continuity of the reinforcing is interrupted.

Exception: Flat plate middle strip bottom mat reinforcing perpendicular to discontinuous slab edges.

In addition, the main bottom mat reinforcement in one-way slabs shall be anchored at discontinuous edges.

1917.2.2Peripheral ties.At each floor and roof level, reinforcement forming a continuous peripheral tie shall be provided. Peripheral ties shall be located within perimeter beams or walls, where they occur, or within 4 feet (1219 mm) of the edge of slab, where perimeter beams or walls do not occur. Continuous tie reinforcement shall be equal to half of the bottom reinforcement within the edge or edge strip for two-way slabs but not less than two bars.

1917.2.3Horizontal ties.At each column, beam reinforcement or slab bottom reinforcement shall be provided at each level that can develop a tension force equal to the maximum of 1 or 2:

1. Three times the load entering the column at that level, using a load combination of $1.0 \times DL$ (self weight of structure only).

2. One and a half times the load entering the column at that level using the load combinations of $(1.2 DL + 1.6 LL)$ or $1.4 DL$.

1917.2.3.1This beam or slab bottom reinforcement shall be distributed around the column perimeter and shall be extended on all sides of the column into the adjacent slab for at least $1/3$ of the span length. Where reinforcing bars cannot be extended beyond the column (e.g., at slab edges and openings), they shall be hooked or otherwise developed within the column.

1917.2.4Vertical ties.Each column and each wall carrying vertical load shall be vertically tied continuously from its lowest to highest level. The vertical ties composed of vertical column reinforcement shall be capable of resisting a tensile force equal to the maximum design dead and live load received by the column or wall from any one story within four floors below.

1917.3Precast concrete general.Precast concrete structural elements shall be reinforced to meet all of the requirements of this section. However, reinforcement provided for gravity, seismic and wind forces and for other purposes may be regarded as forming part of, or the whole of, these requirements. Reinforcing provided for one requirement may be counted towards the other requirements.

1917.3.1Continuity and ties.The structural integrity requirements of ACI 318, Section 16.5, shall apply. In precast and composite structures, ties within precast structural elements shall be continuous and shall be anchored to the supporting structure. In addition to Sections 1917.2.2 and 1917.2.4 the following requirements shall be met.

1917.3.1.1End connections.End connections of all precast slabs, beams and girders shall have an axial tension capacity equal to the larger of the vertical shear capacity of the connection at either end, or at least 2 percent of the maximum factored vertical dead and live load in the precast compression element, whichever is larger, but not less than 20 kips or 2,500 pounds per linear foot of slab (36.48 kN/m). Where more than one element frames in one direction, none of the elements or connections shall have an axial tension capacity of less than 1 percent of the column load but not less than 20 kips.

1917.3.1.2Side connections.Side connections of all precast elements shall have an axial tension capacity not less than the steel required for temperature reinforcement of the larger element at either side.

1917.3.1.3Connection forces.For design of the connections, the transverse shear force and the axial tensile force need not be considered to act simultaneously.

1917.3.2Joints.Joints in precast structures shall not rely on friction due to gravity to transfer load.

1917.3.3Bearing.The net bearing area shall not be less than 2 inches (51 mm) wide and 3 inches (76 mm) long in the direction of the member.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE

Chapter 20: ALUMINUM

SECTION BC 2001: GENERAL

NYC Administrative Code § 28-BC 2001

2001.1 Scope.

This chapter shall govern the quality, design, fabrication and erection of aluminum.



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Chapter 20: ALUMINUM

SECTION BC 2002: MATERIALS

NYC Administrative Code § 28-BC 2002

2002.1 General.

Aluminum used for structural purposes in buildings and structures shall comply with AA ASM 35 and Parts 1-A and 1-B of the Aluminum Design Manual. The nominal loads shall be the minimum design loads required by Chapter 16 of this code.



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Chapter 20: ALUMINUM
SECTION BC 2003: ADDITIONAL REQUIREMENTS

NYC Administrative Code § 28-BC 2003

2003.1 Identification.

Aluminum for structural elements shall at all times in the fabricator's plant, be marked, segregated, or otherwise handled so that the separate alloys and tempers are positively identified, and after completion of fabrication shall be marked to identify the alloy and temper. Such markings shall be affixed to completed members and assemblies or to boxed or bundled shipments of multiple units prior to shipment from the fabricator's plant.

2003.2Quality control.In addition to the requirements of Section 2002, the quality control of aluminum used for structural purposes shall comply with Sections 2003.2.1 and 2003.2.2.

2003.2.1Reference.Welding operations in structural connections where the calculated stresses in welds are 50 percent or more of the basic allowable values shall be subjected to the special inspections as required by Chapter 17 of this code.

2003.2.2Welding operations.Welding operations performed on aluminum used for structural purposes shall comply with thefollowing:

1. Welding work shall be performed only by persons who have obtained a license from the commissioner.
2. Tack welds that are not later incorporated into finished welds carrying calculated stress shall not be considered as structural welds.
3. The inspection of welding operations shall include a check to ascertain that the welders employed on the work have the required license.

2003.3Erection.In addition to the requirements of Section 2002, the erection of aluminum used for structural purposes shall comply with Sections 2003.3.1 through 2003.3.3.

2003.3.1Bracing.All framework shall be carried up true and plumb. Temporary bracing shall be provided to support all loads imposed upon the framework during construction that are in excess of those for which the framework was designed.

2003.3.2Temporary connections.As erection progresses, the work shall be securely bolted, or welded, to resist all dead loads, wind, and erection stresses.

2003.3.3Alignment.The structure shall be properly aligned before riveting, permanent bolting, or welding is performed.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 2: DEFINITIONS
SECTION BC 201: GENERAL

NYC Administrative Code § 28-BC 201

201.1 Scope.

Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter.

201.2Interchangeability.Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

201.3Terms defined in other codes.Where terms are not defined in this code and are defined in the New York City Fuel Gas Code, New York City Fire Code, New York City Mechanical Code, New York City Electrical Code or New York City Plumbing Code, such terms shall have the meanings ascribed to them as in those codes.

201.4Terms not defined.Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.



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Chapter 21: MASONRY
SECTION BC 2101: GENERAL

NYC Administrative Code § 28-BC 2101

2101.1 Scope.

This chapter shall govern the materials, design, construction and quality of masonry.

2101.2Design methods.Masonry shall comply with the provisions of one of the following design methods in this chapter as well as the requirements of Sections 2101 through 2104. Masonry designed by the working stress design provisions of Section 2101.2.1, the strength design provisions of Section 2101.2.2 or the prestressed masonry provisions of Section 2101.2.3 shall comply with Section 2105 for Quality Assurance.

2101.2.1Working stress design.Masonry designed by the working stress design method shall comply with the provisions of Sections 2106 and 2107.

2101.2.2Strength design.Masonry designed by the strength design method shall comply with the provisions of Sections 2106 and 2108.

2101.2.3Prestressed masonry.Prestressed masonry shall be designed in accordance with Chapters 1 and 4 of ACI 530/ASCE 5/TMS 402 and Section 2106. Special inspection during construction shall be provided as set forth in Section 1704.5.

2101.2.4Empirical design.Masonry designed by the empirical design method shall comply with the provisions of Sections 2106 and 2109 or Chapter 5 of ACI 530/ASCE 5/TMS 402.

2101.2.5Glass masonry.Glass masonry shall comply with the provisions of Section 2110 or with the requirements of Chapter 7 of ACI 530/ASCE 5/TMS 402.

2101.2.6Masonry veneer.Masonry veneer shall comply with the provisions of Chapter 14.

2101.3Construction documents.The construction documents shall show all of the items required by this code

including the following:

1. Specified size, grade, type and location of reinforcement, anchors and wall ties.
2. Reinforcing bars to be welded and welding procedure.
3. Size and location of structural elements.
4. Provisions for dimensional changes resulting from elastic deformation, creep, shrinkage, temperature and moisture.

2101.3.1Fireplace drawings.The construction documents shall describe in sufficient detail the location, size and construction of masonry fireplaces. The thickness and characteristics of materials and the clearances from walls, partitions and ceilings shall be clearly indicated. The masonry fireplace shall comply with the provisions of Section 2111.0.



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Chapter 21: MASONRY
SECTION BC 2102: DEFINITIONS AND NOTATIONS

NYC Administrative Code § 28-BC 2102

2102.1 General.

The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

ANCHOR. Metal rod, wire or strap that secures masonry to its structural support.

ARCHITECTURAL TERRA COTTA. Plain or ornamental hard-burned modified clay units, larger in size than brick, with glazed or unglazed ceramic finish.

AREA.

Bedded. The area of the surface of a masonry unit that is in contact with mortar in the plane of the joint.

Gross cross-sectional. The area delineated by the out-to-out specified dimensions of masonry in the plane under consideration.

Net cross-sectional. The area of masonry units, grout and mortar crossed by the plane under consideration based on out-to-out specified dimensions.

BED JOINT. The horizontal layer of mortar on which a masonry unit is laid.

BOND BEAM. A horizontal grouted element within masonry in which reinforcement is embedded.

BOND REINFORCING. The adhesion between steel reinforcement and mortar or grout.

BRICK.

Calcium silicate (sand lime brick). A masonry unit made of sand and lime.

Clay or shale. A masonry unit made of clay or shale, usually formed into a rectangular prism while in the plastic state and burned or fired in a kiln.

Concrete. A masonry unit having the approximate shape of a rectangular prism and composed of inert aggregate particles embedded in a hardened cementitious matrix.

BUTTRESS. A projecting part of a masonry wall built integrally therewith to provide lateral stability.

CAST STONE. A building stone manufactured from portland cement concrete precast and used as a trim, veneer or facing on or in buildings or structures.

CELL. A void space having a gross cross-sectional area greater than 11/2 square inches (967 mm²).

CHIMNEY. A primarily vertical enclosure containing one or more flues used to remove hot gases from burning fuel, refuse, or from industrial processes to the outside atmosphere.

CHIMNEY TYPES.

High-heat appliance type. An approved chimney for removing the products of combustion from fuel-burning, high-heat appliances producing combustion gases in excess of 2,000(degrees)F (1093(degrees)C) measured at the appliance flue outlet (see Section 2113.11.3).

Low-heat appliance type. An approved chimney for removing the products of combustion from fuel-burning, low-heat appliances producing combustion gases not in excess of 1,000(degrees)F (538(degrees)C) under normal operating conditions, but capable of producing combustion gases of 1,400(degrees)F (760(degrees)C) during intermittent forces firing for periods up to 1 hour. Temperatures shall be measured at the appliance flue outlet.

Masonry type. A field-constructed chimney of solid masonry units or stones.

Medium-heat appliance type. An approved chimney for removing the products of combustion from fuel-burning, medium-heat appliances producing combustion gases between 1000(degrees)F (538(degrees)C) and 2,000(degrees)F (1093(degrees)C) measured at the appliance flue outlet (see Section 2113.11.2).

CLEANOUT. An opening to the bottom of a grout space of sufficient size and spacing to allow the removal of debris.

COLLAR JOINT. Vertical longitudinal joint between wythes of masonry or between masonry and backup construction that is permitted to be filled with mortar or grout.

COLUMN, MASONRY. An isolated vertical member whose horizontal dimension measured at right angles to its thickness does not exceed three times its thickness and whose height is at least four times its thickness.

COMPOSITE ACTION. Transfer of stress between components of a member designed so that in resisting loads, the combined components act together as a single member.

COMPOSITE MASONRY. Multiwythe masonry members acting with composite action.

COMPRESSIVE STRENGTH OF MASONRY. Maximum compressive force resisted per unit of net cross-sectional area of masonry, determined by the testing of masonry prisms or a function of individual masonry units, mortar and grout.

CONNECTOR. A mechanical device for securing two or more pieces, parts or members together, including anchors, wall ties and fasteners.

COVER. Distance between surface of reinforcing bar and edge of member.

DIAPHRAGM. A roof or floor system designed to transmit lateral forces to shear walls or other lateral-load-resisting elements.

DIMENSIONS.

Actual. The measured dimension of a masonry unit or element.

Nominal. A dimension equal to a specified dimension plus an allowance for the joints with which the units are to be laid. Thickness is given first, followed by height and then length.

Specified. The dimensions specified for the manufacture or construction of masonry, masonry units, joints or any other component of a structure.

EFFECTIVE HEIGHT. For braced members, the effective height is the clear height between lateral supports and is used for calculating the slenderness ratio. The effective height for unbraced members is calculated in accordance with engineering mechanics.

FIREPLACE. A hearth and fire chamber or similar prepared place in which a fire may be made and which is built in conjunction with a chimney.

FIREPLACE THROAT. The opening between the top of the firebox and the smoke chamber.

FLUE. A passageway within a chimney or vent through which gaseous combustion products pass.

FLUE, APPLIANCE. The passage(s) within an appliance through which combustion products pass from the combustion chamber of the appliance to the draft hood inlet opening on an appliance equipped with a draft hood or to the outlet of the appliance on an appliance not equipped with a draft hood.

FLUE GASES. Products of combustion plus excess air in appliance flues or heat exchangers.

FLUE LINER (LINING). A system or material used to form the inside surface of a flue in a chimney or vent, for the purpose of protecting the surrounding structure from the effects of combustion products and for conveying combustion products without leakage into the atmosphere.

GROUT. Flowable cementitious material comprising cement mixed with fine or coarse aggregates and having a compressive strength not less than 2,000 pounds per square inch (13 790 kPa) at 28 days, and a slump of 8 inches to 11 inches (203 mm to 279 mm).

GROUTED MASONRY.

Grouted hollow-unit masonry. That form of grouted masonry construction in which certain designated cells of hollow units are continuously filled with grout.

Grouted multi-wythe masonry. That form of grouted masonry construction in which the space between the wythes is solidly or periodically filled with grout.

HEAD JOINT. Vertical mortar joint placed between masonry units within the wythe at the time the masonry units are laid.

HEADER (Bonder). A masonry unit that connects two or more adjacent wythes of masonry.

HEIGHT, WALLS. The vertical distance from the foundation wall or other immediate support of such wall to the top of the wall.

MASONRY. A built-up construction or combination of building units or materials of clay, shale, concrete, glass, gypsum, stone or other approved units bonded together with or without mortar or grout or other accepted method of joining.

Ashlar masonry. Masonry composed of various sized rectangular units having sawed, dressed or squared bed surfaces, properly bonded and laid in mortar.

Coursed ashlar. Ashlar masonry laid in courses of stone of equal height for each course, although different courses shall be permitted to be of varying height.

Glass unit masonry. Nonload-bearing masonry composed of glass units bonded by mortar.

Plain masonry. Masonry in which the tensile resistance of the masonry is taken into consideration and the effects of stresses in reinforcement are neglected.

Random ashlar. Ashlar masonry laid in courses of stone set without continuous joints and laid up without drawn patterns. When composed of material cut into modular heights, discontinuous but aligned horizontal joints are discernible.

Reinforced masonry. Masonry construction in which reinforcement acting in conjunction with the masonry is used to resist forces.

Solid masonry. Masonry consisting of solid masonry units laid contiguously with the joints between the units filled with mortar.

MASONRY UNIT. Brick, tile, stone, glass block or concrete block conforming to the requirements specified in Section 2103.

Clay. A building unit larger in size than a brick, composed of burned clay, shale, fire clay or mixtures thereof.

Concrete. A building unit or block larger in size than 12 inches by 4 inches by 4 inches (305 mm by 102 mm by 102 mm) made of cement and suitable aggregates.

Hollow. A masonry unit whose net cross-sectional area in any plane parallel to the load-bearing surface is less than 75 percent of its gross cross-sectional area measured in the same plane.

Solid. A masonry unit whose net cross-sectional area in every plane parallel to the load-bearing surface is 75 percent or more of its gross cross-sectional area measured in the same plane.

MEAN DAILY TEMPERATURE. The average daily temperature of temperature extremes predicted by a local weather bureau for the next 24 hours.

MORTAR. A plastic mixture of approved cementitious materials, fine aggregates and water used to bond masonry or other structural units.

MORTAR, SURFACE-BONDING. A mixture to bond concrete masonry units that contains hydraulic cement, glass fiber reinforcement with or without inorganic fillers or organic modifiers and water.

PLASTIC HINGE. The zone in a structural member in which the yield moment is anticipated to be exceeded under loading combinations that include earthquakes.

PRESTRESSED MASONRY. Masonry in which internal stresses have been introduced to counteract potential tensile stresses in masonry resulting from applied loads.

PRISM. An assemblage of masonry units and mortar with or without grout used as a test specimen for determining properties of the masonry.

RUBBLE MASONRY. Masonry composed of roughly shaped stones.

Coursed rubble. Masonry composed of roughly shaped stones fitting approximately on level beds and well bonded.

Random rubble. Masonry composed of roughly shaped stones laid without regularity of coursing but well-bonded and fitted together to form well-divided joints.

Rough or ordinary rubble. Masonry composed of unsquared field stones laid without regularity of coursing but well-bonded.

RUNNING BOND. The placement of masonry units such that head joints in successive courses are horizontally offset at least one-quarter the unit length.

SHEAR WALL.

Detailed plain masonry shear wall. A masonry shear wall designed to resist lateral forces neglecting stresses in reinforcement, and designed in accordance with Section 2106.1.1.

Intermediate pre-stressed masonry shear wall. A pre-stressed masonry shear wall designed to resist lateral forces considering stresses in reinforcement, and designed in accordance with Section 2106.1.1.2.

Intermediate reinforced masonry shear wall. A masonry shear wall designed to resist lateral forces considering stresses in reinforcement, and designed in accordance with Section 2106.1.1.

Ordinary plain masonry shear wall. A masonry shear wall designed to resist lateral forces neglecting stresses in reinforcement, and designed in accordance with Section 2106.1.1.

Ordinary plain pre-stressed masonry shear wall. A pre-stressed masonry shear wall designed to resist lateral forces considering stresses in reinforcement, and designed in accordance with Section 2106.1.1.1.

Ordinary reinforced masonry shear wall. A masonry shear wall designed to resist lateral forces considering stresses in reinforcement, and designed in accordance with Section 2106.1.1.

Special pre-stressed masonry shear wall. A pre-stressed masonry shear wall designed to resist lateral forces considering stresses in reinforcement and designed in accordance with Section 2106.1.1.3 except that only grouted, laterally restrained tendons are used.

Special reinforced masonry shear wall. A masonry shear wall designed to resist lateral forces considering stresses in reinforcement, and designed in accordance with Section 2106.1.1.

SHELL. The outer portion of a hollow masonry unit as placed in masonry.

SPECIFIED. Required by construction documents.

SPECIFIED COMPRESSIVE STRENGTH OF MASONRY, f_m . Minimum compressive strength, expressed as

force per unit of net cross-sectional area, required of the masonry used in construction by the construction documents, and upon which the project design is based. Whenever the quantity f_m is under the radical sign, the square root of numerical value only is intended and the result has units of pounds per square inch (psi) (Mpa).

STACK BOND. The placement of masonry units in a bond pattern is such that head joints in successive courses are vertically aligned. For the purpose of this code, requirements for stack bond shall apply to masonry laid in other than running bond.

STONE MASONRY. Masonry composed of field, quarried or cast stone units bonded by mortar.

Ashlar stone masonry. Stone masonry composed of rectangular units having sawed, dressed or squared bed surfaces and bonded by mortar.

Rubble stone masonry. Stone masonry composed of irregular-shaped units bonded by mortar.

STRENGTH.

Design strength. Nominal strength multiplied by a strength reduction factor.

Nominal strength. Strength of a member or cross section calculated in accordance with these provisions before application of any strength-reduction factors.

Required strength. Strength of a member or cross section required to resist factored loads.

TIE, LATERAL. Loop of reinforcing bar or wire enclosing longitudinal reinforcement.

TIE, WALL. A connector that connects wythes of masonry walls together.

TILE. A ceramic surface unit, usually relatively thin in relation to facial area, made from clay or a mixture of clay or other ceramic materials, called the body of the tile, having either a "glazed" or "unglazed" face and fired above red heat in the course of manufacture to a temperature sufficiently high enough to produce specific physical properties and characteristics.

TILE, STRUCTURAL CLAY. A hollow masonry unit composed of burned clay, shale, fire clay or mixture thereof, and having parallel cells.

WALL. A vertical element with a horizontal length-to-thickness ratio greater than three, used to enclose space.

Cavity wall. A wall built of masonry units or of concrete, or a combination of these materials, arranged to provide an airspace within the wall, and in which the inner and outer parts of the wall are tied together with metal ties.

Composite wall. A wall built of a combination of two or more masonry units bonded together, one forming the backup and the other forming the facing elements.

Dry-stacked, surface-bonded walls. A wall built of concrete masonry units where the units are stacked dry, without mortar on the bed or head joints, and where both sides of the wall are coated with a surface-bonding mortar.

Masonry-bonded hollow wall. A wall built of masonry units so arranged as to provide an airspace within the wall, and in which the facing and backing of the wall are bonded together with masonry units.

Parapet wall. The part of any wall entirely above the roof line.

WEB. An interior solid portion of a hollow masonry unit as placed in masonry.

WYTHE. Each continuous, vertical section of a wall, one masonry unit in thickness.

NOTATIONS. A_n =Net cross-sectional area of masonry, square inches (mm²). b =Effective width of rectangular member or width of flange for T and I sections, inches (mm). d_b =Diameter of reinforcement, inches (mm). f_r =Modulus of rupture, psi (MPa). f_y =Specified yield stress of the reinforcement or the anchor bolt, psi (MPa). f'_m =Specified compressive strength of masonry at age of 28 days, psi (MPa). K =The lesser of the masonry cover, clear spacing between adjacent reinforcement, or five times d_b , inches (mm). L_s =Distance between supports, inches (mm). L_w =Length of wall, inches (mm). l_d =Required development length of reinforcement, inches (mm). l_{de} =Embedment length of reinforcement, inches (mm). P_w =Weight of wall tributary to section under consideration, pounds (N). T =Specified wall thickness dimension or the least lateral dimension of a column, inches (mm). V_n =Nominal shear strength, pounds (N). V_u =Required shear strength due to factored loads, pounds (N). W =Wind load, or related internal moments in forces. g =Reinforcement size factor. r_n =Ratio of distributed shear reinforcement on plane perpendicular to plane of A_m . r_{max} =Maximum reinforcement ratio. f =Strength reduction factor.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 21: MASONRY
SECTION BC 2103: MASONRY CONSTRUCTION MATERIALS

NYC Administrative Code § 28-BC 2103

2103.1 Concrete masonry units.

Concrete masonry units shall conform to the following standards: ASTM C 55 for concrete brick; ASTM C 90 for load-bearing concrete masonry units; ASTM C 129 for non-load bearing concrete masonry units or ASTM C 744 for prefaced concrete and calcium silicate masonry units.

2103.2Clay or shale masonry units.Clay or shale masonry units shall conform to the following standards: ASTM C 34 for structural clay load-bearing wall tile; ASTM C 56 for structural clay nonload-bearing wall tile; ASTM C 62 for building brick (solid masonry units made from clay or shale); ASTM C 1088 for solid units of thin veneer brick; ASTM C 126 for ceramic-glazed structural clay facing tile, facing brick and solid masonry units; ASTM C 212 for structural clay facing tile; ASTM C 216 for facing brick (solid masonry units made from clay or shale); ASTM C 652 for hollow brick (hollow masonry units made from clay or shale) and ASTM C 73 for calcium silicate face brick.

Exception: Structural clay tile for nonstructural use in fireproofing of structural members and in wall furring shall not be required to meet the compressive strength specifications. The fire-resistance rating shall be determined in accordance with ASTM E 119 and shall comply with the requirements of Table 602.

2103.3Stone masonry units.Stone masonry units shall conform to the following standards: ASTM C 503 for marble building stone (exterior); ASTM C 568 for limestone building stone; ASTM C 615 for granite building stone; ASTM C 616 for sandstone building stone or ASTM C 629 for slate building stone.

2103.4Ceramic tile.Ceramic tile shall be as defined in, and shall conform to the requirements of, ANSI A137.1.

2103.5Glass unit masonry.Hollow glass units shall be partially evacuated and have a minimum average glass face thickness of 3/16 inch (4.8 mm). Solid glass-block units shall be provided when required. The surfaces of units intended to be in contact with mortar shall be treated with a polyvinyl butyral coating or latex-based paint. Reclaimed units shall not be used.

2103.6 Second-hand units. Second-hand masonry units shall not be reused unless they conform to the requirements of new units. The units shall be of whole, sound materials and free from cracks and other defects that will interfere with proper laying or use. Old mortar shall be cleaned from the unit before reuse.

Exception: second-hand masonry units need not conform to the requirements for new units when their reuse is to comply with historic restoration standards or requirements of the New York City Landmarks Preservation Commission or the New York State Historic Preservation Office.

2103.7 Mortar. Mortar for use in masonry construction shall conform to ASTM C 270 and shall conform to the proportion specifications of Table 2103.7(1) or the property specifications of Table 2103.7(2). Type S or N mortar shall be used for glass unit masonry. The amount of water used in mortar for glass unit masonry shall be adjusted to account for the lack of absorption. Re-tempering of mortar for glass unit masonry shall not be permitted after initial set. Unused mortar shall be discarded within 2 1/2 hours after initial mixing except that unused mortar for glass unit masonry shall be discarded within 1 1/2 hours after initial mixing.

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2103.8 Surface-bonding mortar. Surface-bonding mortar shall comply with ASTM C 887. Surface bonding of concrete masonry units shall comply with ASTM C 946.

2103.9 Mortars for ceramic wall and floor tile. Portland cement mortars for installing ceramic wall and floor tile shall comply with ANSI A108.1A and ANSI A108.1B and be of the compositions indicated in Table 2103.9. Table 2103.9 Ceramic Tile Mortar Compositions Location Mortar Composition Walls

Scratchcoat

Setting bed and leveling coat 1 cement; 1/5 hydrated lime; 4 dry or 5 damp sand 1 cement; 1/2 hydrated lime; 5 damp sand to 1 cement 1 hydrated lime, 7 damp sand Floors Setting bed 1 cement; 1/10 hydrated lime; 5 dry or 6 damp sand; or 1 cement; 5 dry or 6 damp sand Ceilings Scratchcoat and sand bed 1 cement; 1/2 hydrated lime; 2 1/2 dry sand or 3 damp sand

2103.9.1 Dry-set portland cement mortars. Premixed prepared portland cement mortars, which require only the addition of water and are used in the installation of ceramic tile, shall comply with ANSI A118.1. The shear bond strength for tile set in such mortar shall be as required in accordance with ANSI A118.1. Tile set in dry-set portland cement mortar shall be installed in accordance with ANSI A108.5.

2103.9.2 Electrically conductive dry-set mortars. Premixed prepared portland cement mortars, which require only the addition of water and comply with ANSI A118.2, shall be used in the installation of electrically conductive ceramic tile. Tile set in electrically conductive dry-set mortar shall be installed in accordance with ANSI A108.7.

2103.9.3 Latex-modified portland cement mortar. Latex-modified portland cement thin-set mortars in which latex is added to dry-set mortar as a replacement for all or part of the gauging water that are used for the installation of ceramic tile shall comply with ANSI A118.4. Tile set in latex-modified portland cement shall be installed in accordance with ANSI A108.5.

2103.9.4 Epoxy mortar. Ceramic tile set and grouted with chemical-resistant epoxy shall comply with ANSI A118.3. Tile set and grouted with epoxy shall be installed in accordance with ANSI A108.6.

2103.9.5 Furan mortar and grout. Chemical-resistant furan mortar and grout that are used to install ceramic tile shall comply with ANSI A118.5. Tile set and grouted with furan shall be installed in accordance with ANSI A108.8.

2103.9.6 Modified epoxy-emulsion mortar and grout. Modified epoxy-emulsion mortar and grout that are used to install ceramic tile shall comply with ANSI A118.8. Tile set and grouted with modified epoxy-emulsion mortar and grout shall be installed in accordance with ANSI A108.9.

2103.9.7 Organic adhesives. Water-resistant organic adhesives used for the installation of ceramic tile shall comply with ANSI A136.1. The shear bond strength after water immersion shall not be less than 40 psi (275 kPa) for Type I adhesive, and not less than 20 psi (138 kPa) for Type II adhesive, when tested in accordance with ANSI A136.1. Tile set in organic adhesives shall be installed in accordance with ANSI A108.4.

2103.9.8 Portland cement grouts. Portland cement grouts used for the installation of ceramic tile shall comply with ANSI A118.6. Portland cement grouts for tile work shall be installed in accordance with ANSI A108.10.

2103.10 Grout. Grout shall conform to Table 2103.10 or to ASTM C 476. When grout conforms to ASTM C 476, the grout shall be specified by proportion requirements or property requirements. Table 2103.10 Grout Proportions by Volume for Masonry Construction Type Parts by Volume of Portland Cement or Blended Cement Parts by Volume of Hydrated Lime or Lime Putty Aggregate, Measured in a Damp, Loose Condition Fine Coarse Finegrout 1 0-1/10 21/8-3 times the sum of the volumes of the cementitious materials- Coarsegrout 1 0-1/10 21/8-3 times the sum of the volumes of the cementitious materials 1-2 times the sum of the volumes of the cementitious materials

2103.11 Metal reinforcement and accessories. Metal reinforcement and accessories shall conform to Sections 2103.11.1 through 2103.11.7.

2103.11.1 Deformed reinforcing bars. Deformed reinforcing bars shall conform to one of the following standards: ASTM A 615 for deformed and plain billet-steel bars for concrete reinforcement; ASTM A 706 for low-alloy steel deformed bars for concrete reinforcement; ASTM A 767 for zinc-coated reinforcing steel bars; ASTM A 775 for epoxy-coated reinforcing steel bars and ASTM A 996 for rail steel and axle steel deformed bars for concrete reinforcement.

2103.11.2 Joint reinforcement. Joint reinforcement shall comply with ASTM A 951. The maximum spacing of crosswires in ladder-type joint reinforcement and of point of connection of cross wires to longitudinal wires of truss-type reinforcement shall be 16 inches (406 mm).

2103.11.3 Deformed reinforcing wire. Deformed reinforcing wire shall conform to ASTM A 496.

2103.11.4 Wire fabric. Wire fabric shall conform to ASTM A 185 for plain steel-welded wire fabric for concrete reinforcement or ASTM A 496 for welded deformed steel wire fabric for concrete reinforcement.

2103.11.5 Anchors, ties and accessories. Anchors, ties and accessories shall conform to the following standards: ASTM A 36 for structural steel; ASTM A 82 for plain steel wire for concrete reinforcement; ASTM A 185 for plain steel-welded wire fabric for concrete reinforcement; ASTM A 167, Type 304, for stainless and heat-resisting chromium-nickel steel plate, sheet and strip and ASTM A 366 for cold-rolled carbon steel sheet, commercial quality.

2103.11.6 Prestressing tendons. Prestressing tendons shall conform to one of the following standards: a. Wire ASTM A 421 b. Low-relaxation wire ASTM A 421 c. Strand ASTM A 416 d. Low-relaxation strand ASTM A 416 e. Bar ASTM A 722

Exceptions:

1. Wire, strands and bars not specifically listed in ASTM A 421, ASTM A 416 or ASTM A 722 are permitted, provided they conform to the minimum requirements in ASTM A 421, ASTM A 416, or ASTM A 722 and are approved by the architect/engineer.

2. Bars and wires of less than 150 kips per square inch (ksi) (1034 MPa) tensile strength and conforming to ASTM A 82, ASTM A 510, ASTM A 615, ASTM A 616, ASTM A 996 or ASTM A 706/A 706 M are permitted to be used as pre-stressed tendons provided that:

2.1. The stress relaxation properties have been assessed by tests according to ASTM E 328 for the maximum permissible stress in the tendon.

2.2. Other nonstress-related requirements of ACI 530/ASCE 5/TMS 402, Chapter 4, addressing pre-stressing tendons are met.

2103.11.7 Corrosion protection. Corrosion protection for pre-stressing tendons, pre-stressing anchorages, couplers and end block shall comply with the requirements of ACI 530.1/ASCE 6/TMS 602, Article 2.4G. Corrosion protection for carbon steel accessories used in exterior wall construction or interior walls exposed to a mean relative humidity exceeding 75 percent shall comply with either Section 2103.11.7.1 or 2103.11.7.2. Corrosion protection for carbon steel accessories used in interior walls exposed to a mean relative humidity equal to or less than 75 percent shall comply with either Section 2103.11.7.1, 2103.11.7.2 or 2103.11.7.3.

2103.11.7.1 Hot-dipped galvanized. Apply a hot-dipped galvanized coating after fabrication as follows:

1. For joint reinforcement, wall ties, anchors and inserts, apply a minimum coating of 1.5 ounces per square foot (psf) (458 g/m²) complying with the requirements of ASTM A 153, Class B.

2. For sheet metal ties and sheet metal anchors, comply with the requirements of ASTM A 153, Class B.

3. For steel plates and bars, comply with the requirements of either ASTM A 123 or ASTM A 153, Class B.

2103.11.7.2 Epoxy coatings. Carbon steel accessories shall be epoxy-coated as follows:

1. For joint reinforcement, comply with the requirements of ASTM A 884 Class B, Type 2-18 mils (457mm).

2. For wire ties and anchors, comply with the requirements of ASTM A 899 Class C-20 mils (508mm).

3. For sheet metal ties and anchors, provide a minimum thickness of 20 mils (508mm) or in accordance with the manufacturer's specification.

2103.11.7.3 Mill galvanized. Apply a mill galvanized coating as follows:

1. For joint reinforcement, wall ties, anchors and inserts, apply a minimum coating of 0.1 ounce psf (31g/m²) complying with the requirements of ASTM A 641.

2. For sheet metal ties and sheet metal anchors, apply a minimum coating complying with Coating Designation G-60 according to the requirements of ASTM A 653.

3. For anchor bolts, steel plates or bars not exposed to the earth, weather or a mean relative humidity exceeding 75 percent, a coating is not required.

2103.11.8 Tests. Where unidentified reinforcement is approved for use, not less than three tension and three bending tests shall be made on representative specimens of the reinforcement from each shipment and grade of reinforcing steel proposed for use in the work.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 21: MASONRY
SECTION BC 2104: CONSTRUCTION

NYC Administrative Code § 28-BC 2104

2104.1 Masonry construction.

Masonry construction shall comply with the requirements of Sections 2104.1.1 through 2104.5 and with ACI 530.1/ASCE 6/TMS 602.

2104.1.1Tolerances.Masonry, except masonry veneer, shall be constructed within the tolerances specified in ACI 530.1/ASCE 6/TMS 602.

2104.1.2Placing mortar and units.Placement of mortar and units shall comply with Sections 2104.1.2.1 through 2104.1.2.5.

2104.1.2.1Bed and head joints.Unless otherwise required or indicated on the construction documents, head and bed joints shall be 3/8 inch (9.5 mm) thick, except that the thickness of the bed joint of the starting course placed over foundations shall not be less than 1/4 inch (6.4 mm) and not more than 3 inch (19.1 mm).

2104.1.2.1.1Open-end units.Open-end units with beveled ends shall be fully grouted. Head joints of open-end units with beveled ends need not be mortared. The beveled ends shall form a grout key that permits grouts within 5/8 inch (15.9 mm) of the face of the unit. The units shall be tightly butted to prevent leakage of the grout.

2104.1.2.2Hollow units.Hollow units shall be placed such that face shells of bed joints are fully mortared. Webs shall be fully mortared in all courses of piers, columns, pilasters, in the starting course on foundations where adjacent cells or cavities are to be grouted, and where otherwise required. Head joints shall be mortared a minimum distance from each face equal to the face shell thickness of the unit.

2104.1.2.3Solid units.Unless otherwise required or indicated on the construction documents, solid units shall be placed in fully mortared bed and head joints. The ends of the units shall be completely buttered. Head joints shall not be filled by slushing with mortar. Head joints shall be constructed by shoving mortar tight against the adjoining unit. Bed

joints shall not be furrowed deep enough to produce voids.

2104.1.2.4Glass unit masonry.Glass units shall be placed so head and bed joints are filled solidly. Mortar shall not be furrowed. Unless otherwise required, head and bed joints of glass unit masonry shall be 1/4 inch (6.4 mm) thick, except that vertical joint thickness of radial panels shall not be less than 1/8 inch (3.2 mm). The bed joint thickness tolerance shall be minus 1/16 inch (1.6 mm) and plus 1/8 inch (3.2 mm). The head joint thickness tolerance shall be plus or minus 1/8 inch (3.2 mm).

2104.1.2.5All units.Units shall be placed while the mortar is soft and plastic. Any unit disturbed to the extent that the initial bond is broken after initial positioning shall be removed and relaid in fresh mortar.

2104.1.3Installation of wall ties.The ends of wall ties shall be embedded in mortar joints. Wall tie ends shall engage outer face shells of hollow units by at least 1/2 inch (12.7 mm). Wire wall ties shall be embedded at least 1 1/2 inches (38 mm) into the mortar bed of solid masonry units or solid-grouted hollow units. Wall ties shall not be bent after being embedded in grout or mortar.

2104.1.4Chases and recesses.Chases and recesses shall be constructed as masonry units are laid. Masonry directly above chases or recesses wider than 12 inches (305 mm) shall be supported on lintels.

2104.1.5Lintels.The design of masonry lintels shall be in accordance with the masonry design provisions of either Section 2107 or 2108. Minimum length of end support shall be 4 inches (102 mm).

2104.1.6Support on wood.Masonry shall not be supported on wood girders or other forms of wood construction except as permitted in Section 2304.12.

2104.1.7Masonry protection.The top of unfinished masonry work shall be covered to protect the masonry from the weather.

2104.1.8Weep holes.Weep holes shall be provided in the exterior wythe of masonry walls and shall be at a maximum spacing of 33 inches (838 mm) on center (o.c.). Weep holes shall not be less than 3/16 inch (4.8 mm) in diameter.

2104.2Corbeled masonry.The maximum corbeled projection beyond the face of the wall shall not be more than one-half of the wall thickness nor one-half the wythe thickness for hollow walls. The maximum projection of one unit shall neither exceed one-half the height of the unit nor one-third the thickness at right angles to the wall.

2104.2.1Molded cornices.Unless structural support and anchorage are provided to resist the overturning moment, the center of gravity of projecting masonry or molded cornices shall lie within the middle one-third of the supporting wall. Terra cotta and metal cornices shall be provided with a structural frame of approved noncombustible material anchored in a manner approved by the commissioner.

2104.3Cold weather construction.The cold weather construction provisions of ACI 530.1/ASCE 6/TMS 602, Article 1.8 C, or the following procedures shall be implemented when either the ambient temperature falls below 40(degrees)F (4(degrees)C) or the temperature of masonry units is below 40(degrees)F (4(degrees)C).

2104.3.1Preparation.

1. Temperatures of masonry units shall not be less than 20(degrees)F (-7(degrees)C) when laid in the masonry. Masonry units containing frozen moisture, visible ice or snow on their surface shall not be laid.

2. Visible ice and snow shall be removed from the top surface of existing foundations and masonry to receive new construction. These surfaces shall be heated to above freezing, using methods that do not result in damage.

3. No salt or other chemicals for the purpose of lowering the freezing temperature of water shall be permitted in the mortar mix.

2104.3.2 Construction. The following requirements shall apply to work in progress and shall be based on ambient temperature.

2104.3.2.1 Construction requirements for temperatures between 40(degrees)F (4(degrees)C) and 32(degrees)F (0(degrees)C). The following construction requirements shall be met when the ambient temperature is between 40(degrees)F (4(degrees)C) and 32(degrees)F (0(degrees)C):

1. Glass unit masonry shall not be laid.

2. Water and aggregates used in mortar and grout shall not be heated above 140(degrees)F (60(degrees)C).

3. Mortar sand or mixing water shall be heated to produce mortar temperatures between 40(degrees)F (4(degrees)C) and 120(degrees)F (49(degrees)C) at the time of mixing. When water and aggregates for grout are below 32(degrees)F (0(degrees)C), they shall be heated.

2104.3.2.2 Construction requirements for temperatures between 32(degrees)F (0(degrees)C) and 25(degrees)F (-4(degrees)C). The requirements of Section 2104.3.2.1 and the following construction requirements shall be met when the ambient temperature is between 32(degrees)F (0(degrees)C) and 25(degrees)F (-4(degrees)C):

1. The mortar temperature shall be maintained above freezing until used in masonry.

2. Aggregates and mixing water for grout shall be heated to produce grout temperatures between 70(degrees)F (21(degrees)C) and 120(degrees)F (49(degrees)C) at the time of mixing. Grout temperature shall be maintained above 70(degrees)F (21(degrees)C) at the time of grout placement.

2104.3.2.3 Construction requirements for temperatures between 25(degrees)F (-4(degrees)C) and 20(degrees)F (-7(degrees)C). The requirements of Sections 2104.3.2.1 and 2104.3.2.2 and the following construction requirements shall be met when the ambient temperature is between 25(degrees)F (-4(degrees)C) and 20(degrees)F (-7(degrees)C):

1. Masonry surfaces under construction shall be heated to 40(degrees)F (4(degrees)C).

2. Wind breaks or enclosures shall be provided when the wind velocity exceeds 15 miles per hour (mph) (24 km/h).

3. Prior to grouting, masonry shall be heated to a minimum of 40(degrees)F (4(degrees)C).

2104.3.2.4 Construction requirements for temperatures below 20(degrees)F (-7(degrees)C). The requirements of Sections 2104.3.2.1, 2104.3.2.2 and 2104.3.2.3 and the following construction requirement shall be met when the ambient temperature is below 20(degrees)F (-7(degrees)C): Enclosures and auxiliary heat shall be provided to maintain air temperature within the enclosure to above 32(degrees)F (0(degrees)C).

2104.3.3 Protection. The requirements of this section and Sections 2104.3.3.1 through 2104.3.3.4 apply after the masonry is placed and shall be based on anticipated minimum daily temperature for grouted masonry and anticipated mean daily temperature for ungrouted masonry.

2104.3.3.1 Glass unit masonry. The temperature of glass unit masonry shall be maintained above 40(degrees)F (4(degrees)C) for 48 hours after construction.

2104.3.3.2 Protection requirements for temperatures between 40(degrees)F (4(degrees)C) and 25(degrees)F (-4(degrees)C). When the temperature is between 40(degrees)F (4(degrees)C) and 25(degrees)F (-4(degrees)C), newly constructed masonry shall be covered with a weather-resistive membrane for 24 hours after being completed.

2104.3.3.3 Protection requirements for temperatures between 25(degrees)F (-4(degrees)C) and 20(degrees)F (-7(degrees)C). When the temperature is between 25(degrees)F (-4(degrees)C) and 20(degrees)F (-7(degrees)C), newly constructed masonry shall be completely covered with weather-resistive insulating blankets, or equal protection, for 24 hours after being completed. The time period shall be extended to 48 hours for grouted masonry, unless the only cement in the grout is Type III portland cement.

2104.3.3.4 Protection requirements for temperatures below 20(degrees)F (-7(degrees)C). When the temperature is below 20(degrees)F (-7(degrees)C), newly constructed masonry shall be maintained at a temperature above 32(degrees)F (0(degrees)C) for at least 24 hours after being completed by using heated enclosures, electric heating blankets, infrared lamps or other acceptable methods. The time period shall be extended to 48 hours for grouted masonry, unless the only cement in the grout is Type III portland cement.

2104.4 Hot weather construction. The hot weather construction provisions of ACI 530.1/ASCE 6/TMS 602, Article 1.8 D, or the following procedures shall be implemented when the temperature or the temperature and wind-velocity limits of this section are exceeded.

2104.4.1 Preparation. The following requirements shall be met prior to conducting masonry work.

2104.4.1.1 Temperature. When the ambient temperature exceeds 100(degrees)F (38(degrees)C), or exceeds 90(degrees)F (32(degrees)C) with a wind velocity greater than 8 mph (13 km/h):

1. Necessary conditions and equipment shall be provided to produce mortar having a temperature below 120(degrees)F (49(degrees)C).

2. Sand piles shall be maintained in a damp, loose condition.

2104.4.1.2 Special conditions. When the ambient temperature exceeds 115(degrees)F (46(degrees)C), or 105(degrees)F (40(degrees)C) with a wind velocity greater than 8 mph (13 km/h), the requirements of Section 2104.4.1.1 shall be implemented, and materials and mixing equipment shall be shaded from direct sunlight.

2104.4.2 Construction. The following requirements shall be met while masonry work is in progress.

2104.4.2.1 Temperature. When the ambient temperature exceeds 100(degrees)F (38(degrees)C), or exceeds 90(degrees)F (32(degrees)C) with a wind velocity greater than 8 mph (13 km/h):

1. The temperature of mortar and grout shall be maintained below 120(degrees)F (49(degrees)C).

2. Mixers, mortar transport containers and mortar boards shall be flushed with cool water before they come into contact with mortar ingredients or mortar.

3. Mortar consistency shall be maintained by retempering with cool water.

4. Mortar shall be used within 2 hours of initial mixing.

2104.4.2.2 Special conditions. When the ambient temperature exceeds 115(degrees)F (46(degrees)C), or exceeds 105(degrees)F (40(degrees)C) with a wind velocity greater than 8 mph (13 km/h), the requirements of Section 2104.4.2.1 shall be implemented and cool mixing water shall be used for mortar and grout. The use of ice shall be permitted in the mixing water prior to use. Ice shall not be permitted in the mixing water when added to the other mortar or grout materials.

2104.4.3 Protection. When the mean daily temperature exceeds 100(degrees)F (38(degrees)C), or exceeds 90(degrees)F (32(degrees)C) with a wind velocity greater than 8 mph (13 km/h), newly constructed masonry shall be fog sprayed until damp at least three times a day until the masonry is three days old.

2104.5Wetting of brick.Brick (clay or shale) at the time of laying shall require wetting if the unit's initial rate of water absorption exceeds 21.42 grams per 30 square inches (19 355 mm²) per minute or 0.025 ounce psi (1 g/645 mm²), as determined by ASTM C 67.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 21: MASONRY
SECTION BC 2105: QUALITY ASSURANCE

NYC Administrative Code § 28-BC 2105

2105.1 General.

A quality assurance program shall be used to ensure that the constructed masonry is in compliance with the construction documents. The quality assurance program shall comply with the inspection and testing requirements of Chapter 17.

2105.2 Acceptance relative to strength requirements.

2105.2.1 Compliance with f'_m . Compressive strength of masonry shall be considered satisfactory if the compressive strength of each masonry wythe and grouted collar joint equals or exceeds the value of f'_m .

2105.2.2 Determination of compressive strength. The compressive strength for each wythe shall be determined by the unit strength method or by the prism test method as specified herein.

2105.2.2.1 Unit strength method.

2105.2.2.1.1 Clay masonry. The compressive strength of masonry shall be determined based on the strength of the units and the type of mortar specified using Table 2105.2.2.1.1, provided:

1. Units conform to ASTM C 62, ASTM C 216 or ASTM C 652 and are sampled and tested in accordance with ASTM C 67.

2. Thickness of bed joints does not exceed 5/8 inch (15.9 mm).

3. For grouted masonry, the grout meets one of the following requirements:

3.1. Grout conforms to ASTM C 476.

3.2. Minimum grout compressive strength equals f'_m but not less than 2,000 psi (13.79 MPa). The compressive

strength of grout shall be determined in accordance with ASTM C 1019. Table 2105.2.2.1.1 Compressive Strength of Clay Masonry Net Area Compressive Strength of Clay Masonry Units (psi) Type M or S mortar Type N mortar Net Area Compressive Strength of Masonry (psi) 1,700 2,100 1,000 3,350 4,150 1,500 4,950 6,200 2,000 6,600 8,250 2,500 8,250 10,300 3,000 9,900 - 3,500 13,200 - 4,000 For SI: 1 pound per square inch = 0.00689 Mpa.

2105.2.2.1.2 Concrete masonry. The compressive strength of masonry shall be determined based on the strength of the unit and type of mortar specified using Table 2105.2.2.1.2, provided:

1. Units conform to ASTM C 55 or ASTM C 90 and are sampled and tested in accordance with ASTM C 140.
2. Thickness of bed joints does not exceed 5/8 inch (15.9 mm).
3. For grouted masonry, the grout meets one of the following requirements:
 - 3.1. Grout conforms to ASTM C 476.

3.2. Minimum grout compressive strength equals f'_m but not less than 2,000 psi (13.79 MPa). The compressive strength of grout shall be determined in accordance with ASTM C 1019. Table 2105.2.2.1.2 Compressive Strength of Concrete Masonry Net Area Compressive Strength of Concrete Masonry Units (psi) Type M or S mortar Type N mortar Net Area Compressive Strength of Masonry (psi) a 1,250 1,300 1,000 1,900 2,150 1,500 2,800 3,050 2,000 3,750 4,050 2,500 4,800 5,250 3,000 For SI: 1 inch = 25.4 mm, 1 pound per square inch = 0.00689 Mpa. a. For units less than 4 inches in height, 85 percent of the values listed.

2105.2.2.2 Prism test method.

2105.2.2.2.1 General. The compressive strength of masonry shall be determined by the prism test method:

1. Where specified in the construction documents.
2. Where masonry does not meet the requirements for application of the unit strength method in Section 2105.2.2.1.

2105.2.2.2.2 Number of prisms per test. A prism test shall consist of three prisms constructed and tested in accordance with ASTM C 1314.

2105.3 Testing prisms from constructed masonry. When approved by the commissioner acceptance of masonry that does not meet the requirements of Section 2105.2.2.1 or 2105.2.2.2 shall be permitted to be based on tests of prisms cut from the masonry construction in accordance with Sections 2105.3.1, 2105.3.2 and 2105.3.3.

2105.3.1 Prism sampling and removal. A set of three masonry prisms that are at least 28 days old shall be saw cut from the masonry for each 5,000 square feet (465 m²) of the wall area that is in question but not less than one set of three masonry prisms for the project. The length, width and height dimensions of the prisms shall comply with the requirements of ASTM C 1314. Transporting, preparation and testing of prisms shall be in accordance with ASTM C 1314.

2105.3.2 Compressive strength calculations. The compressive strength of prisms shall be the value calculated in accordance ASTM C 1314, except that the net cross-sectional area of the prism shall be based on the net mortar bedded area.

2105.3.3 Compliance. Compliance with the requirement for the specified compressive strength of masonry, f'_m , shall be considered satisfied provided the modified compressive strength equals or exceeds the specified f'_m . Additional testing of specimens cut from locations in question shall be permitted.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 21: MASONRY
SECTION BC 2106: SEISMIC DESIGN

NYC Administrative Code § 28-BC 2106

2106.1 Seismic design requirements for masonry.

Masonry structures and components shall comply with the requirements in Section 1.13.2.2 of ACI 530/ASCE 5/TMS 402 and Section 1.13.3, 1.13.4, 1.13.5, 1.13.6 or 1.13.7 of ACI 530/ASCE 5/TMS 402 depending on the structure's seismic design category as determined in Section 1616.3. All masonry walls, unless isolated on three edges from in-plane motion of the basic structural systems, shall be considered to be part of the seismic-force-resisting system. In addition, the following requirements shall be met.

2106.1.1 Basic seismic-force-resisting system. Buildings relying on masonry shear walls as part of the basic seismic-force-resisting system shall comply with Section 1.13.2.2 of ACI 530/ASCE 5/TMS 402 or with Section 2106.1.1.1, 2106.1.1.2 or 2106.1.1.3.

2106.1.1.1 Ordinary plain prestressed masonry shear walls. Ordinary plain prestressed masonry shear walls shall comply with the requirements of Chapter 4 of ACI 530/ASCE 5/TMS 402.

2106.1.1.2 Intermediate prestressed masonry shear walls. Intermediate prestressed masonry shear walls shall comply with the requirements of Section 1.13.2.2.4 of ACI 530/ASCE 5/TMS 402 and shall be designed by Chapter 4, Section 4.5.3.3, of ACI 530/ASCE 5/TMS 402 for flexural strength and by Section 3.2.4.1.2 of ACI 530/ASCE 5/TMS 402 for shear strength. Sections 1.13.2.2.5(a), 3.2.3.5 and 3.2.4.3.2(c) of ACI 530/ASCE 5/TMS 402 shall be applicable for reinforcement. Flexural elements subjected to load reversals shall be symmetrically reinforced. The nominal moment strength at any section along a member shall not be less than one-fourth the maximum moment strength. The cross-sectional area of bonded tendons shall be considered to contribute to the minimum reinforcement in Section 1.13.2.2.4 of ACI 530/ASCE 5/TMS 402. Tendons shall be located in cells that are grouted the full height of the wall.

2106.1.1.3 Special prestressed masonry shear walls. Special prestressed masonry shear walls shall comply with the requirements of Section 1.13.2.2.5 of ACI 530/ASCE 5/TMS 402 and shall be designed by Chapter 4, Section 4.5.3.3, of ACI 530/ASCE 5/TMS 402 for flexural strength and by Section 3.2.4.1.2 of ACI 530/ASCE 5/TMS 402 for shear

strength. Sections 1.13.2.2.5(a), 3.2.3.5 and 3.2.4.3.2(c) of ACI 530/ASCE 5/TMS 402 shall be applicable for reinforcement. Flexural elements subjected to load reversals shall be symmetrically reinforced. The nominal moment strength at any section along a member shall not be less than one-fourth the maximum moment strength. The cross-sectional area of bonded tendons shall be considered to contribute to the minimum reinforcement in Section 1.13.2.2.5 of ACI 530/ASCE 5/TMS 402. Special prestressed masonry shear walls shall also comply with the requirements of Section 3.2.3.5 of ACI 530/ASCE 5/TMS 402.

2106.1.1.3.1 Prestressing tendons. Prestressing tendons shall consist of bars conforming to ASTM A 722.

2106.1.1.3.2 Grouting. All cells of the masonry wall shall be grouted.

2106.2 Anchorage of masonry walls. Masonry walls shall be anchored to the roof and floors that provide lateral support for the wall in accordance with Section 1604.8.2.

2106.3 Seismic Design Category B. Structures assigned to Seismic Design Category B shall conform to the requirements of Section 1.13.4 of ACI 530/ASCE 5/TMS 402.

2106.3.1 Masonry walls not part of the lateral-force-resisting system. Masonry partition walls, masonry screen walls and other masonry elements that are not designed to resist vertical or lateral loads, other than those induced by their own mass, shall be isolated from the structure so that the vertical and lateral forces are not imparted to these elements. Isolation joints and connectors between these elements and the structure shall be designed to accommodate the design story drift.

2106.4 Seismic Design Category C. Structures assigned to Seismic Design Category C shall conform to the requirements of Section 1.13.5 of ACI 530/ASCE 5/TMS 402 and the additional requirements of this section.

2106.4.1 Design of discontinuous members that are part OF THE lateral-force-resisting system. Columns and pilasters that are part of the lateral-force-resisting system and that support reactions from discontinuous stiff members such as walls shall be provided with transverse reinforcement spaced at no more than one-fourth of the least nominal dimension of the column or pilaster. The minimum transverse reinforcement ratio shall be 0.0015. Beams supporting reactions from discontinuous walls or frames shall be provided with transverse reinforcement spaced at no more than one-half of the nominal depth of the beam. The minimum transverse reinforcement ratio shall be 0.0015.

2106.4.2 Masonry walls not part of the lateral-force-resisting system. Masonry partition walls, masonry screen walls and other masonry elements that are not designed to resist vertical or lateral loads, other than those loads induced by their own mass, shall be isolated from the structure so that the vertical and lateral forces are not imparted to these elements. Isolation joints and connectors between these elements and the structure shall be designed to accommodate the design story drift.

2106.5 Seismic Design Category D. Structures assigned to Seismic Design Category D shall conform to the requirements of Section 2106.4, Section 1.13.6 of ACI 530/ASCE 5/TMS 402 and the additional requirements of this section.

2106.5.1 Loads for shear walls designed by the working stress design method. When calculating in-plane shear or diagonal tension stresses by the working stress design method, shear walls that resist seismic forces shall be designed to resist 1.5 times the seismic forces required by Chapter 16. The 1.5 multiplier need not be applied to the overturning moment.

2106.5.2 Shear wall shear strength. For a shear wall whose nominal shear strength exceeds the shear corresponding to development of its nominal flexural strength, two shear regions exist.

For all cross sections within a region defined by the base of the shear wall and a plane at a distance L_w above the

base of the shear wall, the nominal shear strength shall be determined by Equation 21-1.

$$V_n = A_n r n f_y \text{ (Equation 21-1)}$$

The required shear strength for this region shall be calculated at a distance $L_w/2$ above the base of the shear wall, but not to exceed one-half story height.

For the other region, the nominal shear strength of the shear wall shall be determined from Section 2108.

2106.6 Reserved.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008

2106.5.1 amended L.L. 8/2008 § 148, eff. July 1, 2008.



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Chapter 21: MASONRY
SECTION BC 2107: WORKING STRESS DESIGN

NYC Administrative Code § 28-BC 2107

2107.1 General.

The design of masonry structures using working stress design shall comply with Section 2106 and the requirements of Chapters 1 and 2, except Section 2.1.2.1 and 2.1.3.3 of ACI 530/ASCE 5/TMS 402. The text of ACI 530/ASCE 5/TMS 402 shall be modified as follows.

2107.2 Modifications to ACI 530/ASCE 5/TMS 402.

2107.2.1 ACI 530/ASCE 5/TMS 402, Chapter 2. Special inspection during construction shall be provided as set forth in Section 1704.5.

2107.2.2 ACI 530/ASCE 5/TMS 402, Section 2.1.6. Masonry columns used only to support light-frame roofs of carports, porches, sheds or similar structures with a maximum area of 450 square feet (41.8 m²) assigned to Seismic Design Category B or C are permitted to be designed and constructed as follows:

1. Concrete masonry materials shall be in accordance with Section 2103.1. Clay or shale masonry units shall be in accordance with Section 2103.2.
2. The nominal cross-sectional dimension of columns shall not be less than 8 inches (203 mm).
3. Columns shall be reinforced with not less than one No. 4 bar centered in each cell of the column.
4. Columns shall be grouted solid.
5. Columns shall not exceed 12 feet (3658 mm) in height.
6. Roofs shall be anchored to the columns. Such anchorage shall be capable of resisting the design loads specified in Chapter 16.

7. Where such columns are required to resist uplift loads, the columns shall be anchored to their footings with two No. 4 bars extending a minimum of 24 inches (610 mm) into the columns and bent horizontally a minimum of 15 inches (381 mm) in opposite directions into the footings. One of these bars is permitted to be the reinforcing bar specified in Item 3 above. The total weight of a column and its footing shall not be less than 1.5 times the design uplift load.

2107.2.3ACI 530/ASCE 5/TMS 402, Section 2.1.10.6.1.1, lap splices. The minimum length of lap splices for reinforcing bars in tension or compression, l_{ld} , shall be calculated by Equation 21-2, but shall not be less than 15 inches (381 mm).

[SEE graphical material in printed version]

2107.2.4ACI 530/ASCE 5/TMS 402, maximum bar size. The bar diameter shall not exceed one-eighth of the nominal wall thickness and shall not exceed one-quarter of the least dimension of the cell, course or collar joint in which it is placed.

2107.2.5ACI 530/ASCE 5/TMS 402, splices for large bars. Reinforcing bars larger than No. 9 in size shall be spliced using mechanical connectors in accordance with ACI 530/ASCE 5/TMS 402, Section 2.1.10.6.3.

2107.2.6ACI 530/ASCE 5/TMS 402, Maximum reinforcement percentage. Special reinforced masonry shear walls having a shear span ratio, M/Vd , equal to or greater than 1.0 and having an axial load, P greater than $0.05 f_m A_n$ which are subjected to in-plane forces, shall have a maximum reinforcement ratio, ρ_{max} , not greater than that computed as follows:

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 SECTION BC 2108: STRENGTH DESIGN OF MASONRY

NYC Administrative Code § 28-BC 2108

2108.1 General.

The design of masonry structures using strength design shall comply with Section 2106 and the requirements of Chapters 1 and 3 of ACI 530/ASCE 5/TMS 402. The minimum nominal thickness for hollow clay masonry in accordance with Section 3.2.5.5 of ACI 530/ASCE 5/TMS 402 shall be 4 inches (102 mm). The text of ACI 530/ASCE 5/TMS 402 shall be modified as follows;

2108.2ACI 530/ASCE 5/TMS 402, Section 3.2.2(g).Modify Section 3.2.2(g) as follows:

3.2.2(g). The relationship between masonry compressive stress and masonry strain shall be assumed to be defined by the following:

Masonry stress of $0.80 f_m$ shall be assumed uniformly distributed over an equivalent compression zone bounded by edges of the cross section and a straight line located parallel to the neutral axis at a distance, $a = 0.80 c$, from the fiber of maximum compressive strain. The distance, c , from the fiber of maximum strain to the neutral axis shall be measured perpendicular to that axis. For out-of-plane bending, the width of the equivalent stress block shall not be taken greater than six times the nominal thickness of the masonry wall or the spacing between reinforcement, whichever is less. For in-plane bending of flanged walls, the effective flange width shall not exceed six times the thickness of the flange.

2108.3ACI 530/ASCE 5/TMS 402, Section 3.2.3.4.Modify Section 3.2.3.4 (b) and (c) as follows:

3.2.3.4 (b). A welded splice shall have the bars butted and welded to develop at least 125 percent of the yield strength, f_y , of the bar in tension or compression, as required. Welded splices shall be of ASTM A 706 steel reinforcement. Welded splices shall not be permitted in plastic hinge zones of intermediate or special reinforced walls or special moment frames of masonry.

3.2.3.4 (c). Mechanical splices shall be classified as Type 1 or 2 according to Section 21.2.6.1 of ACI 318. Type 1 mechanical splices shall not be used within a plastic hinge zone or within a beam-column joint of intermediate or special reinforced masonry shear walls or special moment frames. Type 2 mechanical splices are permitted in any location within a member.

2108.4ACI 530/ASCE 5/TMS 402, Section 3.2.3.5.1. Add the following text to Section 3.2.3.5.1:

For special prestressed masonry shear walls, strain in all prestressing steel shall be computed to be compatible with a strain in the extreme tension reinforcement equal to five times the strain associated with the reinforcement yield stress, f_y . The calculation of the maximum reinforcement shall consider forces in the prestressing steel that correspond to these calculated strains.



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SECTION BC 2109: EMPIRICAL DESIGN OF MASONRY

NYC Administrative Code § 28-BC 2109

2109.1 General.

Empirically designed masonry shall conform to this chapter or Chapter 5 of ACI 530/ASCE 5/TMS 402.

2109.1.1 Limitations. Empirical masonry design shall not be utilized for any of the following conditions:

1. The design or construction of masonry in buildings assigned to Seismic Design Category D as specified in Section 1616, and the design of the seismic-force-resisting system for buildings assigned to Seismic Design Category B or C.

2. Buildings more than 35 feet (10 668 mm) in height which have masonry wall lateral-force-resisting systems.

In buildings that exceed one or more of the above limitations, masonry shall be designed in accordance with the engineered design provisions of Section 2107 or 2108.

2109.2 Lateral stability.

2109.2.1 Shear walls. Where the structure depends upon masonry walls for lateral stability, shear walls shall be provided parallel to the direction of the lateral forces resisted.

2109.2.1.1 Shear wall thickness. Minimum nominal thickness of masonry shear walls shall be 8 inches (203 mm).

Exception: Shear walls of one-story buildings are permitted to be a minimum nominal thickness of 6 inches (152 mm).

2109.2.1.2 Cumulative length of shear walls. In each direction in which shear walls are required for lateral stability, shear walls shall be positioned in two separate planes. The minimum cumulative length of shear walls provided shall be 0.4 times the long dimension of the building. Cumulative length of shear walls shall not include openings or any

element whose length is less than one-half its height.

2109.2.1.3 Maximum diaphragm ratio. Masonry shear walls shall be spaced so that the length-to-width ratio of each diaphragm transferring lateral forces to the shear walls does not exceed the values given in Table 2109.2.1.3. Table 2109.2.1.3 Diaphragm Length-to-Width Ratios Floor or Roof Diaphragm Construction Maximum Length-to-Width Ratio of Diaphragm Panel Cast-in-place concrete 5:1 Precast concrete 4:1 Metal deck with concrete fill 3:1 Metal deck with no fill 2:1 Wood 2:1

2109.2.2 Roofs. The roof construction shall be designed so as not to impart out-of-plane lateral thrust to the walls under roof gravity load.

2109.2.3 Surface-bonded walls. Dry-stacked, surface-bonded concrete masonry walls shall comply with the requirements of this code for masonry wall construction, except where otherwise noted in this section.

2109.2.3.1 Strength. Dry-stacked, surface-bonded concrete masonry walls shall be of adequate strength and proportions to support all superimposed loads without exceeding the allowable stresses listed in Table 2109.2.3.1. Allowable stresses not specified in Table 2109.2.3.1 shall comply with the requirements of ACI 530/ASCE 5/TMS 402. Table 2109.2.3.1 Allowable Stress Gross Cross-Sectional Area for Dry-Stacked, Surface-Bonded Concrete Masonry Walls Description Maximum Allowable Stress (psi) Compression standard block 45 Shear 10 Flexural tension

Vertical span 18

Horizontal span 30 For SI: 1 pound per square inch = 0.006895 Mpa.

2109.2.3.2 Construction. Construction of dry-stacked, surface-bonded masonry walls, including stacking and leveling of units, mixing and application of mortar and curing and protection shall comply with ASTM C 946.

2109.3 Compressive stress requirements.

2109.3.1 Calculations. Compressive stresses in masonry due to vertical dead plus live loads, excluding wind or seismic loads, shall be determined in accordance with Section 2109.3.2.1. Dead and live loads shall be in accordance with Chapter 16, with live load reductions as permitted in Section 1607.9.

2109.3.2 Allowable compressive stresses. The compressive stresses in masonry shall not exceed the values given in Table 2109.3.2. Stress shall be calculated based on specified rather than nominal dimensions. Table 2109.3.2 Allowable Compressive Stresses for Empirical Design of Masonry Construction; Compressive Strength of Unit Gross Area (psi) Allowable Compressive Stresses a Gross Cross-Sectional Area (psi) Type M or S mortar Type N mortar Solid masonry of brick and other solid units of clay or shale; sand-lime or concrete brick:

8,000 or greater 350 300

4,500 225 200

2,500 160 140

1,500 115 100 Grouted masonry, of clay or shale; sand-lime or concrete:

4,500 or greater 225 200

2,500 160 140

1,500 115 100 Solid masonry of solid concrete masonry units:

3,000 or greater 225 200

2,000 160 140

1,200 115 100 Masonry of hollow load-bearing units:

2,000 or greater 140 120

1,500 115 100

1,000 75 70

700 60 55 Hollow walls (noncomposite masonry bonded)b

Solid units:

2,500 or greater 160 140

1,500 115 100

Hollow units 75 70 Stone ashlar masonry:

Granite 720 640

Limestone or marble 450 400

Sandstone or cast stone 360 320 Rubble stone masonry

Coursed, rough or random 120 100 For SI: 1 pound per square inch = 0.006895 MPa.a. Linear interpolation for determining allowable stresses for masonry units having compressive strengths which are intermediate between those given in the table is permitted.b. Where floor and roof loads are carried upon one wythe, the gross cross-sectional area is that of the wythe underload; if both wythes are loaded, the gross cross-sectional area is that of the wall minus the area of the cavity between the wythes. Walls bonded with metal ties shall be considered as noncomposite walls unless collar joints are filled with mortar or grout.

2109.3.2.1 Calculated compressive stresses. Calculated compressive stresses for single wythe walls and for multi-wythe composite masonry walls shall be determined by dividing the design load by the gross cross-sectional area of the member. The area of openings, chases or recesses in walls shall not be included in the gross cross-sectional area of the wall.

2109.3.2.2 Multi-wythe walls. The allowable stress shall be as given in Table 2109.3.2 for the weakest combination of the units used in each wythe.

2109.4 Lateral support.

2109.4.1 Intervals. Masonry walls shall be laterally supported in either the horizontal or vertical direction at intervals not exceeding those given in Table 2109.4.1. Table 2109.4.1 Wall Lateral Support Requirements Construction Maximum Wall Length to Thickness or Wall Height to Thickness Bearing walls

Solid units or fully grouted 20

All others 18 Nonbearing walls

Exterior18

Interior36

2109.4.2Thickness.Except for cavity walls and cantilever walls, the thickness of a wall shall be its nominal thickness measured perpendicular to the face of the wall. For cavity walls, the thickness shall be determined as the sum of the nominal thicknesses of the individual wythes. For cantilever walls, except for parapets, the ratio of height-to-nominal thickness shall not exceed six for solid masonry or four for hollow masonry. For parapets, see Section 2109.5.5.

2109.4.3Support elements.Lateral support shall be provided by cross-walls, pilasters, buttresses or structural frame members when the limiting distance is taken horizontally, or by floors, roofs acting as diaphragms or structural frame members when the limiting distance is taken vertically.

2109.5Thickness of masonry.Minimum thickness requirements shall be based on nominal dimensions of masonry.

2109.5.1Thickness of walls.The thickness of masonry walls shall conform to the requirements of Section 2109.5.

2109.5.2Minimum thickness.The minimum thickness of masonry bearing walls more than one story high shall be 8 inches (203 mm) where the height floor to floor does not exceed 12 feet (3658 mm), the floor live load does not exceed 60 pounds per square feet (psf) (0.156 kg/m²), and the roof is designed so that the dead load imparts no lateral thrust to the wall. Bearing walls of one-story buildings shall not be less than 6 inches (152 mm) thick. However, the overall thickness of cavity or masonry-bonded hollow walls shall not be less than 8 inches (203 mm), including cavity.

2109.5.2.1Walls above roof level.Masonry walls above roof level, 12 feet (3658 mm) or less in height, enclosing stairways, machinery rooms, shafts, or penthouses, may be up to 8 inches (203 mm) thick and shall be considered as neither increasing the height nor requiring any increase in the thickness of the wall below.

2109.5.3Rubble stone walls.The minimum thickness of rough or random or coursed rubble stone walls shall be 16 inches (406 mm).

2109.5.4Change in thickness.Where walls of masonry of hollow units or masonry bonded hollow walls are decreased in thickness, a course or courses of solid masonry shall be interposed between the wall below and the thinner wall above, or special units or construction shall be used to transmit the loads from face shells or wythes above to those below.

2109.5.5Parapet walls.

2109.5.5.1Minimum thickness.Unreinforced parapet walls shall be at least 8 inches (203 mm) thick, and their height shall not exceed three times their thickness.

2109.5.5.2Parapet wall construction.All cells in the hollow masonry units and all joints in solid, cavity, or masonry-bonded hollow wall construction shall be filled solid with mortar. All corners of masonry parapet walls shall be reinforced with joint reinforcement or its equivalent at vertical intervals not greater than 12 inches (305 mm). Such reinforcement shall extend around the corner for at least 4 feet (1219 mm) in both directions and splices shall be lapped at least 6 inches (152 mm).

2109.5.5.3Parapet anchorage.Parapets of buildings taller than 35 feet (10 668 mm) shall be reinforced vertically and shall be anchored to the roof and floors that provide lateral support for the wall in accordance with section 1604.8.2.

2109.5.5.4Additional provisions.Additional provisions for parapet walls are contained in Sections 1503.2 and 1503.3.

2109.5.6 Foundation walls. Foundation walls shall comply with the requirements of Sections 2109.5.6.1 and 2109.5.6.2.

2109.5.6.1 Minimum thickness. Minimum thickness for foundation walls shall comply with the requirements of Table 2109.5.6.1. The provisions of Table 2109.5.6.1 are only applicable where the following conditions are met:

1. The foundation wall does not exceed 8 feet (2438 mm) in height between lateral supports,
 2. The terrain surrounding foundation walls is graded to drain surface water away from foundation walls,
 3. Backfill is drained to remove ground water away from foundation walls,
 4. Lateral support is provided at the top of foundation walls prior to back-filling,
 5. The length of foundation walls between perpendicular masonry walls or pilasters is a maximum of three times the basement wall height,
 6. The backfill is granular and soil conditions in the area are non-expansive, and
 7. Masonry is laid in running bond using Type M or S mortar.
- Table 2109.5.6.1 Foundation Wall Construction
- | Wall Construction | Nominal Wall Thickness (inches) | Maximum Depth of Unbalanced Backfill (feet) |
|-----------------------|---------------------------------|---|
| Hollow unit masonry | 8 | 10 |
| Solid unit masonry | 8 | 12 |
| Fully grouted masonry | 8 | 12 |
- For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

2109.5.6.2 Design requirements. Where the requirements of Section 2109.5.6.1 are not met, foundation walls shall be designed in accordance with Section 1805.5.

2109.5.7 Partitions. The minimum thickness for partitions shall be as follows:

Height of Walls	Thickness
8 ft. and under	2 in.
Over 8 ft. to 12 ft.	3 in.
Over 12 ft. to 16 ft.	4 in.
Over 16 ft. to 20 ft.	6 in.
Over 20 ft. to 24 ft.	8 in.

2109.6 Bond.

2109.6.1 General. The facing and backing of multi-wythe masonry walls shall be bonded in accordance with Section 2109.6.2, 2109.6.3 or 2109.6.4.

2109.6.2 Bonding with masonry headers.

2109.6.2.1 Solid units. Where the facing and backing (adjacent wythes) of solid masonry construction are bonded by means of masonry headers, no less than 4 percent of the wall surface of each face shall be composed of headers extending not less than 3 inches (76 mm) into the backing. The distance between adjacent full-length headers shall not exceed 24 inches (610 mm) either vertically or horizontally. In walls in which a single header does not extend through the wall, headers from the opposite sides shall overlap at least 3 inches (76 mm), or headers from opposite sides shall be covered with another header course overlapping the header below at least 3 inches (76 mm).

2109.6.2.2 Hollow units. Where two or more hollow units are used to make up the thickness of a wall, the stretcher courses shall be bonded at vertical intervals not exceeding 34 inches (864 mm) by lapping at least 3 inches (76 mm) over the unit below, or by lapping at vertical intervals not exceeding 17 inches (432 mm) with units that are at least 50 percent greater in thickness than the units below.

2109.6.2.3 Masonry bonded hollow walls. In masonry bonded hollow walls, the facing and backing shall be bonded so that not less than 4 percent of the wall surface of each face is composed of masonry bonded units extending not less than 3 inches (76 mm) into the backing. The distance between adjacent bonders shall not exceed 24 inches (610 mm).

either vertically or horizontally.

2109.6.3 Bonding with wall ties or joint reinforcement.

2109.6.3.1 Bonding with wall ties. Except as required by Section 2109.6.3.1.1, where the facing and backing (adjacent wythes) of masonry walls are bonded with wire size W2.8 (MW 18) wall ties or metal wire of equivalent stiffness embedded in the horizontal mortar joints, there shall be at least one metal tie for each 4 1/2 square feet (0.42 m²) of wall area. The maximum vertical distance between ties shall not exceed 24 inches (610 mm), and the maximum horizontal distance shall not exceed 36 inches (914 mm). Rods or ties bent to rectangular shape shall be used with hollow masonry units laid with the cells vertical. In other walls, the ends of ties shall be bent to 90-degree (1.57 rad) angles to provide hooks no less than 2 inches (51 mm) long. Wall ties shall be without drips. Additional bonding ties shall be provided at all openings, spaced not more than 36 inches (914 mm) apart around the perimeter and within 12 inches (305 mm) of the opening.

2109.6.3.1.1 Bonding with adjustable wall ties. Where the facing and backing (adjacent wythes) of masonry are bonded with adjustable wall ties, there shall be at least one tie for each 1.77 square feet (0.16 m²) of wall area. Neither the vertical nor horizontal spacing of the adjustable wall ties shall exceed 16 inches (406 mm). The maximum vertical offset of bed joints from one wythe to the other shall be 1 1/4 inches (32 mm). The maximum clearance between connecting parts of the ties shall be 1/16 inch (1.6 mm). When pintle legs are used, ties shall have at least two wire size W2.8 (MW 18) legs.

2109.6.3.2 Bonding with prefabricated joint reinforcement. Where the facing and backing (adjacent wythes) of masonry are bonded with prefabricated joint reinforcement, there shall be at least one cross wire serving as a tie for each 22/3 square feet (0.25 m²) of wall area. The vertical spacing of the joint reinforcing shall not exceed 24 inches (610 mm). Cross wires on prefabricated joint reinforcement shall not be less than W1.7 (MW 11) and shall be without drips. The longitudinal wires shall be embedded in the mortar.

2109.6.4 Bonding with natural or cast stone.

2109.6.4.1 Ashlar masonry. In ashlar masonry, bonder units, uniformly distributed, shall be provided to the extent of not less than 10 percent of the wall area. Such bonder units shall extend not less than 4 inches (102 mm) into the backing wall.

2109.6.4.2 Rubble stone masonry. Rubble stone masonry 24 inches (610 mm) or less in thickness shall have bonder units with a maximum spacing of 36 inches (914 mm) vertically and 36 inches (914 mm) horizontally, and if the masonry is of greater thickness than 24 inches (610 mm), shall have one bonder unit for each 6 square feet (0.56 m²) of wall surface on both sides.

2109.6.5 Masonry bonding pattern.

2109.6.5.1 Masonry laid in running bond. Each wythe of masonry shall be laid in running bond, head joints in successive courses shall be offset by not less than one-fourth the unit length or the masonry walls shall be reinforced longitudinally as required in Section 2109.6.5.2.

2109.6.5.2 Masonry laid in stack bond. Where unit masonry is laid with less head joint offset than in Section 2109.6.5.1, the minimum area of horizontal reinforcement placed in mortar bed joints or in bond beams spaced not more than 48 inches (1219 mm) apart, shall be 0.0003 times the vertical cross-sectional area of the wall.

2109.7 Anchorage.

2109.7.1 General. Masonry elements shall be anchored in accordance with Sections 2109.7.2 through 2109.7.4.

2109.7.2 Intersecting walls. Masonry walls depending upon one another for lateral support shall be anchored or bonded at locations where they meet or intersect by one of the methods indicated in Sections 2109.7.2.1 through 2109.7.2.5.

2109.7.2.1 Bonding pattern. Fifty percent of the units at the intersection shall be laid in an overlapping masonry bonding pattern, with alternate units having a bearing of not less than 3 inches (76 mm) on the unit below.

2109.7.2.2 Steel connectors. Walls shall be anchored by steel connectors having a minimum section of 1/4 inch (6.4 mm) by 11/2 inches (38 mm), with ends bent up at least 2 inches (51 mm) or with cross pins to form anchorage. Such anchors shall be at least 24 inches (610 mm) long and the maximum spacing shall be 48 inches (1219 mm).

2109.7.2.3 Joint reinforcement. Walls shall be anchored by joint reinforcement spaced at a maximum distance of 8 inches (203 mm). Longitudinal wires of such reinforcement shall be at least wire size W1.7 (MW 11) and shall extend at least 30 inches (762 mm) in each direction at the intersection.

2109.7.2.4 Interior nonload-bearing walls. Interior nonload-bearing walls shall be anchored at their intersection, at vertical intervals of not more than 16 inches (406 mm) with joint reinforcement or 1/4-inch (6.4 mm) mesh galvanized hardware cloth.

2109.7.2.5 Ties, joint reinforcement or anchors. Other metal ties, joint reinforcement or anchors, if used, shall be spaced to provide equivalent area of anchorage to that required by this section and be approved by the commissioner.

2109.7.3 Floor and roof anchorage. Floor and roof diaphragms providing lateral support to masonry shall comply with the live loads in Section 1607.3 and shall be connected to the masonry in accordance with Sections 2109.7.3.1 through 2109.7.3.3.

2109.7.3.1 Wood floor joists. Wood floor joists bearing on masonry walls shall be anchored to the wall at intervals not to exceed 72 inches (1829 mm) by metal strap anchors. Joists parallel to the wall shall be anchored with metal straps spaced not more than 72 inches (1829 mm) o.c. extending over or under and secured to at least three joists. Blocking shall be provided between joists at each strap anchor.

2109.7.3.1.1 Bearing details. Concentrated loads shall be supported upon construction of solid masonry, concrete, or masonry of hollow units with cells filled with mortar, grout, or concrete and of sufficient height to distribute safely the loads to the wall or column, or other adequate provisions shall be made to distribute the loads.

2109.7.3.1.2 Joists. Solid construction for support under joists shall be at least 2 1/4 inches (57 mm) in height, and joists supported on such construction shall extend into the masonry at least 3 inches (76 mm).

2109.7.3.1.3 Beams. Solid construction for support under beams, girders, or other concentrated loads shall be at least 4 inches (102 mm) in height, and the bearing of beams shall extend into the masonry at least 4 inches (102 mm). 2109.7.3.1.4 Isolated piers. Isolated masonry piers shall be bonded as required for solid walls of the same thickness and shall be provided with adequate means for distributing the load at the top of the pier.

2109.7.3.2 Steel floor joists. Steel floor joists bearing on masonry walls shall be anchored to the wall with 3/8-inch (9.5 mm) round bars, or their equivalent, spaced not more than 72 inches (1829 mm) o.c. Where joists are parallel to the wall, anchors shall be located at joist bridging.

2109.7.3.3 Roof diaphragms. Roof diaphragms shall be anchored to masonry walls with 1/2-inch-diameter (12.7 mm) bolts, 72 inches (1829 mm) o.c. or their equivalent. Bolts shall extend and be embedded at least 15 inches (381 mm) into the masonry, or be hooked or welded to not less than 0.20 square inch (0.02 m²) of bond beam reinforcement placed not less than 6 inches (152 mm) from the top of the wall.

2109.7.4 Walls adjoining structural framing. Where walls are dependent upon the structural frame for lateral support, they shall be anchored to the structural members with metal anchors or otherwise keyed to the structural members. Metal anchors shall consist of 1/2-inch (12.7 mm) bolts spaced at 48 inches (1219 mm) o.c. embedded 4 inches (102 mm) into the masonry, or their equivalent area.

2109.7.4.1 Use of existing walls. An existing masonry wall may be used in the alteration or extension of a building provided that it meets the requirements of this standard.

2109.7.4.2 Walls of insufficient thickness. Existing walls of masonry units that are structurally sound, but that are of insufficient thickness when increased in height, may be strengthened by an addition of similar masonry units laid in type M or S mortar. The foundations and lateral support shall be equivalent to those required for newly constructed walls under similar conditions. All such linings shall be thoroughly bonded into existing masonry by toothings to assure combined action of wall and lining. Toothings shall be distributed uniformly throughout the wall, and shall aggregate in vertical cross-sectional area at least 15 percent of the total surface area of the lining. Stresses in the masonry under the new conditions shall not exceed the allowable stresses.

2109.7.4.3 Precautions during erection. Temporary bracing shall be used wherever necessary to resist loads to which the walls may be subjected during erection. Such bracing shall remain in place as long as may be required for safety.

2109.7.4.4 Horizontal joints. All concrete framed buildings to be constructed over 35 feet (10 668 mm) in height (as measured from adjoining grade to the main roof level), whose exterior wythe are of cavity wall construction with steel lintels, shall have horizontal joints in the exterior wythe to prevent masonry distress induced by vertical shortening of the structural frame.

2109.7.4.4.1 Joint minimum thickness. Unless substantiated as indicated by 2109.7.4.4.2, horizontal joints shall be 1/4 inch (6.4 mm) minimum thickness, with neoprene, polyethylene, or urethane gasket or equivalent joint filler filling the entire joint, except for a recess from the toe of the lintel angle to the exterior of the facing brick, to provide space for caulking. These joints shall be placed at each floor.

2109.7.4.4.2 Joint thickness by analysis. The applicant of record shall submit an engineering analysis establishing that proposed building horizontal joints spaced further apart than in 2109.7.4.4.1 are sufficient to provide for the effects of vertical shortening of the structural frame.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 21: MASONRY
SECTION BC 2110: GLASS UNIT MASONRY

NYC Administrative Code § 28-BC 2110

2110.1 Scope.

This section covers the empirical requirements for non-load-bearing glass unit masonry elements in exterior or interior walls.

2110.1.1 Limitations. Solid or hollow approved glass block shall not be used in firewalls, party walls, fire barriers or fire partitions, or for load-bearing construction. Such blocks shall be erected with mortar and reinforcement in metal channel-type frames, structural frames, masonry or concrete recesses, embedded panel anchors as provided for both exterior and interior walls or other approved joint materials. Wood strip framing shall not be used in walls required to have a fire-resistance rating by other provisions of this code.

Exception: Glass-block assemblies having a fire protection rating of not less than 3/4 hour shall be permitted as opening protectives in accordance with Section 715 in fire barriers and fire partitions that have a required fire-resistance rating of 1 hour and do not enclose exit stairways or exit passageways.

2110.2 Units. Hollow or solid glass-block units shall be standard or thin units.

2110.2.1 Standard units. The specified thickness of standard units shall be 37/8 inches (98 mm).

2110.2.2 Thin units. The specified thickness of thin units shall be 31/8 inches (79 mm) for hollow units or 3 inches (76 mm) for solid units.

2110.3 Panel size.

2110.3.1 Exterior standard-unit panels. The maximum area of each individual exterior standard-unit panel shall be 144 square feet (13.4 m²) when the design wind pressure is 20 psf (958 N/m²). The maximum panel dimension between structural supports shall be 25 feet (7620 mm) in width or 20 feet (6096 mm) in height. The panel areas are permitted to be adjusted in accordance with Figure 2110.3.1 for other wind pressures.

[SEE graphical material in printed version]

2110.3.2Exterior thin-unit panels.The maximum area of each individual exterior thin-unit panel shall be 85 square feet (7.9 m²). The maximum dimension between structural supports shall be 15 feet (4572 mm) in width or 10 feet (3048 mm) in height. Thin units shall not be used in applications where the design wind pressure exceeds 20 psf (958 N/m²).

2110.3.3Interior panels.The maximum area of each individual standard-unit panel shall be 250 square feet (23.2 m²). The maximum area of each thin-unit panel shall be 150 square feet (13.9 m²). The maximum dimension between structural supports shall be 25 feet (7620 mm) in width or 20 feet (6096 mm) in height.

2110.3.4Solid units.The maximum area of solid glass-block wall panels in both exterior and interior walls shall not be more than 100 square feet (9.3 m²).

2110.3.5Curved panels.The width of curved panels shall conform to the requirements of Sections 2110.3.1, 2110.3.2 and 2110.3.3, except additional structural supports shall be provided at locations where a curved section joins a straight section, and at inflection points in multi-curved walls.

2110.4Support.

2110.4.1Isolation.Glass unit masonry panels shall be isolated so that in-plane loads are not imparted to the panel.

2110.4.2Vertical.Maximum total deflection of structural members supporting glass unit masonry shall not exceed 1/600.

2110.4.3Lateral.Glass unit masonry panels more than one unit wide or one unit high shall be laterally supported along their tops and sides. Lateral support shall be provided by panel anchors along the top and sides spaced not more than 16 inches (406 mm) o.c. or by channel-type restraints. Glass unit masonry panels shall be recessed at least 1 inch (25 mm) within channels and chases. Channel-type restraints shall be oversized to accommodate expansion material in the opening and packing and sealant between the framing restraints and the glass unit masonry perimeter units. Lateral supports for glass unit masonry panels shall be designed to resist applied loads, or a minimum of 200 pounds per lineal feet (plf) (2919 N/m) of panel, whichever is greater.

Exceptions:

1. Lateral support at the top of glass unit masonry panels that are no more than one unit wide shall not be required.
2. Lateral support at the sides of glass unit masonry panels that are no more than one unit high shall not be required.

2110.4.3.1Single unit panels.Single unit glass unit masonry panels shall conform to the requirements of Section 2110.4.3, except lateral support shall not be provided by panel anchors.

2110.5Expansion joints.Glass unit masonry panels shall be provided with expansion joints along the top and sides at all structural supports. Expansion joints shall have sufficient thickness to accommodate displacements of the supporting structure, but shall not be less than 3/8 inch (9.5 mm) in thickness. Expansion joints shall be entirely free of mortar or other debris and shall be filled with resilient material. The sills of glass-block panels shall be coated with approved water-based asphaltic emulsion, or other elastic waterproofing material, prior to laying the first mortar course.

2110.6Mortar.Mortar for glass unit masonry shall comply with Section 2103.7.

2110.7Reinforcement.Glass unit masonry panels shall have horizontal joint reinforcement spaced not more than 16 inches (406 mm) on center, located in the mortar bed joint, and extending the entire length of the panel but not across expansion joints. Longitudinal wires shall be lapped a minimum of 6 inches (152 mm) at splices. Joint reinforcement

shall be placed in the bed joint immediately below and above openings in the panel. The reinforcement shall have not less than two parallel longitudinal wires of size W1.7 (MW 11), and have welded cross wires of size W1.7 (MW 11).

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008

2110.1.1 Exception amended L.L. 8/2008 § 149, eff. July 1, 2008.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 21: MASONRY
SECTION BC 2111: MASONRY FIREPLACES

NYC Administrative Code § 28-BC 2111

2111.1 Definition.

A masonry fireplace is a fireplace constructed of concrete or masonry. Masonry fireplaces shall be constructed in accordance with this section, Table 2111.1 and Figure 2111.1.

[SEE graphical material in printed version]

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2111.2Footings and foundations.Footings for masonry fireplaces and their chimneys shall be constructed of reinforced concrete or solid masonry at least 12 inches (305 mm) thick and shall extend at least 6 inches (152 mm) beyond the face of the fireplace or foundation wall on all sides. Footings shall be founded on natural undisturbed earth or engineered fill below frost depth. In areas not subjected to freezing, footings shall be at least 12 inches (305 mm) below finished grade. Foundations and footings shall be designed to support the fireplace loading and shall have a minimum fire resistance rating of three hours.

2111.2.1Ash dump clean-out.Clean-out openings, located within foundation walls below fireboxes, when provided, shall be equipped with ferrous metal or masonry doors and frames constructed to remain tightly closed, except when in use. Clean outs shall be accessible and located so that ash removal will not create a hazard to combustible materials.

2111.3Seismic reinforcing.Masonry or concrete fireplaces shall be constructed, anchored, supported and reinforced as required in this chapter. In Seismic Design Category D, masonry and concrete fireplaces shall be reinforced and anchored as detailed in Sections 2111.3.1, 2111.3.2, 2111.4 and 2111.4.1 for chimneys serving fireplaces. In Seismic Design Category B or C, reinforcement and seismic anchorage is not required.

2111.3.1 Vertical reinforcing. For fireplaces with chimneys up to 40 inches (1016 mm) wide, four No. 4 continuous vertical bars, anchored in the foundation, shall be placed in the concrete, between wythes of solid masonry or within the cells of hollow unit masonry and grouted in accordance with Section 2103.10. For fireplaces with chimneys greater than 40 inches (1016 mm) wide, two additional No. 4 vertical bars shall be provided for each additional 40 inches (1016 mm) in width or fraction thereof.

2111.3.2 Horizontal reinforcing. Vertical reinforcement shall be placed enclosed within 1/4-inch (6.4 mm) ties or other reinforcing of equivalent net cross-sectional area, spaced not to exceed 18 inches (457 mm) on center in concrete; or placed in the bed joints of unit masonry at a minimum of every 18 inches (457 mm) of vertical height. Two such ties shall be provided at each bend in the vertical bars.

2111.4 Seismic anchorage. Masonry and concrete chimneys in Seismic Design Category D shall be anchored at each floor, ceiling or roof line more than 6 feet (1829 mm) above grade, except where constructed completely within the exterior walls. Anchorage shall conform to the following requirements.

2111.4.1 Anchorage. Two 3/16-inch by 1-inch (4.8 mm by 25 mm) straps shall be embedded a minimum of 12 inches (305 mm) into the chimney. Straps shall be hooked around the outer bars and extend 6 inches (152 mm) beyond the bend. Each strap shall be fastened to a minimum of four floor joists with two 1/2-inch (12.7 mm) bolts.

2111.5 Firebox walls. Masonry fireboxes shall be constructed of solid masonry units, hollow masonry units grouted solid, stone or concrete. When a lining of firebrick at least 2 inches (51 mm) in thickness or other approved lining is provided, the minimum thickness of back and side-walls shall each be 8 inches (203 mm) of solid masonry, including the lining. The approved lining shall be able to withstand a temperature of 2000(degrees)F (1093(degrees)C) without cracking. The width of joints between firebricks shall not be greater than 1/4 inch (6.4 mm). When no lining is provided, the total minimum thickness of back and side-walls shall be 12 inches (305 mm) of solid masonry. Firebrick shall conform to ASTM C 27 or ASTM C 1261 and shall be laid with medium-duty refractory mortar conforming to ASTM C 199.

2111.5.1 Steel fireplace units. Steel fireplace units are permitted to be installed with solid masonry to form a masonry fireplace provided they are installed according to either the requirements of their listing or the requirements of this section. Steel fireplace units incorporating a steel firebox lining shall be constructed with steel not less than 1/4 inch (6.4 mm) in thickness, and an air-circulating chamber which is ducted to the interior of the building. The firebox lining shall be encased with solid masonry to provide a total thickness at the back and sides of not less than 8 inches (203 mm), of which not less than 4 inches (102 mm) shall be of solid masonry or concrete. Circulating air ducts employed with steel fireplace units shall be constructed of metal or masonry.

2111.6 Firebox dimensions. The firebox of a concrete or masonry fireplace shall have a minimum depth of 20 inches (508 mm). The throat shall not be less than 8 inches (203 mm) above the fireplace opening. The throat opening shall not be less than 4 inches (102 mm) in depth. The cross-sectional area of the passageway above the firebox, including the throat, damper and smoke chamber, shall not be less than the cross-sectional area of the flue.

Exception: Rumford fireplaces shall be permitted provided that the depth of the fireplace is at least 12 inches (305 mm) and at least one-third of the width of the fireplace opening, and the throat is at least 12 inches (305 mm) above the lintel, and at least 1/20 the cross-sectional area of the fireplace opening.

2111.7 Lintel and throat. Masonry over a fireplace opening shall be supported by a lintel of noncombustible material. The minimum required bearing length on each end of the fireplace opening shall be 4 inches (102 mm). The fireplace throat or damper shall be located a minimum of 8 inches (203 mm) above the top of the fireplace opening.

2111.7.1 Damper. Masonry fireplaces shall be equipped with a ferrous metal damper located at least 8 inches (203 mm) above the top of the fireplace opening. Dampers shall be installed in the fireplace or at the top of the flue venting the fireplace, and shall be operable from the room containing the fireplace. Damper controls shall be permitted to be

located in the fireplace. The damper shall be able to withstand distortion from binding, cracking or corrosion when exposed to the fireplace operating temperature.

2111.8Smoke chamber walls.Smoke chamber walls shall be constructed of solid masonry units, hollow masonry units grouted solid, stone or concrete. Corbeling of masonry units shall not leave unit cores exposed to the inside of the smoke chamber. The inside surface of corbeled masonry shall be parged smooth. Where no lining is provided, the total minimum thickness of front, back and side walls shall be 8 inches (203 mm) of solid masonry. When a lining of firebrick at least 2 inches (51 mm) thick, or a lining of vitrified clay at least 5/8 inch (15.9 mm) thick, is provided, the total minimum thickness of front, back and side walls shall be 6 inches (152 mm) of solid masonry, including the lining. Firebrick shall conform to ASTM C 27 or ASTM C 1261 and shall be laid with refractory mortar conforming to ASTM C 199.

2111.8.1Smoke chamber dimensions.The inside height of the smoke chamber from the fireplace throat to the beginning of the flue shall not be greater than the inside width of the fireplace opening. The inside surface of the smoke chamber shall not be inclined more than 45 degrees (0.76 rad) from vertical when prefabricated smoke chamber linings are used or when the smoke chamber walls are rolled or sloped rather than corbeled. When the inside surface of the smoke chamber is formed by corbeled masonry, the walls shall not be corbeled more than 30 degrees (0.52 rad) from vertical.

2111.9Hearth and hearth extension.Masonry fireplace hearths and hearth extensions shall be constructed of concrete, ceramic tile, masonry or equivalent, supported by noncombustible materials, and reinforced to carry their own weight and all imposed loads. No combustible material shall remain against the underside of hearths or hearth extensions after construction.

2111.9.1Hearth thickness.The minimum thickness of fireplace hearths shall be 4 inches (102 mm).

2111.9.2Hearth extension thickness.The minimum thickness of hearth extensions shall be 2 inches (51 mm).

Exception: When the bottom of the firebox opening is raised at least 8 inches (203 mm) above the top of the hearth extension, a hearth extension of not less than 3/8-inch-thick (9.5 mm) brick, concrete, stone, tile or other approved noncombustible material is permitted.

2111.10Hearth extension dimensions.Hearth extensions shall extend at least 16 inches (406 mm) in front of, and at least 8 inches (203 mm) beyond, each side of the fireplace opening. Where the fireplace opening is 6 square feet (0.56 m²) or larger, the hearth extension shall extend at least 20 inches (508 mm) in front of, and at least 12 inches (305 mm) beyond, each side of the fireplace opening.

2111.10.1Elevated or overhanging fireplace.Where a fireplace is elevated or overhangs a floor, the hearth extension shall also extend over the area under the fireplace.

2111.11Fireplace clearance.Any portion of a masonry fireplace located in the interior of a building or within the exterior wall of a building shall have a clearance to combustibles of not less than 2 inches (51 mm) from the front faces and sides of masonry fireplaces and not less than 4 inches (102 mm) from the back faces of masonry fireplaces. The airspace shall not be filled, except to provide fireblocking in accordance with Section 2111.13.

Exceptions:

1. Masonry fireplaces listed and labeled for use in contact with combustibles in accordance with UL 127, and installed in accordance with the manufacturer's installation instructions, are permitted to have combustible material in contact with their exterior surfaces.

2. When masonry fireplaces are constructed as part of masonry or concrete walls, combustible materials shall not

be in contact with the masonry or concrete walls less than 12 inches (306 mm) from the inside surface of the nearest firebox lining.

3. Exposed combustible trim and the edges of sheathing materials, such as wood siding, flooring and drywall, are permitted to abut the masonry fireplace sidewalls and hearth extension, in accordance with Figure 2111.11, provided such combustible trim or sheathing is a minimum of 12 inches (306 mm) from the inside surface of the nearest firebox lining.

4. Exposed combustible mantels or trim is permitted to be placed directly on the masonry fireplace front surrounding the fireplace opening provided such combustible materials shall not be placed within 6 inches (153 mm) of a fireplace opening. Combustible material within 12 inches (306 mm) of the fireplace opening shall not project more than 1/8 inch (3.2 mm) for each 1-inch (25 mm) distance from such opening.
[SEE graphical material in printed version]

2111.12Mantel and trim.Woodwork or other combustible materials shall not be placed within 6 inches (152 mm) of a fireplace opening. Combustible material within 12 inches (305 mm) of the fireplace opening shall not project more than 1/8 inch (3.2 mm) for each 1-inch (25mm) distance from such opening.

2111.13Fireplace fireblocking.All spaces between fireplaces and floors and ceilings through which fireplaces pass shall be fire-blocked with approved noncombustible material securely fastened in place. The fire-blocking of spaces between wood joists, beams or headers shall be to a depth of 1 inch (25 mm) and shall only be placed on strips of metal or metal lath laid across the spaces between combustible material and the chimney.

2111.14Exterior air.Factory-built or masonry fireplaces covered in this section shall be equipped with an exterior air supply to ensure proper fuel combustion unless the room is mechanically ventilated and controlled so that the indoor pressure is neutral or positive.

2111.14.1Factory-built fireplaces.Exterior combustion air ducts for factory-built fireplaces shall be listed components of the fireplace, and installed according to the fireplace manufacturer's instructions.

2111.14.2Masonry fireplaces.Listed combustion air ducts for masonry fireplaces shall be installed according to the terms of their listing and manufacturer's instructions.

2111.14.3Exterior air intake.The exterior air intake shall be capable of providing all combustion air from the exterior of the dwelling. The exterior air intake shall not be located within the garage, attic, basement or crawl space of the dwelling nor shall the air intake be located at an elevation higher than the firebox. The exterior air intake shall be covered with a corrosion-resistant screen of 1/4-inch (6.4 mm) mesh.

2111.14.4Clearance.Unlisted combustion air ducts shall be installed with a minimum 1-inch (25 mm) clearance to combustibles for all parts of the duct within 5 feet (1524 mm) of the duct outlet.

2111.14.5Passageway.The combustion air passageway shall be a minimum of 6 square inches (3870 mm²) and not more than 55 square inches (0.035 m²), except that combustion air systems for listed fireplaces or for fireplaces tested for emissions shall be constructed according to the fireplace manufacturer's instructions.

2111.14.6Outlet.The exterior air outlet is permitted to be located in the back or sides of the firebox chamber or within 24 inches (610 mm) of the firebox opening on or near the floor. The outlet shall be closable and designed to prevent burning material from dropping into concealed combustible spaces.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 21: MASONRY
SECTION BC 2112: MASONRY HEATERS

NYC Administrative Code § 28-BC 2112

2112.1 Definition.

A masonry heater is a heating appliance constructed of concrete or solid masonry, hereinafter referred to as "masonry," having a mass of at least 1,760 pounds (800 kg), excluding the chimney and foundation, which is designed to absorb and store heat from a solid fuel fire built in the firebox by routing the exhaust gases through internal heat exchange channels in which the flow path downstream of the firebox includes at least one 180-degree (3.14 rad) change in flow direction before entering the chimney, and that delivers heat by radiation from the masonry surface of the heater that shall not exceed 230(degrees)F (110(degrees)C) except within 8 inches (203 mm) surrounding the fuel loading door(s).

2112.2 Installation. Masonry heaters may be installed only when their use is permitted by the New York City Air Pollution Control Code. When such use is permitted, masonry heaters shall be installed in accordance with ASTM E 1602. If permitted, such appliances shall be operated in compliance with the New York City Air Pollution Control Code.

2112.3 Seismic reinforcing. Seismic reinforcing shall not be required within the body of a masonry heater whose height is equal to or less than 2.5 times its body width and where the masonry chimney serving the heater is not supported by the body of the heater. Where the masonry chimney shares a common wall with the facing of the masonry heater, the chimney portion of the structure shall be reinforced in accordance with Sections 2113.3 and 2113.4.

2112.4 Masonry heater clearance. Wood or other combustible framing shall not be placed within 4 inches (102 mm) of the outside surface of a masonry heater, provided the wall thickness of the firebox is not less than 8 inches (203 mm) and the wall thickness of the heat exchange channels is not less than 5 inches (127 mm). A clearance of at least 8 inches (203 mm) shall be provided between the gas-tight capping slab of the heater and a combustible ceiling. The required space between the heater and combustible material shall be fully vented to permit the free flow of air around all heater surfaces.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 21: MASONRY
SECTION BC 2113: MASONRY CHIMNEYS

NYC Administrative Code § 28-BC 2113

2113.1 General.

A masonry chimney is a chimney constructed of concrete or masonry, hereinafter referred to as "masonry." Masonry chimneys shall be constructed, anchored, supported and reinforced as required in this chapter.

Chimneys shall be designed and constructed so as to provide the necessary draft and capacity for each appliance connected to them to completely exhaust the products of combustion to the outside air. The temperature on adjacent combustible surfaces shall not be raised above 160(degrees)F (71(degrees)C). Condensation shall not be allowed to develop to an extent that can cause deterioration of the chimney or vent.

In any case, the outlet shall be arranged so that the flue gases are not directed so that they jeopardize people, overheat combustible structures, or enter building openings in the vicinity of the outlet. Gas-fired appliances shall be vented in accordance with this code and NFPA 54.

Chimneys shall not be supported by the equipment they serve unless such equipment has been specifically designed for such loads.

2113.1.1 Chimney adequacy for temperature and gas action. Chimneys shall be of adequate structural strength, and resistant to the temperatures to which they may be subjected and to the corrosive action of gases.

2113.1.2 Chimney caps. Termination caps shall not be permitted and a 3 inch (76 mm) minimum drain shall be installed to receive collected water. A positive means shall be provided to prevent water from entering the appliance.

Exception: Termination caps shall be permitted on listed factory-built chimneys,

2113.1.2.1 Decorative shrouds. Decorative shrouds shall not be installed at the termination of factory-built chimneys except where such shrouds are listed and labeled for use with the specific factory-built chimney system and are installed in accordance with the manufacturers' installation instructions.

2113.1.3Chimney linings.The lining in chimneys shall not be considered as taking either compression or tension stresses.

2113.1.4Chimney expansion and contraction.Expansion and contraction in chimney walls due to temperature variations shall be accommodated solely by the use of steel reinforcing rings.

2113.1.5Reinforcing Rings.Reinforcing rings shall be provided at all changes in wall thickness, at the top of the chimney, and above and below all flue openings.

2113.1.6Adjoining chimneys and vents.Adjoining chimneys and vents shall be in accordance with Sections 2113.1.6.1 to 2113.1.6.8.

2113.1.6.1Responsibility of owner of taller building.Whenver a building is erected, enlarged, or increased in height so that any portion of such building, except chimneys or vents, extends higher than the top of any previously constructed chimneys or vents within 100 feet (30 480 mm), the owner of such new or altered building shall have the responsibility of altering such chimneys or vents to make them conform with the requirements of this chapter. A chimney or vent that is no longer connected with a fireplace or combustion or other equipment for which a chimney or vent was required, shall be exempt from this requirement. Such alterations shall be accomplished by one of the following means or a combination thereof:

1. Carry up the previously constructed chimneys or vents to the height required in this chapter.
2. Offset such chimneys or vents to a distance beyond that required in this chapter from the new or altered building provided that the new location of the outlet of the offset chimney or vent shall otherwise comply with the requirements of this chapter.
3. Such requirements shall not dispense with or modify any additional requirements that may be applicable pursuant to rules of the New York City Department of Environmental Protection.

2113.1.6.2Protection of draft.After the alteration of a chimney or vent as required by this section, it shall be the responsibility of the owner of the new or altered building to provide any mechanical equipment or devices necessary to maintain the proper draft in the equipment.

2113.1.6.3Written notification.The owner of the new or altered building shall notify the owner of the building affected in writing at least 45 days before starting the work required and request written consent to do such work. Such notice shall be accompanied by plans indicating the manner in which the proposed alterations are to be made.

2113.1.6.4Approval.The plans and method of alteration shall be subject to the approval of the commissioner.

2113.1.6.5Refusal of consent.If consent is not granted by the owner of the previously constructed building to do the alteration work required by this section, such owner shall signify his or her refusal in writing to the owner of the new or altered building and to the commissioner; and the owner of the new or altered building having submitted plans that conform to the requirements of this section, shall thereupon be released from any responsibility for the proper operation of the equipment due to loss of draft and for any health hazard or nuisance that may occur as a result of the new or altered building. Such responsibilities shall then be assumed by the owner of the previously constructed building. Similarly, should such owner fail to grant consent within forty-five days from the date of written request or fail to signify his or her refusal, he or she shall then assume all responsibilities as prescribed above.

2113.1.6.6Procedure.It shall be the obligation of the owner of the new or altered building to:

1. Schedule this work so as to create a minimum of disturbance to the occupants of the affected building; and
2. Provide such essential services as are normally supplied by the equipment while it is out of service; and

3. Where necessary, support such extended chimneys, vents and equipment from this building or to carry up such chimneys or vents within his or her building; and

4. Provide for the maintenance, repair, and/or replacement of such extensions and added equipment; and

5. Make such alterations of the same material as the original chimney or vent so as to maintain the same quality and appearance, except where the affected owner of the chimney or vent shall give his or her consent to do otherwise. All work shall be done in such fashion as to maintain the architectural aesthetics of the existing building. Where there is practical difficulty in complying strictly with the provisions of this Item, the commissioner may permit an equally safe alternative.

2113.1.6.7Existing violations.Any existing violations on the previously constructed equipment shall be corrected by the owner of the equipment before any equipment is added or alterations made at the expense of the owner of the new or altered building.

2113.1.6.8Variance.The commissioner may grant a variance in accordance with the provisions of this code.

2113.2Footings and foundations.Foundations for masonry chimneys shall be constructed of concrete or solid masonry at least 12 inches (305 mm) thick and shall extend at least 6 inches (152 mm) beyond the face of the foundation or support wall on all sides. Footings shall be founded on natural undisturbed earth or engineered fill below frost depth. In areas not subjected to freezing, footings shall be at least 12 inches (305 mm) below finished grade.

2113.3Seismic reinforcing.Masonry or concrete chimneys shall be constructed, anchored, supported and reinforced as required in this chapter. In Seismic Design Category D, masonry and concrete chimneys shall be reinforced and anchored as detailed in Sections 2113.3.1, 2113.3.2, and 2113.4. In Seismic Design Category B or C, reinforcement and seismic anchorage is not required.

2113.3.1Vertical reinforcing.For chimneys up to 40 inches (1016 mm) wide, four No. 4 continuous vertical bars anchored in the foundation shall be placed in the concrete, between wythes of solid masonry or within the cells of hollow unit masonry and grouted in accordance with Section 2103.10. Grout shall be prevented from bonding with the flue liner so that the flue liner is free to move with thermal expansion. For chimneys greater than 40 inches (1016 mm) wide, two additional No. 4 vertical bars shall be provided for each additional 40 inches (1016 mm) in width or fraction thereof.

2113.3.2Horizontal reinforcing.Vertical reinforcement shall be placed enclosed within 1/4-inch (6.4 mm) ties, or other reinforcing of equivalent net cross-sectional area, spaced not to exceed 18 inches (457 mm) o.c. in concrete, or placed in the bed joints of unit masonry, at a minimum of every 18 inches (457 mm) of vertical height. Two such ties shall be provided at each bend in the vertical bars.

2113.4Seismic anchorage.Masonry and concrete chimneys and foundations in Seismic Design Category D shall be anchored at each floor, ceiling or roof line more than 6 feet (1829 mm) above grade, except where constructed completely within the exterior walls. Anchorage shall conform to the following requirements.

2113.4.1Anchorage.Two 3/16-inch by 1-inch (4.8 mm by 25 mm) straps shall be embedded a minimum of 12 inches (305 mm) into the chimney. Straps shall be hooked around the outer bars and extend 6 inches (152 mm) beyond the bend. Each strap shall be fastened to a minimum of four floor joists with two 1/2-inch (12.7 mm) bolts.

2113.5Corbeling.Masonry chimneys shall not be corbeled more than half of the chimney's wall thickness from a wall or foundation, nor shall a chimney be corbeled from a wall or foundation that is less than 12 inches (305 mm) in thickness unless it projects equally on each side of the wall, except that on the second story of a two-story dwelling, corbeling of chimneys on the exterior of the enclosing walls is permitted to equal the wall thickness. The projection of a single course shall not exceed one-half the unit height or one-third of the unit bed depth, whichever is less. No masonry

shall be corbeled from hollow or cavity wall masonry units.

2113.6 Changes in dimension. The chimney wall or chimney flue lining shall not change in size or shape within 6 inches (152 mm) above or below where the chimney passes through floor components, ceiling components or roof components.

2113.7 Offsets. Where a masonry chimney is constructed with a fireclay flue liner surrounded by one wythe of masonry, the maximum offset shall be such that the centerline of the flue above the offset does not extend beyond the center of the chimney wall below the offset. Where the chimney offset is supported by masonry below the offset in an approved manner, the maximum offset limitations shall not apply. Each individual corbeled masonry course of the offset shall not exceed the projection limitations specified in Section 2113.5.

2113.8 Additional load. Chimneys shall not support loads other than their own weight unless they are designed and constructed to support the additional load. Masonry chimneys are permitted to be constructed as part of the masonry walls or concrete walls of the building.

2113.9 Termination. Chimneys serving appliances that operate at less than 600(degrees)F (316(degrees)C) shall extend at least 3 feet (914 mm) above the highest construction, such as a roof ridge, parapet wall, or penthouse, within 10 feet (3048 mm) of the chimney outlet, whether the construction is on the same building as the chimney or on another building. However, such constructions do not include other chimneys, vents, or open structural framing. Any chimney located beyond 10 feet (3048 mm) from such construction, but not more than the distance determined from Equation 21-5 and Table 2113.9, shall be at least as high as the construction.

Chimneys serving appliances that operate at between 600(degrees)F (316(degrees)C) and 1000(degrees)F (538(degrees)C) shall extend at least 10 feet (3048 mm) above the highest construction, such as a roof ridge, or parapet wall or penthouse within 20 feet (6096 mm) of the chimney outlet, whether the construction is on the same building as the chimney or on another building. However, such construction does not include other chimneys, vents or open structural framing. Any chimney located beyond 20 feet (6096 mm) from such construction, but not more than the distance determined from Equation 21-5 and Table 2113.9, shall be at least as high as the construction. (Equation 21-5) $D = F \times rA$

where: D = Distance, in feet, measured from the center of the chimney outlet to the nearest edge of the construction. F = Value determined from Table 2113.9. A = Free area, in square inches, of chimney flue space. Table 2113.9 "F" Factor for Determining Chimney Distances "F" Factor for Determining Chimney Distances Type of Fuel "F" Factor 600(degrees)F (316(degrees)C) and less 600(degrees)F (316(degrees)C) to 1000(degrees)F (538(degrees)C) Greater than 1000(degrees)F (538(degrees)C) Gas 2 2 3 No. 2 Fuel Oil 2.5 2.5 3 No. 4, No. 6 Fuel Oils, Solid Fuels and Incinerators 3 3 3

2113.9.1 Spark arrestors. Where a spark arrestor is installed on a masonry chimney, the spark arrestor shall meet all of the following requirements:

1. The net free area of the arrestor shall not be less than four times the net free area of the outlet of the chimney flue it serves.

2. The arrestor screen shall have heat and corrosion resistance equivalent to 19-gage galvanized steel or 24-gage stainless steel.

3. Openings shall not permit the passage of spheres having a diameter greater than 1/2 inch (12.7 mm) nor block the passage of spheres having a diameter less than 3/8 inch (9.5 mm).

4. The spark arrestor shall be accessible for cleaning and the screen or chimney cap shall be removable to allow for cleaning of the chimney flue.

2113.10Wall thickness.Masonry chimney walls shall be constructed of concrete, solid masonry units or hollow masonry units grouted solid with not less than 4 inches (102 mm) nominal thickness, or 8 inches (203 mm) nominal thickness for chimney walls extending more than 3 feet (914 mm) above the highest lateral support point.

2113.11Flue lining (material).Masonry chimneys shall be lined. The lining material shall be appropriate for the type of appliance connected, according to the terms of the appliance listing and the manufacturer's instructions.

2113.11.1Residential-type appliances (general).Flue lining systems shall comply with one of the following:

1. Clay flue lining complying with the requirements of ASTM C 315, or equivalent.
2. Listed chimney lining systems complying with UL 1777.
3. Factory-built chimneys or chimney units listed for installation within masonry chimneys.
4. Other approved materials that will resist corrosion, erosion, softening or cracking from flue gases and condensate at temperatures up to 1,800(degrees)F (982(degrees)C).

2113.11.1.1Flue linings for specific appliances.Flue linings other than those covered in Section 2113.11.1 intended for use with specific appliances shall comply with Sections 2113.11.1.2 through 2113.11.1.4 and Sections 2113.11.2 and 2113.11.3.

2113.11.1.2Gas appliances.Flue lining systems for gas appliances shall be in accordance with the New York City Fuel Gas Code.

2113.11.1.3Pellet fuel-burning appliances.Pellet fuel-burning appliances may be installed only when their use is permitted by the New York City Air Pollution Control Code. Any such appliances shall be listed and labeled and shall be installed in accordance with the terms of the listing. If permitted, such appliances shall be operated in compliance with the New York City Air Pollution Control Code. Flue lining and vent systems for use in masonry chimneys with pellet fuel-burning appliances shall be limited to flue lining systems complying with Section 2113.11.1 and pellet vents listed for installation within masonry chimneys (see Section 2113.11.1.5 for marking).

2113.11.1.4Oil-fired appliances approved for use with L-vent.Flue lining and vent systems for use in masonry chimneys with oil-fired appliances approved for use with Type L vent shall be limited to flue lining systems complying with Section 2113.11.1 and listed chimney liners complying with UL 641 (see Section 2113.11.1.5 for marking).

2113.11.1.5Notice of usage.When a flue is relined with a material not complying with Section 2113.11.1, the chimney shall be plainly and permanently identified by a label attached to a wall, ceiling or other conspicuous location adjacent to where the connector enters the chimney. The label shall include the following message or equivalent language: "This chimney is for use only with (type or category of appliance) that burns (type of fuel). Do not connect other types of appliances."

2113.11.2Concrete and masonry chimneys for medium heat appliances.

2113.11.2.1General.Concrete and masonry chimneys for medium-heat appliances shall comply with Sections 2113.1 through 2113.5.

2113.11.2.2Construction.Chimneys for medium-heat appliances shall be constructed of solid masonry units or of concrete with walls a minimum of 8 inches (203 mm) thick, or with stone masonry a minimum of 12 inches (305 mm). Chimneys for medium-heat appliances constructed with radial brick may be permitted to have different requirements. Design of all such chimneys shall be submitted to the commissioner for approval.

2113.11.2.3Lining.Concrete and masonry chimneys shall be lined with an approved medium-duty refractory brick a

minimum of 4 1/2 inches (114 mm) thick laid on the 4 1/2-inch bed (114 mm) in an approved medium-duty refractory mortar. The lining shall start 2 feet (610 mm) or more below the lowest chimney connector entrance. Chimneys terminating 25 feet (7620 mm) or less above a chimney connector entrance shall be lined to the top.

2113.11.2.4 Multiple passageway. Concrete and masonry chimneys containing more than one passageway shall have the liners separated by a minimum 4-inch-thick (102 mm) concrete or solid masonry wall.

2113.11.2.5 Termination height. Chimneys serving appliances that operate at greater than 1,000(degrees)F (538(degrees)C) shall extend at least 20 feet (6096 mm) above the highest construction, such as roof ridge, parapet wall, penthouse, or other obstruction within 50 feet (15 240 mm) of the chimney outlet, whether the construction is on the same building as the chimney or in another building. However, such construction does not include other chimneys, vents, or open structural framing. Any chimney located beyond 50 feet (15 240 mm) from such construction but not more than the distance determined from Equation 21-5 and Table 2113.9, shall be at least as high as the construction.

2113.11.2.6 Clearance. A minimum clearance of 4 inches (102 mm) shall be provided between the exterior surfaces of a concrete or masonry chimney for medium-heat appliances and combustible material.

2113.11.3 Concrete and masonry chimneys for high-heat appliances.

2113.11.3.1 General. Concrete and masonry chimneys for high-heat appliances shall comply with Sections 2113.1 through 2113.5.

2113.11.3.2 Construction. Chimneys for high-heat appliances shall be constructed with double walls of solid masonry units or of concrete, each wall to be a minimum of 8 inches (203 mm) thick with a minimum airspace of 2 inches (51 mm) between the walls. Alternate chimney designs for high-heat appliances constructed with radial brick shall be permitted subject to the approval of the commissioner.

2113.11.3.3 Lining. The inside of the interior wall shall be lined with an approved high-duty refractory brick, a minimum of 4 1/2 inches (114 mm) thick laid on the 4 1/2-inch bed (114 mm) in an approved high-duty refractory mortar. The lining shall start at the base of the chimney and extend continuously to the top.

2113.11.3.4 Termination height. Concrete and masonry chimneys for high-heat appliances shall extend at least 20 feet (6069 mm) above the highest construction, such as roof ridge, parapet wall, penthouse, or other obstruction within 50 feet (15 240 mm) of the chimney outlet, whether the construction is on the same building as the chimney or on another building. However, such constructions do not include other chimneys, vents, or open structural framing. Any chimney located beyond 50 feet (15 240 mm) from such construction but not more than the distance determined from Equation 21-5 and Table 2113.9, shall be at least as high as the construction.

2113.11.3.5 Clearance. Concrete and masonry chimneys for high-heat appliances shall have approved clearance from buildings and structures to prevent overheating combustible materials, permit inspection and maintenance operations on the chimney and prevent danger of burns to persons.

2113.12 Flue lining (installation). Flue liners shall be installed in accordance with ASTM C 1283 and extend from a point not less than 8 inches (203 mm) below the lowest inlet or, in the case of fireplaces, from the top of the smoke chamber, to a point above the enclosing walls. The lining shall be carried up vertically, with a maximum slope no greater than 30 degrees (0.52 rad) from the vertical. Fireclay flue liners shall be laid in medium-duty refractory mortar conforming to ASTM C 199, with tight mortar joints left smooth on the inside and installed to maintain an airspace or insulation not to exceed the thickness of the flue liner separating the flue liners from the interior face of the chimney masonry walls. Flue lining shall be supported on all sides. Only enough mortar shall be placed to make the joint and hold the liners in position.

2113.13 Additional requirements.

2113.13.1 Listed materials. Listed materials used as flue linings shall be installed in accordance with the terms of their listings and the manufacturer's instructions.

2113.13.2 Space around lining. The space surrounding a chimney lining system or vent installed within a masonry chimney shall not be used to vent any other appliance.

Exception: This shall not prevent the installation of a separate flue lining in accordance with the manufacturer's instructions.

2113.14 Multiple flues. When two or more flues are located in the same chimney, masonry wythes shall be built between adjacent flue linings. The masonry wythes shall be at least 4 inches (102 mm) thick and bonded into the walls of the chimney.

Exception: When venting only one appliance, two flues are permitted to adjoin each other in the same chimney with only the flue lining separation between them. The joints of the adjacent flue linings shall be staggered at least 4 inches (102 mm).

2113.15 Flue area (appliance). Chimney flues shall not be smaller in area than the area of the connector from the appliance. Chimney flues connected to more than one appliance shall not be less than the area of the largest connector plus 50 percent of the areas of additional chimney connectors.

Exceptions:

1. Chimney flues serving oil-fired appliances sized in accordance with NFPA 31.
2. Chimney flues serving gas-fired appliances sized in accordance with the New York City Fuel Gas Code.

2113.16 Flue area (masonry fireplace). Flue sizing for chimneys serving fireplaces shall be in accordance with Section 2113.16.1 or 2113.16.2.

2113.16.1 Minimum area. Round chimney flues shall have a minimum net cross-sectional area of at least 1/12 of the fireplace opening. Square chimney flues shall have a minimum net cross-sectional area of at least 1/10 of the fireplace opening. Rectangular chimney flues with an aspect ratio less than 2 to 1 shall have a minimum net cross-sectional area of at least 1/10 of the fireplace opening. Rectangular chimney flues with an aspect ratio of 2 to 1 or more shall have a minimum net cross-sectional area of at least 1/8 of the fireplace opening.

2113.16.2 Determination of minimum area. The minimum net cross-sectional area of the flue shall be determined in accordance with Figure 2113.16. A flue size providing at least the equivalent net cross-sectional area shall be used. Cross-sectional areas of clay flue linings are as provided in Tables 2113.16(1) and 2113.16(2) or as provided by the manufacturer or as measured in the field. The height of the chimney shall be measured from the firebox floor to the top of the chimney flue. Figure 2113.16 Flue Sizes for Masonry Chimneys

[SEE graphical material in printed version]

For SI: 1 inch = 25.4 mm, 1 square inch = 645 mm². Table 2113.16(1) Net Cross-Sectional Area of Round Flue Sizes
 Flue Size, Inside Diameter (inches) Cross-Sectional Area (Square inches)
 6 28 7 38 8 50 10 78 10 3/4 90 12 113 15 176 18 254
 For SI: 1 inch = 25.4 mm, 1 square inch = 645.16 mm². a. Flue sizes are based on ASTM C 315. Table 2113.16(2) Net Cross-Sectional Area of Square and Rectangular Flue Sizes
 Flue Size, Inside Dimension (inches) Cross-Sectional Area (Square inches)
 4 1/2 x 13 34 7 1/2 x 7 1/2 37 8 1/2 x 8 1/2 47 7 1/2 x 11 1/2 58 8 1/2 x 13 74 7 1/2 x 15 1/2 82 11 1/2 x 11 1/2 91 8 1/2 x 17 1/2 101 13 x 13 122 11 1/2 x 15 1/2 124 13 x 17 1/2 165 15 1/2 x 15 1/2 168 15 1/2 x 19 1/2 214 17 1/2 x 17 1/2 226 19 1/2 x 19 1/2 269 20 x 20 286
 For SI: 1 inch = 25.4 mm, 1 square inch = 645.16 mm². a. Flue sizes are based on ASTM C 315.

2113.17 Inlet. Inlets to masonry chimneys shall enter from the side. Inlets shall have a thimble of fireclay, rigid

refractory material or metal that will prevent the connector from pulling out of the inlet or from extending beyond the wall of the liner.

2113.18Masonry chimney cleanout openings.Cleanout openings shall be provided within 6 inches (152 mm) of the base of each flue within every masonry chimney. The upper edge of the cleanout shall be located at least 6 inches (152 mm) below the lowest chimney inlet opening. The height of the opening shall be at least 6 inches (152 mm). The cleanout shall be provided with a noncombustible cover.

Exception: Chimney flues serving masonry fireplaces, where cleaning is possible through the fireplace opening.

2113.19Chimney clearances.Any portion of a masonry chimney located in the interior of the building or within the exterior wall of the building shall have a minimum airspace clearance to combustibles of 2 inches (51 mm). Chimneys located entirely outside the exterior walls of the building, including chimneys that pass through the soffit or cornice, shall have a minimum airspace clearance of 1 inch (25 mm). The airspace shall not be filled, except to provide fireblocking in accordance with Section 2113.20.

Exceptions:

1. Masonry chimneys equipped with a chimney lining system listed and labeled for use in chimneys in contact with combustibles in accordance with UL 1777, and installed in accordance with the manufacturer's instructions, are permitted to have combustible material in contact with their exterior surfaces.

2. Where masonry chimneys are constructed as part of masonry or concrete walls, combustible materials shall not be in contact with the masonry or concrete wall less than 12 inches (305 mm) from the inside surface of the nearest flue lining.

3. Exposed combustible trim and the edges of sheathing materials, such as wood siding, are permitted to abut the masonry chimney sidewalls, in accordance with Figure 2113.19, provided such combustible trim or sheathing is a minimum of 12 inches (305 mm) from the inside surface of the nearest flue lining. Combustible material and trim shall not overlap the corners of the chimney by more than 1 inch (25 mm).

2113.19.1Additional requirements for clearance.

1. Trimmers shall be not less than 5 inches (127 mm) from the inside face of the concrete or masonry chimney wall. Finished flooring shall have at least one-half inch clearance from chimney walls.

2. A clearance of at least 2 inches (51 mm) shall be provided between the exterior surfaces of interior masonry or concrete chimneys for all wood- burning appliances.

3. No combustible lathing, furring, or plaster grounds shall be placed against a chimney at any point more than 11/2 inches (38 mm) from the corner of the chimney; but this shall not prevent plastering directly on masonry or on metal lath and metal furring nor shall it prevent placing chimneys for low temperature equipment entirely on the exterior of a building against the sheathing.

[SEE graphical material in printed version]

2113.20Chimney fireblocking.All spaces between chimneys and floors and ceilings through which chimneys pass shall be fireblocked with noncombustible material securely fastened in place. The fireblocking of spaces between wood joists, beams or headers shall be to a depth of 1 inch (25 mm) and shall only be placed on strips of metal or metal lath laid across the spaces between combustible material and the chimney.

2113.21Test run.All new chimneys shall be test run by the registered design professional responsible for the testing under standard conditions to demonstrate fire safety and the complete exhausting of smoke and the products of

combustion to the outer air. The results of such test run shall be certified as correct by the design professional engineer responsible for the test and shall be submitted in writing to the department.

2113.22 Requirement of a smoke test. A smoke test shall be made as outlined below. Any faults or leaks found shall be corrected. Such smoke test shall be witnessed by a representative of the commissioner. In lieu thereof, the commissioner may accept the test report of the design professional engineer responsible for the test, which shall be submitted in writing to the department.

2113.22.1 Smoke test. To determine the tightness of chimney construction, a smoke test shall be made in accordance with the following conditions and requirements:

1. The equipment, materials, power and labor necessary for such test shall be furnished by, and at the expense of, the owner or holder of the work permit.

2. If the test shows any evidence of leakage or other defects, such defects shall be corrected in accordance with the requirement of this chapter and the test shall be repeated until the results are satisfactory.

3. Method of test. The chimney shall be filled with a thick penetrating smoke produced by one or more smoke machines, or smoke bombs, or other equivalent method. As the smoke appears at the stack opening on the roof, such opening shall be tightly closed, and a pressure equivalent to 1/2 inch (12.7 mm) column of water measured at the base of the stack shall be applied. The test shall be conducted for a length of time sufficient to permit the inspection of the chimney.



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 CHAPTER 7: THE NEW YORK CITY BUILDING CODE
 Chapter 21: MASONRY
 SECTION BC 2114: STRUCTURAL INTEGRITY REQUIREMENTS

NYC Administrative Code § 28-BC 2114

2114.1 General.

Load-bearing masonry structures shall be reinforced to meet all of the requirements of this section. However, reinforcement provided for gravity, seismic or wind forces or for other purposes may be regarded as satisfying part of, or the whole of, these requirements. Reinforcement provided for one requirement may be counted towards the other requirements.

2114.2Continuity and ties.Load-bearing masonry structures shall be reinforced to obtain a continuous system of vertical and horizontal ties. Continuity of all ties shall be ensured by providing lap, welded or mechanical tension splices. The following requirements shall be met for walls, columns and piers:

2114.2.1Horizontal.At each floor and roof level, continuous horizontal ties shall be provided in all load-bearing masonry walls, and around the perimeter of the building. Minimum horizontal tie reinforcement shall be not less than the equivalent of two No. 4 bars.

2114.2.1.1Location of horizontal ties.Ties shall be located within the thickness of walls or beams, where they occur, or within 1 foot (305 mm) of the edge of slab, where walls or beams do not occur.

2114.2.1.2End connections of horizontal ties.All horizontal ties shall be terminated in a perpendicular horizontal tie. Where no perpendicular horizontal tie exists within 4 feet (1219 mm) of the end of a wall, the horizontal tie shall be anchored at the end of the wall. The vertical reinforcement at the end of such walls shall not be less than two No. 4 bars placed within 16 inches (406 mm) of the end of the wall. This vertical reinforcement shall be continuous from the lowest to highest level of the wall, and anchored at each end in a horizontal tie or the foundation element.

2114.2.2End connections.Where slab or beam elements are supported on a masonry wall, column or pier, the connection shall be designed to sustain an axial tension capacity equal to the greater of the vertical shear capacity of the connected element at either end or two percent of the maximum factored vertical dead and live load in the compression

masonry element. The design of the end connections shall ensure the transfer of such loads to horizontal or vertical ties.

Where more than one element frames in one direction, none of the elements or connections shall have an axial tension capacity of less than one percent of the vertical load.

For the design of the connections, the transverse shear force and the axial tensile force need not be considered to act simultaneously.

The reinforcement of the end connections shall be equivalent to at least one No. 4 bar, at a maximum spacing of 24 inches (610 mm) on center. Where end connections occur at a masonry pier or column, reinforcement equivalent to a minimum of four fully developed No. 4 bars shall be provided. The reinforcement shall be distributed around the perimeter of the column or pier. The minimum anchorage into both the slab and the masonry compression element shall be equivalent to the capacity of the fully developed No. 4 bar.

Where the floor extends on both sides of a bearing wall, the portion of the tie within the slab shall alternate between both sides.

2114.2.3 Vertical ties. Each column, pier and wall shall be vertically tied continuously from its lowest to highest level. The vertical reinforcement shall be terminated in a horizontal tie or foundation or their equivalent. Where openings in bearing walls greater than 24 inches (610 mm) in height occur, ties shall be provided at each side of the opening that extend and are anchored in the masonry above and below the opening. Vertical ties shall be placed on both sides of control joints in bearing walls.

2114.2.3.1 Vertical ties reinforcing. Vertical tie reinforcing shall not be less than the equivalent of one No. 4 bar, at a maximum spacing of 48 inches (1219 mm) on center. A minimum of four continuous No. 4 bars shall be provided per masonry column or pier.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE

Chapter 22: STEEL

SECTION BC 2201: GENERAL

NYC Administrative Code § 28-BC 2201

2201.1 Scope.

The provisions of this chapter govern the quality, design, fabrication and erection of steel used structurally in buildings or structures.



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Chapter 22: STEEL
SECTION BC 2202: DEFINITIONS AND NOMENCLATURE

NYC Administrative Code § 28-BC 2202

2202.1 Definitions.

The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

ADJUSTED SHEAR RESISTANCE. In Type II shear walls, the unadjusted shear resistance multiplied by the shear resistance adjustment factors of Table 2211.3.

STEEL CONSTRUCTION, COLD-FORMED. That type of construction made up entirely or in part of steel structural members cold formed to shape from sheet or strip steel such as roof deck, floor and wall panels, studs, floor joists, roof joists and other structural elements.

STEEL JOIST. Any steel structural member of a building or structure made of hot-rolled or cold-formed solid or open-web sections, or riveted or welded bars, strip or sheet steel members, or slotted and expanded, or otherwise deformed rolled sections.

STEEL MEMBER, STRUCTURAL. Any steel structural member of a building or structure consisting of a rolled steel structural shape other than cold-formed steel, or steel joist members.

TYPE I SHEAR WALL. A wall designed to resist in-plane lateral forces that is fully sheathed and provided with hold-down anchors at each end of the wall segment. Type I walls are permitted to have openings where detailing for force transfer around the openings is provided (see Figure 2202.1).

TYPE II SHEAR WALL. A wall designed to resist in-plane lateral forces that is sheathed with wood structural panel or sheet steel that contains openings, that have not been specifically designed and detailed for force transfer around wall openings. Hold-down anchors for Type II shear walls are only required at the ends of the wall (see Figure 2202.1).

TYPE II SHEAR WALL SEGMENT. A section of shear wall with full-height sheathing and which meets the aspect ratio limits of Section 2211.3.2(3).

UNADJUSTED SHEAR RESISTANCE. In Type II walls, the unadjusted shear resistance is based on the design shear and the limitations of Section 2211.3.1.

[SEE graphical material in printed version]

2202.2 Nomenclature. The following symbols shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein. f =Resistance factor (see Section 2211.2.1). W =Factor of safety (see Section 2211.2.1). W_o =System over-strength factor (see Section 1617.6). C_o =Shear resistance adjustment factor from Table 2211.3. SL_i =Sum of widths of Type II shear wall segments, feet (mm/1,000). C =Compression chord uplift force, lbs (kN). V =Shear force in Type II shear wall, lbs (kN). H =The height of a shear wall measured as: 1. The maximum clear height from top of foundation to bottom of diaphragm framing above; or 2. The maximum clear height from top of a diaphragm to bottom of diaphragm framing above. v =Unit shear force, plf (kN/m). w =The width of a shear wall or wall pier in the direction of application of force measured as the sheathed dimension of the shear wall.



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 Chapter 22: STEEL

SECTION BC 2203: IDENTIFICATION AND PROTECTION OF STEEL FOR STRUCTURAL PURPOSES

NYC Administrative Code § 28-BC 2203

2203.1 Identification.

Steel furnished for structural load-carrying purposes shall be properly identified for conformity to the ordered grade in accordance with the specified ASTM standard or other specification and the provisions of this chapter. Steel that is not readily identifiable as to grade from marking and test records shall be tested to determine conformity to such standards.

2203.2 Protection. Painting of structural steel shall comply with the requirements contained in either the AISC Load and Resistance Factor Design Specification for Structural Steel Buildings (AISC-LRFD), AISC Specification for Structural Steel Buildings-Allowable Stress Design (AISC 335) or AISC Specification for the Design of Steel Hollow Structural Sections (AISC-HSS). Individual structural members and assembled panels of cold-formed steel construction, except where fabricated of approved corrosion-resistant steel or of steel having a corrosion resistant or other approved coating, shall be protected against corrosion with an approved coat of paint, enamel or other approved protection.

2203.2.1 Protection of structural steel. All structural steel shall receive one coat of paint, zinc, or bituminous coating, or equivalent metal protection before erection. The protection shall be applied thoroughly and evenly to dry surfaces which have been cleaned of loose mill scale, loose rust, weld slag flux deposit, dirt, and other foreign matter. Oil and grease deposits shall be removed. Surfaces inaccessible after assembly shall be treated as required by this section prior to assembly. Structural steel that will remain exposed to the weather or to a corrosive atmosphere shall receive an additional coat of metal protection of another color after erection, except for types of structural steels that have been specifically intended for use under exposure to the weather without protection. All abrasions to, or deteriorations of, the protective coating shall be spot painted.

Exceptions: Surfaces of structural steel shall not be required to receive metal protection when the structural steel is used under the conditions listed below. However, these surfaces shall be cleaned of oil and grease by solvent cleaners and be cleaned of dirt and other foreign material by thorough brushing with a fiber brush.

1. Structural steel that is encased in concrete (other than cinder concrete) or surfaces that abut concrete (other than

cinder concrete) at interior locations.

2. Structural steel encased in non-corrosive fire resistive materials that are bonded or secured to the steel surfaces by approved means.

3. Surfaces of structural steel that are to be riveted, bolted or welded together; provided, however, that parts of structural members left unpainted because of welding, bolting or riveting operations are not exempted from painting and shall receive a field application of approved metal protection.

4. Surfaces of structural steel within 2 inches (51 mm) of field welds shall be free of protective coatings that would prevent proper welding or produce objectionable fumes while welding is being done.

5. Surfaces of structural steel that have been machine finished.

6. Surfaces of types of structural steel that have been specifically approved for use without metal protection.

7. Structural steel members that are completely concealed by interior finish such as lath and plaster, and masonry, need not be painted except that where such members are subject to condensation from piping, are in shower or steam rooms, are exposed to chemical fumes or are exposed to other conditions of potentially aggressive corrosion.



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SECTION BC 2204: CONNECTIONS

NYC Administrative Code § 28-BC 2204

2204.1 Welding.

The details of design, workmanship and technique for welding, inspection of welding and qualification of welding operators shall conform to the requirements of the specifications listed in Sections 2205, 2206, 2207, 2209 and 2210. Special inspection of welding shall be provided where required by Section 1704.

2204.1.1 Tack welds. Tack welds, which are later incorporated into finished welds carrying calculated stress, shall not be considered as structural welds.

2204.2 Bolting. The design, installation and inspection of bolts shall be in accordance with the requirements of the specifications listed in Sections 2205, 2206, 2209 and 2210. Special inspection of the installation of high-strength bolts shall be provided where required by Section 1704.

2204.2.1 Anchor rods. Anchor rods shall be set accurately to the pattern and dimensions called for on the plans. The protrusion of the threaded ends through the connected material shall be sufficient to fully engage the threads of the nuts, but shall not be greater than the length of the threads on the bolts.



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 Chapter 22: STEEL
 SECTION BC 2205: STRUCTURAL STEEL

NYC Administrative Code § 28-BC 2205

2205.1 General.

The design, fabrication and erection of structural steel for buildings and structures shall be in accordance with either the AISC-LRFD, AISC 335 or AISC-HSS. Where required, the seismic design of steel structures shall be in accordance with the additional provisions of Section 2205.2.

2205.1.1 Structural steel. Material for use as structural steel not listed in AISC-LRFD and AISC 335 may be used in accordance with AISC-LRFD and AISC 335 when approved by the commissioner for such use.

2205.2 Seismic requirements for steel structures. The design of structural steel structures to resist seismic forces shall be in accordance with the provisions of Section 2205.2.1 or 2205.2.2 for the appropriate seismic design category.

2205.2.1 Seismic Design Category B or C. Structural steel structures assigned to Seismic Design Category B or C, in accordance with Section 1616, shall be of any construction permitted in Section 2205. An R factor as set forth in Section 1617.6 for the appropriate steel system is permitted where the structure is designed and detailed in accordance with the provisions of AISC 341, Parts I and III. Systems not detailed in accordance with the above shall use the R factor in Section 1617.6 designated for "steel systems not detailed for seismic."

Pre-qualified moment connections detailed in FEMA 350 (FEMA 2000a) may be considered as pre-qualified with regard to AISC 341 requirements for Special Moment Frames (SMF's), Intermediate Moment Frames (IMF's), and link-to-column connections of Eccentrically Brace Frames (EBF's).

2205.2.2 Seismic Design Category D. Structural steel structures assigned to Seismic Design Category D shall be designed and detailed in accordance with AISC 341, Part I or Part III.

2205.3 Seismic requirements for composite construction. The design, construction and quality of composite steel and concrete components that resist seismic forces shall conform to the requirements of the AISC-LRFD and ACI 318. An

R factor as set forth in Section 1617.6 for the appropriate composite steel and concrete system is permitted where the structure is designed and detailed in accordance with the provisions of AISC 341, Part II. In Seismic Design Category B or above, the design of such systems shall conform to the requirements of AISC 341, Part II.

2205.3.1 Seismic Design Category D. Composite structures are permitted in Seismic Design Categories D, subject to the limitations in Section 1617.6, where substantiating evidence is provided to demonstrate that the proposed system will perform as intended by AISC 341, Part II. The substantiating evidence shall be subject to the commissioner's approval. Where composite elements or connections are required to sustain inelastic deformations, the substantiating evidence shall be based on cyclic testing.

2205.4 Composite members. In addition to the provisions for composite members in Reference Standards AISC-LRFD and AISC 335, the following provisions shall be used:

2205.4.1 Heavy vehicle loads. Composite construction used for members subject to heavy vehicle loads (excluding passenger cars), shall be designed for moving loads and shall be proportioned in accordance with the requirements for Highway Bridges, AASHTO HB-16 REV 02, Standard Specification for Highway Bridges.

2205.4.2 Concrete encased beams. Where the design strength of concrete encased structural steel beams is determined from the plastic stress distribution of the structural steel beam alone in accordance with AISC-LRFD or from AISC 335 where the allowable bending stress of the structural steel beam alone is used, the yield stress of the structural steel shall not exceed 36 ksi (250 Mpa), the steel beam depth shall not exceed 40 inches (1016 mm), the concrete compressive strength shall not be less than 3,000 psi (20 685 kPa) and the concrete aggregate shall conform with ASTM C33.

2205.4.3 Special cases. Where special cases for composite construction are considered in accordance with AISC-LRFD and AISC 335, test programs shall be satisfactory to the commissioner.

2205.5 Ponding. In addition to the provisions of AISC-LRFD and AISC 335, in flat roof systems (slope less than 1 (degrees) (0.02 rad)) where secondary members are made up of members of materials other than steel, the depth of the structural steel members shall not be less than $f_b/600$ times the span length whether designed as simple or continuous. f_b shall be taken as the computed bending stress of the structural steel member.

2205.6 Fabrication, erection and quality control. In addition to the provisions for fabrication, erection and quality control in AISC-LRFD and AISC 335, the following provisions shall be used.

2205.6.1 Shop drawings. Shop drawings shall include the location of oversized, short slotted and long slotted holes.

2205.6.2 Field connections. Field connections shall meet the requirements for corresponding types of shop connections described in AISC-LRFD and AISC 335. No holes, copes or cuts of any type shall be made to facilitate erection unless specifically shown on the shop drawings or authorized in writing by the engineer or architect of record.

2205.6.3 Handling and storing materials. All structural steel members shall be shipped and handled in a manner that will not cause injury to protective coatings or permanent deformations of the members. Structural steel members shall not be dropped, thrown, or dragged. Any bends, crimps or other evidence of permanent deformations shall be straightened by methods approved by the engineer or architect of record or the piece shall be rejected. Materials shall be stored out of contact with the ground, kept clean, and protected against damage and corrosion.

2205.6.4 Structural steel erection.

2205.6.4.1 Placing of structural members. During the placing of a structural member, the load shall not be released from the hoisting rope until the member is securely supported.

Open web steel joists that are hoisted singly shall be transferred from their place of storage directly to their permanent location and safely secured. No load shall be placed on open web steel joists until they are permanently fastened in place.

2205.6.4.2 Tag lines. While structural members or assemblies are being hoisted, tag lines shall be used to prevent uncontrolled movement.

2205.6.4.3 Erection of trusses. All trusses shall be laterally braced or guyed as necessary for the safety of the structure.

2205.6.4.4 Erection of frames. All structural frames shall be properly braced with shores or guyed cables and turnbuckles as necessary for the safety of the structure.

2205.6.4.5 Permanent flooring and steel erection in tiered buildings. The permanent floors of such buildings or other structures shall be installed as soon as possible as the erection of structural steel members progresses. In no case shall there be more than eight stories, floors or equivalent levels or 120 feet (36 576 mm), whichever is less, between the erection floor and the uppermost permanent floor.



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SECTION BC 2206: STEEL JOISTS

NYC Administrative Code § 28-BC 2206

2206.1 General.

The design, manufacturing and use of open web steel joists and joist girders shall be in accordance with one of the following Steel Joist Institute specifications:

1. Standard Specifications for Open Web Steel joists, K Series.
2. Standard Specifications for Longspan Steel joists, LH Series and Deep Longspan Steel joists, DLH Series.
3. Standard Specifications for Joist Girders.

Where required, the seismic design of buildings shall be in accordance with the additional provisions of Section 2205.2 or 2211.

2206.2Painting.Open web steel joists shall be painted. The shop coat shall be applied at the place of manufacture. All abrasions shall be touched up at the job site with the same material. Steel joists that remain exposed to the weather or a corrosive atmosphere shall receive an additional coat of metal protection of another color after erection, except for types of structural steels that have been specifically approved for use under exposure to the weather without metal protection.

2206.3Limitations of use.Open web steel joists shall be prohibited in high rise buildings until the commissioner promulgates rules establishing minimum acceptable fireproofing methods.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008

2206.3 amended L.L. 8/2008 § 150, eff. July 1, 2008.



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Chapter 22: STEEL
SECTION BC 2207: STEEL CABLE STRUCTURES

NYC Administrative Code § 28-BC 2207

2207.1 General.

The design, fabrication and erection including related connections, and protective coatings of steel cables for buildings shall be in accordance with ASCE 19.

2207.1.1 Protection of steel cables. The minimum protection of all wires or strands used in building structures shall be a class "A" coating as defined in ASTM A 586 and A 603, whether the cable is used on the interior or exterior.

2207.2 Seismic requirements for steel cable. The design strength of steel cables shall be determined by the provisions of ASCE 19 except as modified by these provisions.

1. A load factor of 1.1 shall be applied to the prestress force included in T3 and T4 as defined in Section 3.12.
2. In Section 3.2.1, Item (c) shall be replaced with "1.5 T3" and Item (d) shall be replaced with "1.5 T4"



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Chapter 22: STEEL

SECTION BC 2208: STEEL STORAGE RACKS

NYC Administrative Code § 28-BC 2208

2208.1 Storage racks.

The design, testing and utilization of industrial steel storage racks shall be in accordance with the RMI Specification for the Design, Testing and Utilization of Industrial Steel Storage Racks. Racks in the scope of this specification include industrial pallet racks, movable shelf racks and stacker racks, and does not apply to other types of racks, such as drive-in and drive-through racks, cantilever racks, portable racks or rack buildings. Where required, the seismic design of storage racks shall be in accordance with the provisions of Section 9.6.2.9 of ASCE 7.



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SECTION BC 2209: COLD-FORMED STEEL

NYC Administrative Code § 28-BC 2209

2209.1 General.

The design of cold-formed carbon and low-alloy steel structural members shall be in accordance with the North American Specification for the Design of Cold-formed steel Structural Members (AISI-NASPEC). The design of cold-formed stainless-steel structural members shall be in accordance with ASCE 8. Cold-formed steel light-framed construction shall comply with Section 2210.

2209.1.1 Other steels.

1. Cold-formed steel not listed in the North American Specification for the Design of Cold-formed steel Structural Members (AISI-NASPEC) may be used in accordance with AISI-NASPEC when approved by the commissioner for such use.

2. Cold-formed stainless steel not listed in ASCE 8 may be used in accordance with ASCE 8 when approved by the commissioner for such use.

2209.1.2 Load tests. The Load test requirements of Chapter 17 shall apply in lieu of the load test procedures of Chapter 6.2 of ASCE 8 and Chapter F of AISI-NASPEC.

2209.1.3 Fabrication and erection.

1. All materials shall be flat, clean and straight. If straightening or flattening is necessary, it shall be done by a suitable process or method and in a manner that will not injure the material.

2. Profiles used structurally shall conform to the specified dimension. Care shall be taken not to stretch, bend, or otherwise distort parts of the sections unless such forming is an integral part of the design.

3. Components may be cut by slitting, shearing, sawing, or flame cutting. All punched holes and sheared or flame

cut edges of material in members subject to calculated stress shall be clean and free from notches and burred edges.

4. Care shall be taken to avoid damage when loading, unloading, and handling members.

2209.1.4 Special inspection. The use of cold-formed steel for structural purposes shall be subject to the requirements of special inspection in accordance with Chapter 17.

2209.2 Composite slabs on steel decks. Composite slabs of concrete and steel deck shall be designed and constructed in accordance with ASCE 3.

HISTORICAL NOTES:

Section added L.L. 33/2007 §16, eff. July 1, 2008

2209.1.4 added L.L. 8/2008 § 151, eff. July 1, 2008.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 22: STEEL
SECTION BC 2210: COLD-FORMED STEEL LIGHT-FRAMED CONSTRUCTION

NYC Administrative Code § 28-BC 2210

2210.1 General.

The design, installation and construction of cold-formed carbon or low-alloy steel, structural and nonstructural steel framing, shall be in accordance with the Standard for Cold-formed steel Framing-General Provisions, American Iron and Steel Institute (AISI-General) and AISI-NASPEC.

2210.2Headers. The design and installation of cold-formed steel box and back-to-back headers, and double L-headers used in single-span conditions for load-carrying purposes shall be in accordance with the Standard for Cold-formed steel Framing-Header Design, American Iron and Steel Institute (AISI-Header), subject to the limitations therein.

2210.3Trusses. The design, quality assurance, installation and testing of cold-formed steel trusses shall be in accordance with the Standard for Cold-formed steel Framing-Trusses, American Iron and Steel Institute (AISI-Truss), subject to the limitations therein.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 22: STEEL
SECTION BC 2211: COLD-FORMED STEEL LIGHT-FRAMED SHEAR WALLS

NYC Administrative Code § 28-BC 2211

2211.1 General.

In addition to the requirements of Section 2210, the design of cold-formed steel light-framed shear walls, to resist wind and seismic loads shall be in accordance with the requirements of Section 2211.2 for Type I (segmented) shear walls or Section 2211.3 for Type II (perforated) shear walls.

Light-framed structures assigned to Seismic Design Category B, in accordance with Section 1616, shall be of any construction permitted in Section 2210. An R factor as set forth in Section 1617.6 for the appropriate steel system is permitted where the lateral design of the structure is in accordance with the provisions of Section 2211.4. Systems not detailed in accordance with Section 2211.4 shall use the R factor in Section 1617.6 designated for "steel systems not detailed for seismic."

In Seismic Design Category D, the lateral design of light-framed structures shall also comply with the requirements in Section 2211.4.

2211.2 Type I shear walls. The design of Type I shear walls, of cold-formed steel light-framed construction, to resist wind and seismic loads, shall be in accordance the requirements of this section.

1. The nominal shear value for Type I shear walls, as shown in Table 2211.2(1) for wind loads, Table 2211.2(2) for wind or seismic loads or Table 2211.2(3) for seismic loads, is permitted to establish allowable shear values or design strength values.

2. Boundary members, chords, collectors and connections thereto shall be proportioned to transmit the induced forces.

3. As an alternative to the values in Tables 2211.2(1), 2211.2(2) and 2211.2(3), shear values are permitted to be calculated by the principles of mechanics by using approved fastener values and shear values appropriate for the

sheathing material attached.

4. Type I shear walls sheathed with wood structural or sheet steel panels are permitted to have window openings, between hold-down anchors at each end of a wall segment, where details are provided to account for force transfer around openings.

5. The aspect ratio limitations of Section 2211.2.2, Item 5, shall apply to the entire Type I segment and to each wall pier at the side of each opening.

6. The height of the wall pier (h) shall be defined as the clear height of the pier at the side of an opening.

7. The width of a pier (w) shall be defined as the sheathed width of the pier.

8. The width of wall piers shall not be less than 24 inches (610 mm).

9. Hold-down anchors shall be provided at each end of a Type I shear wall capable of resisting the design forces.
[SEE graphical material in printed version]

[SEE graphical material in printed version]

[SEE graphical material in printed version]

2211.2.1 Design shear determination. Where allowable stress design (ASD) is used, the allowable shear value shall be determined by dividing the nominal shear value, shown in Tables 2211.2(1), 2211.2(2) and 2211.2(3), by a factor of safety (W) of 2.5.

Where load and resistance factor design (LRFD) is used, the design strength value shall be determined by multiplying the nominal shear value, shown in Tables 2211.2(1), 2211.2(2) and 2211.2(3), by a resistance factor (F) of 0.55.

2211.2.2 Limitations for systems. The lateral-resistant systems listed in Tables 2211.2(1), 2211.2(2) and 2211.2(3) shall conform to the following requirements:

1. Studs shall be a minimum 15/8 inches (41 mm) by 31/2 inches (89 mm) with a 3/8-inch (9.5 mm) return lip. As a minimum, studs shall be doubled (back to back) at shear wall ends.

2. Track shall be a minimum 11/4 inches (32 mm) by 31 inches (89 mm).

3. Both studs and track shall have a minimum uncoated base metal thickness of 33 mils (0.84 mm) and shall be of the following grades of structural quality steel: ASTM A 653 SS Grade 33, ASTM A 792 SS Grade 33 or ASTM A 875 SS Grade 33.

4. Fasteners along the edges in shear panels shall be placed not less than 3/8 inch (9.5 mm) in from panel edges.

5. The height-to-width shear wall aspect ratio (h/w) of wall systems shall not exceed the values in Tables 2211.2(1), 2211.2(2) and 2211.2(3). Where the limiting ratio of h/w is greater than 2:1, the shear values shall be multiplied by 2w/h.

6. Panel thicknesses shown are minimums. Panels less than 12 inches (305 mm) wide shall not be used. All panel edges shall be fully blocked.

7. Where horizontal strap blocking is used to provide edge blocking, it shall be a minimum 11/2 inches (38 mm) wide and of the same material and equal or greater thickness as the track and studs.

8. The design shear values for shear panels with different nominal shear values applied to the same side of a wall are not cumulative except as permitted in Tables 2211.2(1), 2211.2(2) and 2211.2(3). For walls with material applied to both faces of the same wall, the design shear value of material of the same capacity is cumulative. Where the material nominal shear values are not equal, the design shear value shall be either two times the design shear value of the material with the smaller values or shall be taken as the value of the stronger side, whichever is greater. Summing shear values of dissimilar material applied to opposite faces or to the same wall line is not allowed unless permitted by Table 2211.2(1).

2211.2.2.1 Sheet steel sheathing. Steel sheets, attached to cold-formed steel framing, are permitted to resist horizontal forces produced by wind or seismic loads.

1. Steel sheets shall have a minimum base metal thickness as shown in Table 2211.2(1) or 2211.2(3), and shall be of the following grades of structural quality steel: ASTM A 653 SS Grade 33, ASTM A792 SS Grade 33 or ASTM A 875 SS Grade 33.

2. Nominal shear values, used to establish the allowable shear value or design strength value, are given in Tables 2211.2(1) for wind loads and 2211.2(3) for seismic loads.

3. Steel sheets are permitted to be applied either parallel or perpendicular to framing. All edges of steel sheets shall be attached to framing members, strap blocking or shall be overlapped and attached to each other with screw spacing as required for edges.

4. Screws used to attach steel sheets shall be a minimum No. 8 modified truss head.

2211.2.2.2 Wood structural panel sheathing. Cold-formed steel framed wall systems, sheathed with wood structural panels, are permitted to resist horizontal forces produced by wind or seismic loads subject to the following:

1. Nominal shear values, used to establish the allowable shear value or design strength value, are given in Tables 2211.2(1), for wind loads, and 2211.2(3), for seismic loads.

2. Wood structural panels shall comply with DOC PS 1 or PS 2 and shall be manufactured using exterior glue.

3. Wood structural panels shall be attached to steel framing with flat-head self-drilling tapping screws with a minimum head diameter of 0.292 inch (7.4 mm).

4. Where 7/16-inch (11.1 mm) oriented strand board (OSB) is specified, 15/32-inch (12 mm) structural 1 sheathing (plywood) is permitted.

5. Structural panels are permitted to be applied either parallel or perpendicular to framing.

6. Increases of the nominal loads shown in Tables 2211.2(1) and 2211.2(3) shall not be permitted for duration of load as permitted in Chapter 23.

2211.2.2.3 Gypsum board panel sheathing. Cold-formed steel framed wall systems, sheathed with gypsum board, are permitted to resist horizontal forces produced by wind or seismic loads subject to the following:

1. Nominal shear values, used to establish the allowable shear value or design strength value, are given in Table 2211.2(2).

2. The shear values listed in Table 2211.2(2) shall not be cumulative with the shear values of other materials applied to the same wall unless otherwise permitted herein.

3. The nominal shear values shown are for gypsum board that is applied to both sides of the wall.

4. Where gypsum board is only applied to one side of the wall, the nominal shear values shall be taken as one-half of the value shown.

5. Where gypsum board is applied perpendicular to studs, end joints of adjacent courses of gypsum board sheets shall not occur over the same stud.

6. Screws used to attach gypsum board shall be a minimum No. 6 in accordance with ASTM C 954.

7. Walls resisting seismic loads shall be subject to the limitations in Section 1617.6.

2211.3 Type II shear walls. Type II (Perforated) shear walls sheathed with wood structural panels or sheet steel are permitted to resist wind and seismic loads when designed in accordance with this section. Type II walls shall meet the requirements for Type I walls except as revised by this section. Table 2211.3 Shear Resistance Adjustment Factor-Column Height (h) Maximum Opening Height Ratio and Height h/3 h/2 2h/3 5h/6 h 8'0" 2'8" 4'0" 5'4" 6'8" 8'0" 10'0" 3'4" 5'0" 6'8" 8'4" 10'0" Percent full-height sheathing

Shear Resistance Adjustment Factor 10% 1.00 0.69 0.53 0.43 0.36 20% 1.00 0.71 0.56 0.45 0.38 30% 1.00 0.74 0.59 0.49 0.42 40% 1.00 0.77 0.63 0.53 0.45 50% 1.00 0.80 0.67 0.57 0.50 60% 1.00 0.83 0.71 0.63 0.56 70% 1.00 0.87 0.77 0.69 0.63 80% 1.00 0.91 0.83 0.77 0.71 90% 1.00 0.95 0.91 0.87 0.83 100% 1.00 1.00 1.00 1.00 1.00 a. See Section 2211.3.2, Item 2.b. See Section 2211.3.2, Item 1.

2211.3.1 Limitations. The following limitations shall apply to the use of Type II shear walls:

1. A Type II shear wall segment, meeting the minimum aspect ratio (h/w) of Section 2211.3.2, Item 3, shall be located at each end of a Type II shear wall. Openings shall be permitted to occur beyond the ends of the Type II shear wall; however, the width of such openings shall not be included in the width of the Type II shear wall.

2. In Seismic Design Categories B, C, and D, the nominal shear values shall be based upon edge screw spacing not less than 4 inches (102 mm) o.c.

3. A Type II shear wall shall not have out-of-plane (horizontal) offsets. Where out-of-plane offsets occur, portions of the wall on each side of the offset shall be considered as separate Type II shear walls.

4. Collectors for shear transfer shall be provided through the full length of the Type II shear wall.

5. A Type II shear wall shall have uniform top of wall and bottom of wall elevations. Type II shear walls not having uniform elevations shall be designed by other methods.

6. Type II shear wall height, h, shall not exceed 20 feet (6096 mm).

2211.3.2 Type II shear wall resistance. The Type II shear wall resistance shall be equal to the adjusted shear resistance multiplied by the sum of the widths (SLi) of the Type II shear wall segments and shall be calculated in accordance with the following:

1. Percent full-height sheathing. The percent of full-height sheathing shall be calculated as the sum of widths (SLi) of Type II shear wall segments divided by the total width of the Type II shear wall including openings.

2. Maximum opening height ratio. The maximum opening height ratio shall be calculated by dividing the maximum opening clear height by the shear wall height, h.

3. Unadjusted shear resistance. The unadjusted shear resistance shall be the design shear values calculated in accordance with Section 2211.2.1 based upon the values in Tables 2211.2(1) and 2211.2(3). The aspect ratio of all Type II shear wall segments used in calculations shall not exceed 2:1.

Exception: Where permitted by Tables 2211.2(1) and 2211.2(3), the aspect ratio (h/w) of Type II wall segments greater than 2:1, but in no case greater than 4:1, is permitted to be included in the calculation of the unadjusted shear resistance for the wall, provided the values are multiplied by $2w/h$.

4. Adjusted shear resistance. The adjusted shear resistance shall be calculated by multiplying the unadjusted shear resistance by the shear resistance adjustment factors of Table 2211.3. For intermediate percentages of full-height sheathing, the values are permitted to be determined by interpolation.

2211.3.3 Anchorage and load path. Design of Type II shear wall anchorage and load path shall conform to the requirements of this section, or shall be calculated using principles of mechanics.

2211.3.3.1 Anchorage for in-plane shear. The unit shear force, v , transmitted into the top and out of the base of the Type II shear wall full-height sheathing segments, and into collectors (drag struts) connecting shear wall segments, shall be calculated in accordance with the following:

[SEE graphical material in printed version]

2211.3.3.2 Uplift anchorage at Type II shear wall ends. Anchorage for uplift forces due to overturning shall be provided at each end of the Type II shear wall. Where seismic loads govern, the uplift anchorage shall be determined in accordance with the requirements of Section 2211.4.3.

2211.3.3.3 Uplift anchorage between Type II shear wall ends. In addition to the requirements of Section 2211.3.3.1, Type II shear wall bottom plates at full-height sheathing shall be anchored for a uniform uplift force, t , equal to the unit shear force, v , determined in Section 2211.3.3.1.

2211.3.3.4 Compression chords. Vertical elements at each end of each Type II shear wall segment shall be designed for a compression force, C , from each story calculated in accordance with the following:

[SEE graphical material in printed version]

2211.3.3.5 Load path. A load path to the foundation shall be provided for the uplift shear and compression forces as determined from Sections 2211.3.3.1 through 2211.3.3.4, inclusive. Elements resisting shear wall forces contributed by multiple stories shall be designed for the sum of forces contributed by each story.

2211.4 Seismic Design Category D.

2211.4.1 General. In addition to the requirements of Sections 2211.2 and 2211.3, light-framed cold-formed steel wall systems, that resist seismic loads, in buildings assigned to Seismic Design Category D, shall comply with the requirements of this section.

2211.4.2 Connections. Connections for diagonal bracing members, top chord splices, boundary members and collectors shall be designed to develop the lesser of the nominal tensile strength of the member or the design seismic force multiplied by the seismic overstrength factor, W_o , from Section 1617.6. The pull-out resistance of screws shall not be used to resist design seismic forces.

2211.4.3 Anchorage of braced wall segments. Studs or other vertical boundary members at the ends of wall segments, that resist seismic loads, braced with either sheathing or diagonal braces, shall be anchored such that the bottom track is not required to resist uplift by bending of the track web. Both flanges of the studs shall be braced to prevent lateral torsional buckling. Studs or other vertical boundary members and anchorage thereto shall have the nominal strength to resist design seismic force multiplied by the seismic overstrength factor, W_o , from Section 1617.6.

2211.4.4 Sheet steel sheathing. Where steel sheathing provides lateral resistance, the design and construction of such walls shall be in accordance with the additional requirements of this section. Perimeter members at openings shall be provided and shall be detailed to distribute the shearing stresses. Wall studs and track shall have a minimum uncoated

base metal thickness of 33 mils (0.84 mm) and shall not have an uncoated base metal thickness greater than 48 mils (1.10 mm). The nominal shear value for light-framed wall systems for buildings in Seismic Design Category D shall be based upon values from Table 2211.2(3).

2211.4.5 Wood structural panel sheathing. Where wood structural panels provide lateral resistance, the design and construction of such walls shall be in accordance with the additional requirements of this section. Perimeter members at openings shall be provided and shall be detailed to distribute the shearing stresses. Wood sheathing shall not be used to splice these members. Wall studs and track shall have a minimum uncoated base metal thickness of 33 mils (0.84 mm) and shall not have an uncoated base metal thickness greater than 48 mils (1.10 mm). The nominal shear value for light-framed wall systems for buildings in Seismic Design Category D shall be based upon values from Table 2211.2(3).

2211.4.6 Diagonal bracing. Where diagonal bracing is provided for lateral resistance, provisions shall be made for pretensioning or other methods of installing. Tension-only bracing shall be used to guard against loose diagonal straps. The l/r of the brace is permitted to exceed 200.

2211.4.7 Gypsum board panel sheathing. Gypsum board panel sheathing is permitted to resist seismic loads, subject to the limitations in Table 2211.2(2) and Section 1617.6.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

2211.3 Table footnote b amended L.L. 8/2008 § 152, eff. July 1, 2008.



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Chapter 22: STEEL
SECTION BC 2212: MINIMUM THICKNESS OF METAL

NYC Administrative Code § 28-BC 2212

2212.1 Exterior members.

All exterior structural steel members exposed to weather shall have a minimum thickness of metal of 0.23 inches (5.8 mm).

Exceptions:

1. When an approved type of atmospheric corrosion resistant steel is used.
2. Exposed surfaces are zinc coated with a minimum weight of coating of approximately 0.6 ounces per square foot (0.00156 kg/m²) of exposed surface and covered with a protective coating as required by Section 2203.2.
3. Exposed surfaces are protected by other means approved by the commissioner.
4. Temporary construction that will be in place for a period of one year or less, provided that all surfaces which are exposed to the weather shall have a protective coating as required by Section 2203.2.
5. Joists or purlins that are exposed to the weather but which do not support more than 200 square feet (19 m²) of floor or roof area, and which have a protective coating as required by 2203.2.



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 Chapter 22: STEEL
 SECTION BC 2213: STRUCTURAL INTEGRITY REQUIREMENTS

NYC Administrative Code § 28-BC 2213

2213.1 General.

Structural steel members shall be designed to meet all of the requirements of this section. However, details provided for gravity, seismic and wind forces and for other purposes may be regarded as forming part of, or the whole of, these requirements. Detailing provided for one requirement may be counted towards the other requirements.

Exceptions:

1. One story structures less than 5,000 square feet (465 m²) not to exceed 15 feet (4572 mm) in height.
2. Structures in Group R-3 occupancy not more than three stories in height.

2213.2 Continuity and ties. The following requirements shall be met:

1. All bolted connections shall have at least two bolts.
2. Bolted connections of all columns, beams, braces and other structural elements that are part of the lateral load resisting system shall be designed as bearing type connections with pretensioned bolts or as slip critical connections.
3. End connections of all beams and girders shall have a design axial tension strength equal to the larger of the provided vertical shear strength of the connections at either end, but not less than 10 kips (45 kN). For the design of the connections, the shear force and the axial tensile force need not be considered to act simultaneously. For the purpose of this provision, a connection shall be considered compliant if it meets the following requirements:

3.1. For single plate shear connections, the nominal axial tension strength shall be determined for the limit state of bolt bearing, where deformation is not a consideration, on the plate and beam web.

3.2. For single angle and double angle shear connections, the nominal tension strength shall be determined for the

limit state of bolt bearing, where deformation is not a consideration, on the angles and beam web and for tension yielding on the gross area of the angles.

3.3. All other connections shall be designed for the required tension force in accordance with either the AISC-LRFD, AISC 335, or AISC-HSS.

For the purpose of meeting this integrity provision only, bolts in connections with short-slotted holes parallel to the direction of the tension force are permitted. For the purpose of checking bearing these bolts shall be assumed to be located at the end of the slots.

4. Elements and their connections that brace compression members shall have an available axial tension strength equal to at least two percent of the required strength of the compression member being braced, but not less than 10 kips (45 kN). For design of the connections, the shear force and the axial tension force need not be considered to act simultaneously. Where more than one element braces a compression member in one direction, all elements and connections shall have an available axial tension strength equal to at least 1 percent of the required strength of the compression member but not less than 10 kips (45 kN).

2213.2.1 Vertical ties. Column splices shall have an available tension strength at least equal to the largest design gravity load reaction applied to the column at any floor level located within four floors below the splice.

2213.3 Composite construction. For steel framing members and/or decking acting compositely with concrete slabs, the following requirements shall be met.

1. Shear studs shall not be less than 1/2 inch (12.7 mm) in diameter. The spacing of shear studs shall not be greater than one every 12 inches (305 mm) averaged over the length of the beam.

2. Connections at the discontinuous edges of permanent metal decking to supporting members shall have a minimum connection strength in the direction parallel to the rib of the deck equal to the shear strength of a 3/4-inch (19.1 mm) puddle weld every 12 inches (305 mm) on center.

3. Side lap connections of permanent metal decking shall have a minimum strength equal to the strength of a button punch every 24 inches (610 mm) on center.

4. Welded wire fabric reinforcement in concrete slabs shall be continuous over all supports and in all spans. Minimum area of continuous reinforcement shall be 0.0015 times the area of concrete. The welded wire fabric reinforcement shall have tension splices and be anchored at discontinuous edges.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008

2213.1 Exceptions item 2 amended L.L. 8/2008 § 153, eff. July 1, 2008.

2213.3 Item 2 amended L.L. 8/2008 § 154, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 23: WOOD
SECTION BC 2301: GENERAL

NYC Administrative Code § 28-BC 2301

2301.1 Scope.

The provisions of this chapter shall govern the materials, design, construction and quality of wood members and their fasteners.

2301.2 General design requirements. The design of structural elements or systems, constructed partially or wholly of wood or wood-based products, shall be based on one of the following methods.

2301.2.1 Allowable stress design. Design using allowable stress design methods shall resist the applicable load combinations of Chapter 16 in accordance with the provisions of Sections 2304, 2305 and 2306.

2301.2.2 Load and resistance factor design (LRFD). Design using load and resistance factor design (LRFD) methods shall resist the applicable load combinations of Chapter 16 in accordance with the provisions of Sections 2304, 2305 and 2307.

2301.2.3 Conventional light-frame wood construction. The design and construction of conventional light-frame wood construction shall be in accordance with the provisions of Sections 2304 and 2308.

Exception: Buildings designed in accordance with the provisions of the AF&PA Wood Frame Construction Manual for One- and Two-Family Dwellings shall be deemed to meet the requirements of the provisions of Section 2308.

2301.3 Nominal sizes. For the purposes of this chapter, where dimensions of lumber are specified, they shall be deemed to be nominal dimensions unless specifically designated as actual dimensions (see Section 2304.2).



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 23: WOOD
SECTION BC 2302: DEFINITIONS

NYC Administrative Code § 28-BC 2302

2302.1 Definitions.

The following words and terms shall, for the purposes of this chapter, have the meanings shown herein.

ADJUSTED SHEAR RESISTANCE. The unadjusted shear resistance multiplied by the shear resistance adjustment factors of Table 2305.3.7.2.

BRACED WALL LINE. A series of braced wall panels in a single story that meets the requirements of Section 2308.3 or 2308.12.4.

BRACED WALL PANEL. A section of wall braced in accordance with Section 2308.9.3 or 2308.12.4.

COLLECTOR. A horizontal diaphragm element parallel and in line with the applied force that collects and transfers diaphragm shear forces to the vertical elements of the lateral-force-resisting system and/or distributes forces within the diaphragm.

CONVENTIONAL LIGHT-FRAME WOOD CONSTRUCTION. A type of construction whose primary structural elements are formed by a system of repetitive wood-framing members. See Section 2308 for conventional light-frame wood construction provisions.

CRIPPLE WALL. A framed stud wall extending from the top of the foundation to the underside of floor framing for the lowest occupied floor level.

DIAPHRAGM, UNBLOCKED. A diaphragm that has edge nailing at supporting members only. Blocking between supporting structural members at panel edges is not included. Diaphragm panels are field nailed to supporting members.

DRAG STRUT. See "Collector."

FIBERBOARD. A fibrous, homogeneous panel made from lignocellulosic fibers (usually wood or cane) and having a density of less than 31 pounds per cubic foot (pcf) (497 kg/m³) but more than 10 pcf (160 kg/m³).

FIRECUTTING. The ends of wood beams, joists, and rafters resting on masonry or concrete walls shall be fire cut to a bevel of three inches in their depth.

GLUED BUILT-UP MEMBER. A structural element, the section of which is composed of built-up lumber, wood structural panels or wood structural panels in combination with lumber, all parts bonded together with structural adhesives.

GRADE (LUMBER). The classification of lumber in regard to strength and utility in accordance with American Softwood Lumber Standard DOC PS 20 and the grading rules of an approved lumber rules-writing agency.

HARDBOARD. A fibrous-felted, homogeneous panel made from lignocellulosic fibers consolidated under heat and pressure in a hot press to a density not less than 31 pcf (497 kg/m³).

NAILING, BOUNDARY. A special nailing pattern required by design at the boundaries of diaphragms.

NAILING, EDGE. A special nailing pattern required by design at the edges of each panel within the assembly of a diaphragm or shear wall.

NAILING, FIELD. Nailing required between the sheathing panels and framing members at locations other than boundary nailing and edge nailing.

NATURALLY DURABLE WOOD. The heartwood of the following species with the exception that an occasional piece with corner sapwood is permitted if 90 percent or more of the width of each side on which it occurs is heartwood.

Decay resistant. Redwood, cedar, black locust and black walnut.

Termite resistant. Redwood and Eastern red cedar.

NOMINAL SIZE (LUMBER). The commercial size designation of width and depth, in standard sawn lumber and glued-laminated lumber grades; somewhat larger than the standard net size of dressed lumber, in accordance with DOC PS 20 for sawn lumber and with the National Design Specification for Wood Construction (NDS) for glued-laminated lumber.

PARTICLEBOARD. A generic term for a panel primarily composed of cellulosic materials (usually wood), generally in the form of discrete pieces or particles, as distinguished from fibers. The cellulosic material is combined with synthetic resin or other suitable bonding system by a process in which the interparticle bond is created by the bonding system under heat and pressure.

PERFORATED SHEAR WALL. A wood structural panel sheathed wall with openings, that has not been specifically designed and detailed for force transfer around openings.

PERFORATED SHEAR WALL SEGMENT. A section of shear wall with full-height sheathing that meets the aspect ratio limits of Section 2305.3.3.

PRESERVATIVE-TREATED WOOD. Wood (including plywood) pressure treated with preservatives in accordance with Section 2303.1.8.

REFERENCE RESISTANCE (D). The resistance (force or moment as appropriate) of a member or connection computed at the reference end use conditions.

SHEAR WALL. A wall designed to resist lateral forces parallel to the plane of a wall.

STRUCTURAL GLUED-LAMINATED TIMBER. Any member comprising an assembly of laminations of lumber in which the grain of all laminations is approximately parallel longitudinally, in which the laminations are bonded with adhesives.

SUBDIAPHRAGM. A portion of a larger wood diaphragm designed to anchor and transfer local forces to primary diaphragm struts and the main diaphragm.

TIE-DOWN (HOLD-DOWN). A device used to resist uplift of the chords of shear walls.

TREATED WOOD. Wood impregnated under pressure with compounds that reduce its susceptibility to flame spread or to deterioration caused by fungi, insects or marine borers.

UNADJUSTED SHEAR RESISTANCE. The allowable shear set forth in Table 2306.4.1 where the aspect ratio of any perforated shear wall segment used in calculation of perforated shear wall resistance does not exceed 2:1. Where the aspect ratio of any perforated shear wall segment used in calculation of perforated shear wall resistance is greater than 2:1, but not exceeding 3.5:1, the unadjusted shear resistance shall be the allowable shear set forth in Table 2306.4.1, multiplied by $2w/h$.

WOOD SHEAR PANEL. A wood floor, roof or wall component sheathed to act as a shear wall or diaphragm.

WOOD STRUCTURAL PANEL. A panel manufactured from veneers, or wood strands or wafers, or a combination of veneer and wood strands or wafers, bonded together with waterproof synthetic resins or other suitable bonding systems. Examples of wood structural panels are:

Composite panels. A structural panel that is made of layers of veneer and wood-based material;

Oriented strand board (OSB). A wood structural panel that is a mat-formed product composed of thin rectangular wood strands or wafers arranged in oriented layers; or

Plywood. A wood structural panel comprised of plies of wood veneer arranged in cross-aligned layers.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 23: WOOD
SECTION BC 2303: MINIMUM STANDARDS AND QUALITY

NYC Administrative Code § 28-BC 2303

2303.1 General.

Structural lumber, end-jointed lumber, prefabricated I-joists, structural glued-laminated timber, wood structural panels, fiberboard sheathing (when used structurally), hardboard siding (when used structurally), particleboard, preservative-treated wood, fire-retardant-treated wood, hardwood, plywood, trusses and joist hangers shall conform to the applicable provisions of this section.

2303.1.1 Lumber. Lumber used for load-supporting purposes, including end-jointed or edge-glued lumber, machine stress-rated or machine evaluated lumber, shall be identified by the grade mark of a lumber grading or inspection agency that has been approved by the commissioner that complies with DOC PS 20 or equivalent. Grading practices and identification shall comply with rules published by an agency approved in accordance with the procedures of DOC PS 20 or equivalent procedures. In lieu of a grade mark on the material, a certificate of inspection as to species and grade issued by a lumber-grading or inspection agency meeting the requirements of this section is permitted to be accepted for precut, remanufactured or rough-sawn lumber, and for sizes larger than 3 inches (76 mm) nominal thickness. Approved end-jointed lumber is permitted to be used interchangeably with solid-sawn members of the same species and grade.

2303.1.2 Prefabricated wood I-joists. Structural capacities and design provisions for prefabricated wood I-joists shall be established and monitored in accordance with ASTM D 5055. The use of prefabricated wood I-joists structurally shall be subject to the special inspection requirements of Chapter 17.

2303.1.3 Structural glued-laminated timber. Glued-laminated timbers shall be manufactured and identified as required in AITC A190.1 and ASTM D 3737.

2303.1.4 Wood structural panels. Wood structural panels, when used structurally (including those used for siding, roof and wall sheathing, sub-flooring, diaphragms and built-up members), shall conform to the requirements for their type in DOC PS 1 or PS 2. Each panel or member shall be identified for grade and glue type by the trademarks of an

approved testing and grading agency. Wood structural panel components shall be designed and fabricated in accordance with the applicable standards listed in Section 2306.1 and identified by the trademarks of an approved testing and inspection agency indicating conformance with the applicable standard. In addition, wood structural panels when permanently exposed in outdoor applications shall be of exterior type, except that wood structural panel roof sheathing exposed to the outdoors on the underside is permitted to be interior type bonded with exterior glue, Exposure 1.

2303.1.5Fiberboard.Fiberboard for its various uses shall conform to ANSI/AHA A 194.1 or ASTM C 208. Fiberboard sheathing, when used structurally, shall be so identified by an approved agency as conforming to ANSI/AHA A 194.1 or ASTM C 208.

2303.1.5.1Jointing.To ensure tight-fitting assemblies, edges shall be manufactured with square, ship-lapped, beveled, tongue-and-groove or U-shaped joints.

2303.1.5.2Roof insulation.Where used as roof insulation in all types of construction, fiberboard shall be protected with an approved roof covering.

2303.1.5.3Wall insulation.Where installed and fire-blocked to comply with Chapter 7, fiberboards are permitted as wall insulation in all types of construction. In fire walls and fire barriers, unless treated to comply with Section 803.1 for Class A materials, the boards shall be cemented directly to the concrete, masonry or other noncombustible base and shall be protected with an approved noncombustible veneer anchored to the base without intervening airspaces.

2303.1.5.3.1Protection.Fiberboard wall insulation applied on the exterior of foundation walls shall be protected below ground level with a bituminous coating.

2303.1.5.4Insulating roof deck.Where used as roof decking in open beam construction, fiberboard insulation roof deck shall have a nominal thickness of not less than 1 inch (25 mm).

2303.1.6Hardboard.Hardboard siding used structurally shall be identified by an approved agency conforming to AHA A135.6. Hardboard under-layment shall meet the strength requirements of 7/32-inch (5.6 mm) or 1/4-inch (6.4 mm) service class hardboard planed or sanded on one side to a uniform thickness of not less than 0.200 inch (5.1 mm). Prefinished hardboard paneling shall meet the requirements of AHA A135.5. Other basic hardboard products shall meet the requirements of AHA A135.4. Hardboard products shall be installed in accordance with manufacturer's recommendations.

2303.1.7Particleboard.Particleboard shall conform to ANSI A208.1. Particleboard shall be identified by the grade mark or certificate of inspection issued by an approved agency. Particleboard shall not be utilized for applications other than indicated in this section unless the particleboard complies with the provisions of Section 2306.4.3.

2303.1.7.1Floor underlayment.Particleboard floor underlayment shall conform to Type PBU of ANSI A208.1. Type PBU underlayment shall not be less than 1/4-inch (6.4 mm) thick and shall be installed in accordance with the instructions of the Composite Panel Association.

2303.1.8Preservative-treated wood.Lumber, timber, plywood, piles and poles supporting permanent structures required by Section 2304.11 to be preservative- treated shall conform to the requirements of the applicable AWP Standard C1, C2, C3, C4, C9, C14, C15, C16, C22, C23, C24, C28, C31, C33 and M4, for the species, product, preservative and end use. Preservatives shall conform to AWP P1/P13, P2, P5, P8 and P9. Lumber and plywood used in wood foundation systems shall conform to Chapter 18.

2303.1.8.1Identification.Wood required by Section 2304.11 to be preservative- treated shall bear the quality mark of an inspection agency that maintains continuing supervision, testing and inspection over the quality of the preservative-treated wood. Inspection agencies for preservative-treated wood shall be listed by an accreditation body that complies with the requirements of the American Lumber Standards Treated Wood Program, or its equivalent. The

quality mark shall be on a stamp or label affixed to the preservative-treated wood, and shall include the following information:

1. Identification of treating manufacturer.
2. Type of preservative used.
3. Minimum preservative retention (pcf).
4. End use for which the product is treated.
5. AWP standard to which the product was treated.
6. Identity of the accredited inspection agency.

2303.1.8.2Moisture content. Where preservative-treated wood is used in enclosed locations where drying in service cannot readily occur, such wood shall be at a moisture content of 19 percent or less before being covered with insulation, interior wall finish, floor covering or other materials.

2303.1.9Structural composite lumber. Structural capacities for structural composite lumber shall be established and monitored in accordance with ASTM D 5456.

2303.2Fire-retardant-treated wood. Fire-retardant-treated wood is any wood product which, when impregnated with chemicals by a pressure process or other means during manufacture, shall have, when tested in accordance with ASTM E 84, a listed flame spread index of 25 or less and show no evidence of significant progressive combustion when the test is continued for an additional 20-minute period. In addition, the flame front shall not progress more than 10.5 feet (3200 mm) beyond the centerline of the burners at any time during the test.

2303.2.1Labeling. Fire-retardant-treated lumber and wood structural panels shall be labeled. The label shall contain the following items:

1. The identification of an approved agency in accordance with chapter 1 of Title 28 of the Administrative Code.
2. Identification of the treating manufacturer.
3. The name of the fire-retardant treatment.
4. The species of wood treated.
5. Flame spread and smoke-developed index.
6. Method of drying after treatment.
7. Conformance with appropriate standards in accordance with Sections 2303.2.2 through 2303.2.5.
8. For fire-retardant-treated wood exposed to weather, damp or wet locations, include the words "No increase in the listed classification when subjected to the Standard Rain Test" (ASTM D 2898).

2303.2.2Strength adjustments. Design values for untreated lumber and wood structural panels, as specified in Section 2303.1, shall be adjusted for fire-retardant-treated wood. Adjustments to design values shall be based on an approved method of investigation that takes into consideration the effects of the anticipated temperature and humidity to which the fire-retardant-treated wood will be subjected, the type of treatment and redrying procedures.

2303.2.2.1Wood structural panels. The effect of treatment and the method of redrying after treatment, and exposure

to high temperatures and high humidities on the flexure properties of fire-retardant-treated softwood plywood shall be determined in accordance with ASTM D 5516. The test data developed by ASTM D 5516 shall be used to develop adjustment factors, maximum loads and spans, or both, for untreated plywood design values in accordance with ASTM D 6305. Each manufacturer shall publish the allowable maximum loads and spans for service as floor and roof sheathing for its treatment.

2303.2.2 Lumber. For each species of wood treated, the effect of the treatment and the method of redrying after treatment and exposure to high temperatures and high humidities on the allowable design properties of fire-retardant-treated lumber shall be determined in accordance with ASTM D 5664. The test data developed by ASTM D 5664 shall be used to develop modification factors for use at or near room temperature and at elevated temperatures and humidity in accordance with an approved method of investigation. Each manufacturer shall publish the modification factors for service at temperatures of not less than 80F (26.7C) and for roof framing. The roof framing modification factors shall take into consideration the climatological location.

2303.2.3 Exposure to weather, damp or wet locations. Where fire-retardant-treated wood is exposed to weather, or damp or wet locations, it shall be identified as "Exterior" to indicate there is no increase in the listed flame spread index as defined in Section 2303.2 when subjected to ASTM D 2898.

2303.2.4 Interior applications. Interior fire-retardant-treated wood shall have moisture content of not over 28 percent when tested in accordance with ASTM D 3201 procedures at 92-percent relative humidity. Interior fire-retardant-treated wood shall be tested in accordance with Section 2303.2.2.1 or 2303.2.2.2. Interior fire-retardant-treated wood designated as Type A shall be tested in accordance with the provisions of this section.

2303.2.5 Moisture content. Fire-retardant-treated wood shall be dried to a moisture content of 19 percent or less for lumber and 15 percent or less for wood structural panels before use. For wood kiln dried after treatment (KDAT), the kiln temperatures shall not exceed those used in kiln drying the lumber and plywood submitted for the tests described in Section 2303.2.2.1 for plywood and 2303.2.2.2 for lumber.

2303.2.6 Type I and II construction applications. See Section 603.1 for limitations on the use of fire-retardant-treated wood in buildings of Type I or II construction.

2303.3 Hardwood plywood. Hardwood and decorative plywood shall be manufactured and identified as required in HPVA HP-1.

2303.4 Trusses. Metal-plate-connected wood trusses shall be manufactured as required by TPI 1. Each manufacturer of trusses using metal plate connectors shall retain an approved agency to make unscheduled inspections of truss manufacturing and delivery operations. The inspection shall cover all phases of truss operations, including lumber storage, handling, cutting fixtures, presses or rollers, manufacturing, bundling and banding. Metal-plate connected wood trusses shall also be subject to the special inspection requirements of Chapter 17.

2303.4.1 Truss design drawings. Truss construction documents shall be prepared by a registered design professional and shall be provided to the commissioner and approved prior to installation. These construction documents shall include, at a minimum, the information specified below. Truss shop drawings shall be provided with the shipment of trusses delivered to the job site.

1. Slope or depth, span and spacing;
2. Location of joints;
3. Required bearing widths;
4. Design loads as applicable;

5. Top chord live load (including snow loads);
6. Top chord dead load;
7. Bottom chord live load;
8. Bottom chord dead load;
9. Concentrated loads and their points of application;
10. Controlling wind and earthquake loads;
11. Adjustments to lumber and metal connector plate design value for conditions of use;
12. Each reaction force and direction;
13. Metal connector plate type, size, thickness or gage, and the dimensioned location of each metal connector plate except where symmetrically located relative to the joint interface;
14. Lumber size, species and grade for each member;
15. Connection requirements for:
 - 15.1. Truss to truss girder;
 - 15.2. Truss ply to ply; and
 - 15.3. Field splices;
16. Calculated deflection ratio or maximum deflection for live and total load;
17. Maximum axial compression forces in the truss members to design the size, connections and anchorage of the permanent continuous lateral bracing. Forces shall be shown on the truss construction documents or on supplemental documents; and
18. Required permanent truss member bracing location.

2303.5 Test standard for joist hangers and connectors. For the required test standards for joist hangers and connectors, see Section 1715.1.

2303.6 Nails and staples. Nails and staples shall conform to requirements of ASTM F 1667. Nails used for framing and sheathing connections shall have minimum average bending yield strengths as follows: 80 kips per square inch (ksi) (551 MPa) for shank diameters larger than 0.177 inch (4.50 mm) but not larger than 0.254 inch (6.45 mm), 90 ksi (620 MPa) for shank diameters larger than 0.142 inch (3.61 mm) but not larger than 0.177 inch (4.50 mm) and 100 ksi (689 MPa) for shank diameters of 0.142 inch (3.61 mm) or less.

2303.7 Shrinkage. Consideration shall be given in design to the possible effect of cross-grain dimensional changes considered vertically which may occur in lumber fabricated in a green condition.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008

2303.1.2 amended L.L. 8/2008 § 155, eff. July 1, 2008.

2303.4 amended L.L. 8/2008 § 155, eff. July 1, 2008.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 23: WOOD
SECTION BC 2304: GENERAL CONSTRUCTION REQUIREMENTS

NYC Administrative Code § 28-BC 2304

2304.1 General.

The provisions of this section apply to design methods specified in Section 2301.2.

2304.2Size of structural members.Computations to determine the required sizes of members shall be based on the net dimensions (actual sizes) and not nominal sizes.

2304.3Wall framing.The framing of exterior and interior walls shall be in accordance with the provisions specified in Section 2308 unless a specific design is furnished.

2304.3.1Bottom plates.Studs shall have full bearing on a 2-inch-thick (actual 1 1/2-inch, 38 mm) or larger plate or sill having a width at least equal to the width of the studs.

2304.3.2Framing over openings.Headers, double joists, trusses or other approved assemblies that are of adequate size to transfer loads to the vertical members shall be provided over window and door openings in load-bearing walls and partitions.

2304.3.3.Shrinkage.Wood walls and bearing partitions shall not support more than two floors and a roof unless an analysis satisfactory to the commissioner shows that shrinkage of the wood framing will not have adverse effects on the structure or any plumbing, electrical or mechanical systems, or other equipment installed therein due to excessive shrinkage or differential movements caused by shrinkage. The analysis shall also show that the roof drainage system and the foregoing systems or equipment will not be adversely affected or, as an alternate, such systems shall be designed to accommodate the differential shrinkage or movements.

2304.4Floor and roof framing.The framing of wood-joisted floors and wood framed roofs shall be in accordance with the provisions specified in Section 2308 unless a specific design is furnished.

2304.5Framing around flues and chimneys.Combustible framing shall be a minimum of 2 inches (51 mm), but shall

not be less than the distance specified in Sections 2111 and 2113 and the New York City Mechanical Code, from flues, chimneys and fireplaces, and 6 inches (152 mm) away from flue openings.

2304.6 Wall sheathing. Except as provided for in Section 1405 for weather boarding or where stucco construction that complies with Section 2510 is installed, enclosed buildings shall be sheathed with one of the materials of the nominal thickness specified in Table 2304.6 or any other approved material of equivalent strength or durability.

2304.6.1 Wood structural panel sheathing. Where wood structural panel sheathing is used as the exposed finish on the exterior of outside walls, it shall have an exterior exposure durability classification. Where wood structural panel sheathing is used on the exterior of outside walls but not as the exposed finish, it shall be of a type manufactured with exterior glue (Exposure 1 or Exterior). Where wood structural panel sheathing is used elsewhere, it shall be of a type manufactured with intermediate or exterior glue.

2304.6.2 Interior paneling. Softwood wood structural panels used for interior paneling shall conform with the provisions of Chapter 8 and shall be installed in accordance with Table 2304.9.1. Panels shall comply with DOC PS 1 or PS 2. Prefinished hardboard paneling shall meet the requirements of AHA A135.5, Prefinished Hardboard Paneling. Hardwood plywood shall conform to HPVA HP-1, The American National Standard for Hardwood and Decorative Plywood. Table 2304.6 Minimum Thickness of Wall Sheathing Sheathing Type Minimum Thickness Maximum Wall Stud Spacing Wood boards 5/8 inch 24 inches on center Fiberboard 1/2 inch 16 inches on center Wood structural panel In accordance with Tables 2308.9.3(2) and 2308.9.3(3) - M-S "Exterior Glue" and M-2 "Exterior Glue" Particleboard In accordance with Tables 2306.4.3 and 2308.9.3(5) - Gypsum sheathing 1/2 inch 16 inches on center Gypsum wallboard 1/2 inch 24 inches on center Reinforced cement mortar 1 inch 24 inches on center For SI: 1 inch = 25.4 mm.

2304.7 Floor and roof sheathing.

2304.7.1 Structural floor sheathing. Structural floor sheathing shall be designed in accordance with the general provisions of this code and the special provisions in this section. Floor sheathing conforming to the provisions of Table 2304.7(1), 2304.7(2), 2304.7(3) or 2304.7(4) shall be deemed to meet the requirements of this section.

2304.7.2 Structural roof sheathing. Structural roof sheathing shall be designed in accordance with the general provisions of this code and the special provisions in this section. Roof sheathing conforming to the provisions of Table 2304.7(1), 2304.7(2), 2304.7(3) or 2304.7(5) shall be deemed to meet the requirements of this section. Wood structural panel roof sheathing shall be bonded by exterior glue.

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2304.8 Mechanically laminated floors and decks.

2304.8.1 General. A laminated lumber floor or deck built up of wood members set on edge, when meeting the following requirements, is permitted to be designed as a solid floor or roof deck of the same thickness, and continuous spans are permitted to be designed on the basis of the full cross section using the simple span moment coefficient.

Nail lengths shall not be less than two and one-half times the net thickness of each lamination. Where deck supports are 4 feet (1219 mm) on center (o.c.) or less, side nails shall be spaced not more than 30 inches (762 mm) o.c. alternately near top and bottom edges, and staggered one-third of the spacing in adjacent laminations. Where supports

are spaced more than 4 feet (1219 mm) o.c., side nails shall be spaced not more than 18 inches (457 mm) o.c. alternately near top and bottom edges, and staggered one-third of the spacing in adjacent laminations. Two side nails shall be used at each end of butt-jointed pieces.

Laminations shall be toenailed to supports with 20d or larger common nails. Where the supports are 4 feet (1219 mm) o.c. or less, alternate laminations shall be toenailed to alternate supports; where supports are spaced more than 4 feet (1219 mm) o.c., alternate laminations shall be toenailed to every support. A single-span deck shall have all laminations full length. A continuous deck of two spans shall not have more than every fourth lamination spliced within quarter points adjoining supports. Joints shall be closely butted over supports or staggered across the deck but within the adjoining quarter spans. No lamination shall be spliced more than twice in any span.

2304.9Connections and fasteners.

2304.9.1Fastener requirements.Connections for wood members shall be designed in accordance with the appropriate methodology in Section 2301.2. The number and size of nails connecting wood members shall not be less than that set forth in Table 2304.9.1.

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2304.9.2Sheathing fasteners.Sheathing nails or other approved sheathing connectors shall be driven so that their head or crown is flush with the surface of the sheathing.

2304.9.3Joist hangers and framing anchors.Connections depending on joist hangers or framing anchors, ties and other mechanical fastenings not otherwise covered are permitted where approved. The vertical load-bearing capacity, torsional moment capacity and deflection characteristics of joist hangers shall be determined in accordance with Section 1715.1.

2304.9.4Other fasteners.Clips, staples, glues and other approved methods of fastening are permitted where approved.

2304.9.5Fasteners in preservative-treated and fire-retardant-treated wood.Fasteners for preservative-treated and fire-retardant-treated wood shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Fastenings for wood foundations shall be as required in AF & PA Technical Report No. 7.

2304.9.6Load path.Where wall framing members are not continuous from foundation sill to roof, the members shall be secured to ensure a continuous load path. Where required, sheet metal clamps, ties or clips shall be formed of galvanized steel or other approved corrosion-resistant material not less than 0.040 inch (1.01 mm) nominal thickness.

2304.9.7Framing requirements.Wood columns and posts shall be framed to provide full end bearing. Alternatively, column-and-post end connections shall be designed to resist the full compressive loads, neglecting end-bearing capacity. Column-and-post end connections shall be fastened to resist lateral and net induced uplift forces.

2304.10Heavy timber construction.

2304.10.1 Minimum member sizes.

2304.10.1.1 Columns. Columns shall be at least 8 inches (203 mm) in all dimensions when supporting floor loads and at least 6 inches (152 mm) wide and 8 inches (203 mm) deep when supporting roof and ceiling loads only.

2304.10.1.2 Beams and girders. Beams and girders shall be at least 6 inches (152 mm) wide and 10 inches (254 mm) deep.

2304.10.1.3 Frames and arches. Frames and arches that spring from grade or the floor line and support floor loads shall be at least 8 inches (203 mm) in all dimensions. Frames or arches for roof construction that spring from grade or the floor line and do not support floor loads shall have members at least 6 inches (152 mm) wide and 8 inches (203 mm) deep for the lower half of the height, and at least 6 inches (152 mm) deep for the upper half.

Frames or arches for roof construction that spring from the top of walls or wall abutments, framed timber trusses, and other roof framing, which do not support floor loads, shall have members at least 4 inches (102 mm) wide and 6 inches (152 mm) deep. Spaced members may be composed of two or more pieces at least 3 inches (76 mm) thick when blocked solidly through their intervening spaces or when such spaces are tightly closed by a continuous wood cover plate at least 2 inches (51 mm) thick secured to the underside of the members. Splice plates shall be at least 3 inches (76 mm) thick. When protected by approved automatic sprinklers under the roof deck, framing members shall be at least 3 inches (76 mm) wide.

2304.10.1.4 Trusses. Timber trusses supporting floor loads shall have members at least 8 inches (203 mm) in all dimensions.

2304.10.2 Columns. Columns shall be continuous or superimposed throughout all stories by means of reinforced concrete or metal caps with brackets, or shall be connected by properly designed steel or iron caps, with pintles and base plates, or by timber splice plates affixed to the columns by metal connectors housed within the contact faces, or by other approved methods.

2304.10.2.1 Column connections. Girders and beams shall be closely fitted around columns and adjoining ends shall be cross tied to each other, or inter-tied by caps or ties, to transfer horizontal loads across joints. Wood bolsters shall not be placed on tops of columns unless the columns support roof loads only.

2304.10.3 Floor framing. Approved wall plate boxes or hangers shall be provided where wood beams, girders or trusses rest on masonry or concrete walls. Where intermediate beams are used to support a floor, they shall rest on top of girders, or shall be supported by ledgers or blocks securely fastened to the sides of the girders, or they shall be supported by an approved metal hanger into which the ends of the beams shall be closely fitted.

2304.10.4 Roof framing. Every roof girder and at least every alternate roof beam shall be anchored to its supporting member; and every monitor and every saw tooth construction shall be anchored to the main roof construction. Such anchors shall consist of steel bolts of sufficient strength to resist vertical uplift of the roof.

2304.10.5 Floor decks. Floor decks and covering shall not extend closer than 1/2 inch (12.7 mm) to walls. Such 1/2-inch (12.7 mm) spaces shall be covered by a molding fastened to the wall either above or below the floor and arranged such that the molding will not obstruct the expansion or contraction movements of the floor. Corbeling of masonry walls under floors is permitted in place of such molding.

2304.10.6 Roof decks. Where supported by a wall, roof decks shall be anchored to walls to resist uplift forces determined in accordance with Chapter 16. Such anchors shall consist of steel bolts of sufficient strength to resist vertical uplift of the roof.

2304.10.7 Fabrication. All timber shall be accurately cut and framed to a close fit in such a manner that the joints

will have even bearing over the contact surfaces. Mortises shall be true to size for their full depth and tenons shall fit snugly. No shimming in joints, or open joints, shall be permitted.

2304.10.8Erection.Joints shall have a tight fit. Fasteners shall be installed in a manner that will not damage the wood. End compression joints shall be brought to full bearing. All framework shall be carried up true and plumb. As erection progresses, the work shall be bolted, or nailed as necessary, to resist all dead load, wind, and erection stresses. The structure shall be properly aligned before final tightening of the connections.

2304.11Protection against decay and termites.

2304.11.1General.Where required by this section, protection from decay and termites shall be provided by the use of naturally durable or preservative-treated wood.

2304.11.2Wood used above ground.Wood installed above ground in the locations specified in Sections 2304.11.2.1 through 2304.11.2.6 shall be naturally durable wood or preservative-treated wood that uses water-borne preservatives, and shall be treated in accordance with AWPAC2 or C9 or applicable AWPAC standards for above ground use.

2304.11.2.1Joists, girders and subfloor.Where wood joists or the bottom of a wood structural floor without joists are closer than 18 inches (457 mm), or wood girders are closer than 12 inches (305 mm) to the exposed ground in crawl spaces or unexcavated areas located within the perimeter of the building foundation, the floor assembly (including posts, girders, joists and subfloor) shall be of naturally durable or preservative-treated wood.

2304.11.2.2Framing.Wood framing members, including wood sheathing, which rest on exterior foundation walls and are less than 8 inches (203 mm) from exposed earth shall be of naturally durable or preservative-treated wood. Wood framing members and furring strips attached directly to the interior of exterior masonry or concrete walls below grade shall be of approved naturally durable or preservative-treated wood.

2304.11.2.3Sleepers and sills.Sleepers and sills on a concrete or masonry slab that is in direct contact with earth shall be of naturally durable or preservative-treated wood.

2304.11.2.4Girder ends.The ends of wood girders entering exterior masonry or concrete walls shall be provided with a 1/2-inch (12.7 mm) air space on top, sides and end, unless naturally durable or preservative-treated wood is used.

2304.11.2.5Wood siding.Clearance between wood siding and earth on the exterior of a building shall not be less than 6 inches (152 mm) except where siding, sheathing and wall framing are of naturally durable or preservative-treated wood.

2304.11.2.6Posts or columns.Posts or columns supporting permanent structures and supported by a concrete or masonry slab or footing that is in direct contact with the earth shall be of naturally durable or preservative-treated wood.

Exceptions:

1. Posts or columns that are either exposed to the weather or located in basements or cellars, supported by concrete piers or metal pedestals projected at least 1 inch (25 mm) above the slab or deck and 6 inches (152 mm) above exposed earth, and are separated therefrom by an impervious moisture barrier.

2. Posts or columns in enclosed crawl spaces or unexcavated areas located within the periphery of the building, supported by a concrete pier or metal pedestal at a height greater than 8 inches (203 mm) from exposed ground, and are separated therefrom by an impervious moisture barrier.

2304.11.3Laminated timbers.The portions of glued-laminated timbers that form the structural supports of a building or other structure and are exposed to weather and not properly protected by a roof, eave or similar covering shall be pressure-treated with preservative, or be manufactured from naturally durable or preservative-treated wood.

2304.11.4Wood in contact with the ground or fresh water.Wood in contact with the ground (exposed earth) that supports permanent structures shall be of naturally durable (species for both decay and termite resistance) or preservative-treated wood using water-borne preservatives and shall be treated in accordance with AWPAC2, C9 or other applicable AWPAC standard for soil or fresh water contact, where used in the locations specified in Sections 2304.11.4.1 and 2304.11.4.2.

Exception: Untreated wood is permitted where such wood is continuously and entirely below the ground-water level or submerged in fresh water.

2304.11.4.1Posts or columns.Posts and columns supporting permanent structures that are embedded in concrete in direct contact with the earth or embedded in concrete exposed to the weather, or in direct contact with the earth, shall be of preservative-treated wood.

2304.11.4.2Wood structural members.Wood structural members that support moisture-permeable floors or roofs that are exposed to the weather, such as concrete or masonry slabs, shall be of naturally durable or preservative-treated wood unless separated from such floors or roofs by an impervious moisture barrier.

2304.11.5Supporting member for permanent appurtenances.Naturally durable or preservative-treated wood shall be utilized for those portions of wood members that form the structural supports of buildings, balconies, porches or similar permanent building appurtenances where such members are exposed to the weather without adequate protection from a roof, eave, overhang or other covering to prevent moisture or water accumulation on the surface or at joints between members.

2304.11.6Termite protection.In geographical areas where the hazard of termite damage is known to be very heavy, the floor framing shall be of naturally durable or preservative-treated wood, or provided with approved methods of termite protection.

2304.11.7Wood used in retaining walls and cribs.Wood installed in retaining or crib walls shall be of preservative-treated wood treated in accordance with AWPAC2 or C9 for soil and fresh water contact.

2304.11.8Attic ventilation.For attic ventilation, see Section 1203.2.

2304.11.9Under-floor ventilation (crawl space).For under-floor ventilation (crawl space), see Section 1203.3.

2304.11.10Firecutting.The ends of wood beams, joists and rafters resting on masonry or concrete walls shall be firecut to a bevel of three inches in their depth.

2304.11.11Debris.All loose wood and debris and all wood forms shall be removed from spaces under the building. All stump and roots shall be grubbed to a minimum depth of twelve inches.

2304.12Wood supporting masonry or concrete.Wood members shall not be used to permanently support the dead load of any masonry or concrete.

Exceptions:

1. Masonry or concrete nonstructural floor or roof surfacing not more than 4 inches (102 mm) thick is permitted to be supported by wood members.

2. Any structure is permitted to rest upon wood piles constructed in accordance with the requirements of Chapter 18.

3. Veneer of brick, concrete or stone applied as specified in Section 1405.5 having an installed weight of 40 pounds per square foot (psf) (1.9 kN/m²) or less is permitted to be supported by an approved treated wood foundation when the

maximum height of veneer does not exceed 30 feet (9144 mm) above the foundation. Such veneer used as an interior wall finish is permitted to be supported on wood floor construction. The wood floor construction shall be designed to support the additional weight of the veneer plus any other loads and to limit the deflection and shrinkage to 1/600 of the span of the supporting members.

4. Glass unit masonry having an installed weight of 20 psf (0.96 kN/m²) or less is permitted to be installed in accordance with the provisions of Section 2110. The wood construction supporting the glass unit masonry shall be designed for dead and live loads to limit deflection and shrinkage to 1/600 of the span of the supporting members.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 23: WOOD

SECTION BC 2305: GENERAL DESIGN REQUIREMENTS FOR LATERAL-FORCE-RESISTING SYSTEMS

NYC Administrative Code § 28-BC 2305

2305.1 General.

Structures using wood shear walls and diaphragms to resist wind, seismic and other lateral loads shall be designed and constructed in accordance with the provisions of this section.

2305.1.1 Shear resistance based on principles of mechanics. Shear resistance of diaphragms and shear walls are permitted to be calculated by principles of mechanics using values of fastener strength and sheathing shear resistance.

2305.1.2 Framing. Boundary elements shall be provided to transmit tension and compression forces. Perimeter members at openings shall be provided and shall be detailed to distribute the shearing stresses. Diaphragm and shear wall sheathing shall not be used to splice boundary elements. Diaphragm chords and collectors shall be placed in, or tangent to, the plane of the diaphragm framing unless it can be demonstrated that the moments, shears and deformations, considering eccentricities resulting from other configurations can be tolerated without exceeding the adjusted resistance and drift limits.

2305.1.2.1 Framing members. Framing members shall be at least 2 inch (51 mm) nominal width. In general, adjoining panel edges shall bear and be attached to the framing members and butt along their centerlines. Nails shall be placed not less than 3/8 inch (9.5 mm) from the panel edge, not more than 12 inches (305 mm) apart along intermediate supports, and 6 inches (152 mm) along panel edge bearings, and shall be firmly driven into the framing members.

2305.1.3 Openings in shear panels. Openings in shear panels that materially affect their strength shall be fully detailed on the plans, and shall have their edges adequately reinforced to transfer all shearing stresses.

2305.1.4 Shear panel connections. Positive connections and anchorages, capable of resisting the design forces, shall be provided between the shear panel and the attached components. In Seismic Design Category D, toenails shall not be used to transfer lateral forces in excess of 150 pounds per foot (2189 N/m) from diaphragms to shear walls, drag struts (collectors) or other elements, or from shear walls to other elements.

2305.1.5 Wood members resisting horizontal seismic forces contributed by masonry and concrete. Wood shear walls, diaphragms, horizontal trusses and other members shall not be used to resist horizontal seismic forces contributed by masonry or concrete construction in structures over one story in height.

Exceptions:

1. Wood floor and roof members are permitted to be used in horizontal trusses and diaphragms to resist horizontal seismic forces contributed by masonry or concrete construction (including those due to masonry veneer, fireplaces and chimneys) provided such forces do not result in torsional force distribution through the truss or diaphragm.

2. Wood structural panel sheathed shear walls are permitted to be used to provide resistance to seismic forces contributed by masonry or concrete construction in two-story structures of masonry or concrete construction, provided the following requirements are met:

2.1. Story-to-story wall heights shall not exceed 12 feet (3658 mm).

2.2. Diaphragms shall not be designed to transmit lateral forces by rotation. Diaphragms shall not cantilever past the outermost supporting shear wall.

2.3. Combined deflections of diaphragms and shear walls shall not permit story drift of supported masonry or concrete walls to exceed the limit of Section 1617.3.

2.4. Wood structural panel sheathing in diaphragms shall have unsupported edges blocked. Wood structural panel sheathing for both stories of shear walls shall have unsupported edges blocked and, for the lower story, shall have a minimum thickness of 15/32 inch (11.9 mm).

2.5. There shall be no out-of-plane horizontal offsets between the first and second stories of wood structural panel shear walls.

2305.2 Design of wood diaphragms.

2305.2.1 General. Wood diaphragms are permitted to be used to resist horizontal forces provided the deflection in the plane of the diaphragm, as determined by calculations, tests or analogies drawn therefrom, does not exceed the permissible deflection of attached distributing or resisting elements. Connections shall extend into the diaphragm a sufficient distance to develop the force transferred into the diaphragm.

2305.2.2 Deflection. Permissible deflection shall be that deflection up to which the diaphragm and any attached distributing or resisting element will maintain its structural integrity under design load conditions, such that the resisting element will continue to support design loads without danger to occupants of the structure. Calculations for diaphragm deflection shall account for the usual bending and shear components as well as any other factors, such as nail deformation, which will contribute to deflection. The deflection (D) of a blocked wood structural panel diaphragm uniformly nailed throughout is permitted to be calculated by using the following formula. If not uniformly nailed, the constant 0.188 (For SI: 1/1627) in the third term must be modified accordingly.
[SEE graphical material in printed version]

2305.2.3 Diaphragm aspect ratios. Size and shape of diaphragms shall be limited as set forth in Table 2305.2.3. Table 2305.2.3 Maximum Diaphragm Dimension Ratios Horizontal and Sloped Diaphragm Type Maximum Length-Width Ratio Wood structural panel, nailed all edges 4:1 Wood structural panel, blocking omitted at intermediate joints 3:1 Diagonal sheathing, single 3:1 Diagonal sheathing, double 4:1

2305.2.4 Construction. Shear panels shall be constructed of wood structural panels, manufactured with exterior glue, not less than 4 feet by 8 feet (1219 mm by 2438 mm), except at boundaries and changes in framing. Boundary elements

shall be connected at corners. Wood structural panel thickness for horizontal diaphragms shall not be less than set forth in Tables 2304.7(3) and 2304.7(5) for corresponding joist spacing and loads, except that 1/4 inch (6.4 mm) is permitted to be used where perpendicular loads permit. Sheet-type sheathing shall be arranged so that the width of a sheet in a shear wall shall not be less than 2 feet (610 mm).

2305.2.5 Rigid diaphragms. Design of structures with rigid diaphragms shall conform to the structure configuration requirements of Section 9.5.2.3 of ASCE 7 and the horizontal shear distribution requirements of Section 9.5.5.5 of ASCE 7.

Open front structures with rigid wood diaphragms resulting in torsional force distribution are permitted provided the length, l , of the diaphragm normal to the open side does not exceed 25 feet (7620 mm), the diaphragm sheathing conforms to Section 2305.2.4, and the l/w ratio [as shown in Figure 2305.2.5(1)] is less than 1.0 for one-story structures or 0.67 for structures over one story in height.

Exception: Where calculations show that diaphragm deflections can be tolerated, the length, l , normal to the open end is permitted to be increased to al/w ratio not greater than 1.5 where sheathed in compliance with Section 2305.2.4 or to 1.0 where sheathed in compliance with Section 2306.3.4 or 2306.3.5.

Rigid wood diaphragms are permitted to cantilever past the outermost supporting shear wall (or other vertical resisting element) a length, l , of not more than 25 feet (7620 mm) or two-thirds of the diaphragm width, w , whichever is the smaller. Figure 2305.2.5(2) illustrates the dimensions of l and w for a cantilevered diaphragm.

Structures with rigid wood diaphragms having a torsional irregularity in accordance with Table 1616.5.1.1, Item 1, shall meet the following requirements: The l/w ratio shall not exceed 1.0 for one-story structures or 0.67 for structures over one story in height, where l is the dimension parallel to the load direction for which the irregularity exists.

Exception: Where calculations demonstrate that the diaphragm deflections can be tolerated, the width is permitted to be increased and the l/w ratio is permitted to be increased to 1.5 where sheathed in compliance with Section 2306.3.4 or 2306.3.5.

[SEE graphical material in printed version]

[SEE graphical material in printed version]

2305.3 Design of wood shear walls.

2305.3.1 General. Wood shear walls are permitted to resist horizontal forces in vertical distributing or resisting elements, provided the deflection in the plane of the shear wall, as determined by calculations, tests or analogies drawn therefrom, does not exceed the more restrictive of the permissible deflection of attached distributing or resisting elements or the drift limits of Section 1617.3.

2305.3.2 Deflection. Permissible deflection shall be that deflection up to which the shear wall and any attached distributing or resisting element will maintain its structural integrity under design load conditions, i.e., continue to support design loads without danger to occupants of the structure.

The deflection (D) of a blocked wood structural panel shear wall uniformly fastened throughout is permitted to be calculated by the use of the following formula:

[SEE graphical material in printed version]

[SEE graphical material in printed version]

2305.3.3 Shear wall aspect ratios. Size and shape of shear walls and shear wall segments within shear walls containing openings shall be limited as set forth in Table 2305.3.3. Table 2305.3.3 Maximum Shear Wall Aspect Ratios

Type Maximum Height-Width Ratio Wood structural panels or particleboard, nailed edges For other than seismic: 31/2:1 For seismic; 2:1a Diagonal sheathing, single 2:1 Fiberboard 11/2:1 Gypsum board, gypsum lath, cement plaster 11/2:1b a. For design to resist seismic forces, shear wall height-width ratios greater than 2:1, but not exceeding 31/2:1, are permitted provided the allowable shear values in Table 2306.4.1 are multiplied by $2w/h.b.$ Ratio shown is for unblocked construction. Aspect ratio is permitted to be 2:1 where the wall is installed as blocked construction in accordance with Section 2306.4.5.1.2.

2305.3.4 Shear wall height definition. The height of a shear wall shall be defined as:

1. The maximum clear height from top of foundation to bottom of diaphragm framing above; or
 2. The maximum clear height from top of diaphragm to bottom of diaphragm framing above [see Figure 2305.3.4(a)].
- [SEE graphical material in printed version]

2305.3.5 Shear wall width definition. The width of a shear wall shall be defined as the sheathed dimension of the shear wall in the direction of application of force [see Figure 2305.3.4(a)].

2305.3.5.1 Shear wall segment width definition. The width of full-height sheathing adjacent to unrestrained openings in a shear wall.

2305.3.6 Overturning restraint. Where the dead load stabilizing moment in accordance with Chapter 16 allowable stress design load combinations is not sufficient to prevent uplift due to overturning moments on the wall, an anchoring device shall be provided. Anchoring devices shall maintain a continuous load path to the foundation.

2305.3.7 Shear walls with openings. The provisions of this section shall apply to the design of shear walls with openings. Where framing and connections around the openings are designed for force transfer around the openings, the provisions of Section 2305.3.7.1 shall apply. Where framing and connections around the openings are not designed for force transfer around the openings, the provisions of Section 2305.3.7.2 shall apply.

2305.3.7.1 Force transfer around openings. Where shear walls with openings are designed for force transfer around the openings, the limitations of Table 2305.3.3 shall apply to the overall shear wall including openings and to each wall pier at the side of an opening. The height of a wall pier shall be defined as the clear height of the pier at the side of an opening. The width of a wall pier shall be defined as the sheathed width of the pier at the side of an opening. Design for force transfer shall be based on a rational analysis. Detailing of boundary elements around the opening shall be provided in accordance with the provisions of this section [see Figure 2305.3.4(b)].

2305.3.7.2 Perforated shear walls. The provisions of Section 2305.3.7.2 shall be permitted to be used for the design of perforated shear walls.

2305.3.7.2.1 Limitations. The following limitations shall apply to the use of Section 2305.3.7.2:

1. A perforated shear wall segment shall be located at each end of a perforated shear wall. Openings shall be permitted to occur beyond the ends of the perforated shear wall; however, the width of such openings shall not be included in the width of the perforated shear wall.
2. The allowable shear set forth in Table 2306.4.1 shall not exceed 490 plf (7150 N/m).
3. Where out-of-plane offsets occur, portions of the wall on each side of the offset shall be considered as separate perforated shear walls.
4. Collectors for shear transfer shall be provided through the full length of the perforated shear wall.

5. A perforated shear wall shall have uniform top of wall and bottom of wall elevations. Perforated shear walls not having uniform elevations shall be designed by other methods.

6. Perforated shear wall height, h , shall not exceed 20 feet (6096 mm).

2305.3.7.2.2 Perforated shear wall resistance. The resistance of a perforated shear wall shall be calculated in accordance with the following:

1. The percent of full-height sheathing shall be calculated as the sum of the widths of perforated shear wall segments divided by the total width of the perforated shear wall including openings.

2. The maximum opening height shall be taken as the maximum opening clear height. Where areas above and below an opening remain unsheathed, the height of opening shall be defined as the height of the wall.

3. The adjusted shear resistance shall be calculated by multiplying the unadjusted shear resistance by the shear resistance adjustment factors of Table 2305.3.7.2. For intermediate percentages of full-height sheathing, the values in Table 2305.3.7.2 are permitted to be interpolated.

4. The perforated shear wall resistance shall be equal to the adjusted shear resistance times the sum of the widths of the perforated shear wall segments.

2305.3.7.2.3 Anchorage and load path. Design of perforated shear wall anchorage and load path shall conform to the requirements of Sections 2305.3.7.2.4 through 2305.3.7.2.8, or shall be calculated using principles of mechanics. Except as modified by these sections, wall framing, sheathing, sheathing attachment and fastener schedules shall conform to the requirements of Section 2305.2.4 and Table 2306.4.1.

2305.3.7.2.4 Uplift anchorage at perforated shear wall ends. Anchorage for uplift forces due to overturning shall be provided at each end of the perforated shear wall. The uplift anchorage shall conform to the requirements of Section 2305.3.6 except that for each story the minimum tension chord uplift force, T , shall be calculated in accordance with the following:

[SEE graphical material in printed version]

2305.3.7.2.5 Anchorage for in-plane shear. The unit shear force, v , transmitted into the top of a perforated shear wall, out of the base of the perforated shear wall at full-height sheathing and into collectors (drag struts) connecting shear wall segments, shall be calculated in accordance with the following:

[SEE graphical material in printed version]

2305.3.7.2.6 Uplift anchorage between perforated shear wall ends. In addition to the requirements of Section 2305.3.7.2.4, perforated shear wall bottom plates at full-height sheathing shall be anchored for a uniform uplift force, t , equal to the unit shear force, v , determined in Section 2305.3.7.2.5.

[SEE graphical material in printed version]

2305.3.7.2.7 Compression chords. Each end of each perforated shear wall segment shall be designed for a compression chord force, C , equal to the tension chord uplift force, T , calculated in Section 2305.3.7.2.4.

2305.3.7.2.8 Load path. A load path to the foundation shall be provided for each uplift force, T and t , for each shear force, V and v , and for each compression chord force, C . Elements resisting shear wall forces contributed by multiple stories shall be designed for the sum of forces contributed by each story.

2305.3.7.2.9 Deflection of shear walls with openings. The controlling deflection of a blocked shear wall with openings uniformly nailed throughout shall be taken as the maximum individual deflection of the shear wall segments calculated in accordance with Section 2305.3.2, divided by the appropriate shear resistance adjustment factors of Table

2305.3.7.2.

2305.3.8 Summing shear capacities. The shear values for shear panels of different capacities applied to the same side of the wall are not cumulative except as allowed in Table 2306.4.1.

The shear values for material of the same type and capacity applied to both faces of the same wall are cumulative. Where the material capacities are not equal, the allowable shear shall be either two times the smaller shear capacity or the capacity of the stronger side, whichever is greater.

Summing shear capacities of dissimilar materials applied to opposite faces or to the same wall line is not allowed.

Exception: For wind design, the allowable shear capacity of shear wall segments sheathed with a combination of wood structural panels and gypsum wallboard on opposite faces, fiberboard structural sheathing and gypsum wall board on opposite faces or hardboard panel siding and gypsum wallboard on opposite faces shall equal the sum of the sheathing capacities of each face separately.

2305.3.9 Adhesives. Adhesive attachment of shear wall sheathing is not permitted as a substitute for mechanical fasteners, and shall not be used in shear wall strength calculations alone, or in combination with mechanical fasteners in Seismic Design Category D.

2305.3.10 Sill plate size and anchorage in Seismic Design Category D. Two-inch (51 mm) nominal wood sill plates for shear walls shall include steel plate washers, a minimum of 3/16 inch by 2 inches by 2 inches (4.76 mm by 51 mm by 51 mm) in size, between the sill plate and nut. Sill plates resisting a design load greater than 490 plf (LRFD) (7154 N/m) or 350 plf (ASD) (5110 N/m) shall not be less than a 3-inch (76 mm) nominal member. Where a single 3-inch (76 mm) nominal sill plate is used, 2-20d box end nails shall be substituted for 2-16d common end nails found in Line 8 of Table 2304.9.1.

Exception: In shear walls where the design load is less than 840 plf (LRFD) (12 264 N/m) or 600 plf (ASD) (8760 N/m), the sill plate is permitted to be a 2-inch (51 mm) nominal member if the sill plate is anchored by two times the number of bolts required by design and 3/16 inch by 2 inch by 2 inch (4.76 mm by 51 mm by 51 mm) plate washers are used.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008

2305.3.3 Table repealed and added L.L. 8/2008 § 156, eff. July 1, 2008.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 23: WOOD
SECTION BC 2306: ALLOWABLE STRESS DESIGN

NYC Administrative Code § 28-BC 2306

2306.1 Allowable stress design.

The structural analysis and construction of wood elements in structures using allowable design methods shall be in accordance with the following applicable standards:

American Forest & Paper Association.

NDS National Design Specification for Wood Construction

American Institute of Timber Construction. AITC 104 Typical Construction Details AITC 110 Standard Appearance Grades for Structural Glued Laminated Timber AITC 112 Standard for Tongue-and-Groove Heavy Timber Roof Decking AITC 113 Standard for Dimensions of Structural Glued Laminated Timber AITC 117 Standard Specifications for Structural Glued Laminated Timber of Softwood Species AITC 119 Structural Standard Specifications for Glued Laminated Timber of Hardwood Species AITC A190.1 Structural Glued Laminated Timber AITC 200 Inspection Manual AITC 500 Determination of Design Values for Structural Glued Laminated Timber

Truss Plate Institute, Inc. TPI 1 National Design Standard for Metal Plate Connected Wood Truss Construction

American Society of Agricultural Engineers. ASAE EP 484.2 Diaphragm Design of Metal-Clad, Post-Frame Rectangular Buildings ASAE EP 486.1 Shallow Post Foundation Design ASAE 559 Design Requirements and Bending Properties for Mechanically Laminated Columns

APA-The Engineered Wood Association.

Plywood Design Specification

Plywood Design Specification Supplement 1-Design & Fabrication of Plywood Curved Panels.

Plywood Design Specification Supplement 2-Design & Fabrication of Glued Plywood-Lumber Beams.

Plywood Design Specification Supplement 3-Design & Fabrication of Plywood Stressed-Skin Panels.

Plywood Design Specification Supplement 4-Design & Fabrication of Plywood Sandwich Panels.

Plywood Design Specification Supplement 5-Design & Fabrication of All-Plywood Beams.EWS T300Glulam
Connection DetailsEWS S560Field Notching and Drilling of Glued Laminated Timber BeamsEWS S475Glued
Laminated Beam Design TablesEWS X450Glulam in Residential ConstructionEWS X440Product and Application
Guide: GlulamEWS R540Builders Tips: Proper Storage and Handling of Glulam Beams

2306.1.1Joists and rafters.The design of rafter spans is permitted to be in accordance with the AF&PA Span Tables for Joists and Rafters.

2306.1.2Plank and beam flooring.The design of plank and beam flooring is permitted to be in accordance with the AF&PA Wood Construction DataNo. 4.

2306.1.3Treated wood stress adjustments.The allowable unit stresses for preservative-treated wood need no adjustment for treatment, but are subject to other adjustments. The allowable unit stresses for fire-retardant-treated wood, including fastener values, shall be developed from an approved method of investigation that considers the effects of anticipated temperature and humidity to which the fire-retardant-treated wood will be subjected, the type of treatment and the redrying process. Other adjustments are applicable except that the impact load duration shall not apply.

2306.2Wind provisions for walls.

2306.2.1Wall stud bending stress increase.The NDS fiber stress in bending (Fb) design values for wood studs resisting wind shall be increased by the factors in Table 2306.2.1, in lieu of the 1.15 repetitive member factor, to take into consideration the load sharing and composite actions provided by the wood structural panels as defined in Section 2302.1, where the studs are designed for bending in accordance with Section 1609.6 spaced no more than 16 inches (406 mm) o.c, covered on the inside with a minimum of 1/2-inch (12.7 mm) gypsum board fastened in accordance with Table 2306.4.5, and sheathed on the exterior with a minimum of 3/8-inch (9.5 mm) wood structural panel sheathing that is attached to the studs using a minimum of 8d common nails spaced a maximum of 6 inches o.c. (152 mm) at panel edges and 12 inches o.c. (305 mm) in the field of the panels.Table 2306.2.1 Wall Stud Bending Stress Increase Factors Stud Size System Factor 2 x 4 1.5 2 x 6 1.4 2 x 8 1.3 2 x 10 1.2 2 x 12 1.15

2306.3Wood diaphragms.

2306.3.1Shear capacities modifications.The allowable shear capacities in Table 2306.3.1 for horizontal wood structural panel diaphragms shall be increased 40 percent for wind design.
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[SEE graphical material in printed version]

[SEE graphical material in printed version]

2306.3.2Wood structural panel diaphragms.Structural panel diaphragms with wood structural panels are permitted to be used to resist horizontal forces not exceeding those set forth in Table 2306.3.1 or 2306.3.2 or calculated by principles of mechanics without limitations by using values for fastener strength in the NDS structural design properties for wood structural panels based on DOC PS-1 and DOC PS-2 or plywood design properties given in the APA Plywood Design Specification.

2306.3.3Diagonally sheathed lumber diaphragms.Diagonally sheathed lumber diaphragms shall be nailed in

accordance with Table 2306.3.3.

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[SEE graphical material in printed version]

2306.3.4 Single diagonally sheathed lumber diaphragms. Single diagonally sheathed lumber diaphragms shall be constructed of minimum 1-inch (25 mm) thick nominal sheathing boards laid at an angle of approximately 45 degrees (0.78 rad) to the supports. The shear capacity for single diagonally sheathed lumber diaphragms of southern pine or Douglas fir-larch shall not exceed 300 plf (4378 N/m) of width. The shear capacities shall be adjusted by reduction factors of 0.82 for framing members of species with a specific gravity equal to or greater than 0.42 but less than 0.49 and 0.65 for species with a specific gravity of less than 0.42, as contained in the NDS.

2306.3.4.1 End joints. End joints in adjacent boards shall be separated by at least one stud or joist space and there shall be at least two boards between joints on the same support.

2306.3.4.2 Single diagonally sheathed lumber diaphragms. Single diagonally sheathed lumber diaphragms made up of 2-inch (51 mm) nominal diagonal lumber sheathing fastened with 16d nails shall be designed with the same shear capacities as shear panels using 1-inch (25 mm) boards fastened with 8d nails, provided there are not splices in adjacent boards on the same support and the supports are not less than 4 inch (102 mm) nominal depth or 3 inch (76 mm) nominal thickness.

2306.3.5 Double diagonally sheathed lumber diaphragms. Double diagonally sheathed lumber diaphragms shall be constructed of two layers of diagonal sheathing boards at 90 degrees (1.57 rad) to each other on the same face of the supporting members. Each chord shall be considered as a beam with uniform load per foot equal to 50 percent of the unit shear due to diaphragm action. The load shall be assumed as acting normal to the chord in the plan of the diaphragm in either direction. The span of the chord or portion thereof shall be the distance between framing members of the diaphragm, such as the joists, studs and blocking that serve to transfer the assumed load to the sheathing. The shear capacity of double diagonally sheathed diaphragms of Southern pine or Douglas fir-larch shall not exceed 600 plf (8756 kN/m) of width. The shear capacity shall be adjusted by reduction factors of 0.82 for framing members of species with a specific gravity equal to or greater than 0.42 but less than 0.49 and 0.65 for species with a specific gravity of less than 0.42, as contained in the NDS. Nailing of diagonally sheathed lumber diaphragms shall be in accordance with Table 2306.3.3.

2306.3.6 Gypsum board diaphragm ceilings. Gypsum board diaphragm ceilings shall be in accordance with Section 2508.5.

2306.4 Shear walls. Panel sheathing joints in shear walls shall occur over studs or blocking. Adjacent panel sheathing joints shall occur over and be nailed to common framing members (see Section 2305.3.1 for limitations on shear wall bracing materials).

2306.4.1 Wood structural panel shear walls. The allowable shear capacities for wood structural panel shear walls shall be in accordance with Table 2306.4.1. These capacities are permitted to be increased 40 percent for wind design. Shear walls are permitted to be calculated by principles of mechanics without limitations by using values for nail strength given in the NDS and wood structural panel design properties given in the APA/PDS.

2306.4.2 Lumber sheathed shear walls. Single and double diagonally sheathed lumber diaphragms are permitted using the construction and allowable load provisions of Sections 2306.3.4 and 2306.3.5.

2306.4.3 Particleboard shear walls. The design shear capacity of particleboard shear walls shall be in accordance with Table 2306.4.3. Shear panels shall be constructed with particleboard sheets not less than 4 feet by 8 feet (1219 mm

by 2438 mm), except at boundaries and changes in framing. Particleboard panels shall be designed to resist shear only, and chords, collector members and boundary elements shall be connected at all corners. Panel edges shall be backed with 2-inch (51 mm) nominal or wider framing. Sheets are permitted to be installed either horizontally or vertically. For 3/8-inch (9.5 mm) particleboard sheets installed with the long dimension parallel to the studs spaced 24 inches (610 mm) o.c., nails shall be spaced at 6 inches (152 mm) o.c. along intermediate framing members. For all other conditions, nails of the same size shall be spaced at 12 inches (305 mm) o.c. along intermediate framing members. Particleboard panels less than 12 inches (305 mm) wide shall be blocked. Particleboard shall not be used to resist seismic forces in structures in Seismic Design Category D.

[SEE graphical material in printed version]

2306.4.4Fiberboard shear walls.The design shear capacity of fiberboard shear walls shall be in accordance with Table 2308.9.3(4). The fiberboard sheathing shall be applied vertically or horizontally to wood studs not less than 2 inch (51 mm) nominal thickness spaced 16 inches (406 mm) o.c. Blocking not less than 2 inch (51 mm) nominal in thickness shall be provided at horizontal joints. Fiberboard shall not be used to resist seismic forces in structures in Seismic Design Category D.

2306.4.5Shear walls sheathed with other materials.Shear capacities for walls sheathed with lath and plaster, and gypsum board shall be in accordance with Table 2306.4.5. Shear walls sheathed with lath, plaster and gypsum board shall be constructed in accordance with Chapter 25 and Section 2306.4.5.1. Walls resisting seismic loads shall be subject to the limitations in Section 1617.6.

2306.4.5.1Application of gypsum board or lath and plaster to wood framing.

2306.4.5.1.1Joint staggering.End joints of adjacent courses of gypsum board shall not occur over the same stud.

2306.4.5.1.2Blocking.Where required in Table 2306.4.5, wood blocking having the same cross-sectional dimensions as the studs shall be provided at joints that are perpendicular to the studs.

2306.4.5.1.3Nailing.Studs, top and bottom plates and blocking shall be nailed in accordance with Table 2304.9.1.

2306.4.5.1.4Fasteners.The size and spacing of nails shall be set forth in Table 2306.4.5. Nails shall be spaced not less than 3 inch (9.5 mm) from edges and ends of gypsum boards or sides of studs, blocking and top and bottom plates.

2306.4.5.1.5Gypsum lath.Gypsum lath shall be applied perpendicular to the studs. Maximum allowable shear values shall be as set forth in Table 2306.4.5.

2306.4.5.1.6Gypsum sheathing.Four-foot-wide (1219 mm) pieces of gypsum sheathing shall be applied parallel or perpendicular to studs. Two-foot-wide (610 mm) pieces of gypsum sheathing shall be applied perpendicular to the studs. Maximum allowable shear values shall be as set forth in Table 2306.4.5.

2306.4.5.1.7Other gypsum boards.Gypsum board shall be applied parallel or perpendicular to studs. Maximum allowable shear values shall be as set forth in Table 2306.4.5.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

2306.3.2 Table repealed and added L.L. 8/2008 § 157, eff. July 1, 2008.

2306.4.5 Table note a amended L.L. 8/2008 § 158, eff. July 1, 2008.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK

Title 28: NEW YORK CITY CONSTRUCTION CODES**

CHAPTER 7: THE NEW YORK CITY BUILDING CODE

Chapter 23: WOOD

SECTION BC 2307: LOAD AND RESISTANCE FACTOR DESIGN

NYC Administrative Code § 28-BC 2307

2307.1 Load and resistance factor design (LRFD).

The structural analysis and construction of wood elements and structures using load and resistance factor design (LRFD) methods shall be in accordance with ASCE 16.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 23: WOOD
SECTION BC 2308: CONVENTIONAL LIGHT-FRAME CONSTRUCTION

NYC Administrative Code § 28-BC 2308

2308.1 General.

The requirements of this section are intended for conventional light-frame construction. Other methods are permitted to be used provided a satisfactory design is submitted showing compliance with other provisions of this code. Interior non-load-bearing partitions, ceilings and curtain walls of conventional light-frame construction are not subject to the limitations of this section. Alternatively, compliance with the following standard shall be permitted subject to the limitations therein and the limitations of this code: American Forest and Paper Association (AF&PA) Wood Frame Construction Manual for One- and Two-Family Dwellings (WCFM).

2308.2 Limitations. Buildings are permitted to be constructed in accordance with the provisions of conventional light-frame construction, subject to the following limitations, and to further limitations of Sections 2308.11 and 2308.12.

1. Buildings shall be limited to a maximum of three stories above grade. For the purposes of this section, for buildings in Seismic Design Category D as determined in Section 1616, cripple stud walls shall be considered to be a story.

Exception: Solid blocked cripple walls not exceeding 14 inches (356 mm) in height need not be considered a story.

2. Bearing wall floor-to-floor heights shall not exceed 10 feet (3048 mm).

3. Loads as determined in Chapter 16 shall not exceed the following:

3.1. Average dead loads shall not exceed 15 psf (718 N/m²) for roofs and exterior walls, floors and partitions.

3.2. Live loads shall not exceed 40 psf (1916 N/m²) for floors.

3.3. Ground snow loads shall not exceed 50 psf (2395 N/m²).

4. Wind speeds shall not exceed 110 miles per hour (mph) (48.4 m/s) (3-second gust) for buildings in Exposure Category A or B.

5. Roof trusses and rafters shall not span more than 40 feet (12 192 mm) between points of vertical support.

6. The use of the provisions for conventional light-frame construction in this section shall not be permitted for buildings in Seismic Design Category B, C, or D for Seismic Use Group III, as determined in Section 1616.

7. Conventional light-frame construction is limited in irregular structures in Seismic Design Category D, as specified in Section 2308.12.6.

2308.2.1 Basic wind speed greater than 100 mph (3-second gust). Where the basic wind speed exceeds 100 mph (3-second gust), the provisions of either the AF&PA Wood Frame Construction Manual for One- and Two-Family Dwellings (WFCM), or the SBCCI Standard for Hurricane-Resistant Residential Construction (SSTD 10), are permitted to be used.

2308.2.2 Buildings in Seismic Design Category B, C, or D. Buildings of conventional light-frame construction in Seismic Design Category B or C, as determined in Section 1616, shall comply with the additional requirements in Section 2308.11.

Exceptions:

1. Detached one- and two-family dwellings in Seismic Design Category B.
2. Detached one- and two-family dwellings in Seismic Design Category C where masonry veneer is limited to the first two stories above grade.

Buildings of conventional light-frame construction in Seismic Design Category D, as determined in Section 1616, shall comply with the additional requirements in Section 2308.12.

2308.3 Braced wall lines. Buildings shall be provided with exterior and interior braced wall lines as described in Section 2308.9.3 and installed in accordance with Sections 2308.3.1 through 2308.3.4.

2308.3.1 Spacing. Spacing of braced wall lines shall not exceed 35 feet (10 668 mm) o.c. in both the longitudinal and transverse directions in each story.

2308.3.2 Braced wall panel connections. Forces shall be transferred from the roofs and floors to braced wall panels and from the braced wall panels in upper stories to the braced wall panels in the story below by the following:

1. Braced wall panel top and bottom plates shall be fastened to joists, rafters or full-depth blocking. Braced wall panels shall be extended and fastened to roof framing at intervals not to exceed 50 feet (15 240 mm) between parallel braced wall lines.

Exception: Where roof trusses are used, lateral forces shall be transferred from the roof diaphragm to the braced wall by blocking of the ends of the trusses or by other approved methods.

2. Bottom plate fastening to joist or blocking below shall be with not less than 3-16d nails at 16 inches (406 mm) o.c.

3. Blocking shall be nailed to the top plate below with not less than 3-8d toenails per block.

4. Joists parallel to the top plates shall be nailed to the top plate with not less than 8d toenails at 6 inches (152 mm) o.c.

In addition, top plate laps shall be nailed with not less than 8-16d face nails on each side of each break in the top plate.

2308.3.3 Sill anchorage. Where foundations are required by Section 2308.3.4, braced wall line sills shall be anchored to concrete or masonry foundations. Such anchorage shall conform to the requirements of Section 2308.6 except that such anchors shall be spaced at not more than 4 feet (1219 mm) o.c. for structures over two stories in height. The anchors shall be distributed along the length of the braced wall line. Other anchorage devices having equivalent capacity are permitted.

2308.3.3.1 Anchorage to all-wood foundations. Where all-wood foundations are used, the force transfer from the braced wall lines shall be determined based on calculation and shall have a capacity greater than or equal to the connections required by Section 2308.3.3.

2308.3.4 Braced wall line support. Braced wall lines shall be supported by continuous foundations.

Exception: For structures with maximum plan dimensions not over 50 feet (15 240 mm), continuous foundations are required at exterior walls only.

2308.4 Design of portions. Where a building of otherwise conventional construction contains non-conventional structural elements, those elements shall be designed to resist the forces specified in Chapter 16. The extent of such design need only demonstrate compliance of non-conventional elements with other applicable provisions of this code, and shall be compatible with the performance of the conventional framed system.

2308.5 Connections and fasteners. Connections and fasteners used in conventional light-frame construction shall comply with the requirements of Section 2304.9.

2308.6 Foundation plates or sills. Foundations and footings shall be as specified in Chapter 18. Foundation plates or sills resting on concrete or masonry foundations shall comply with Section 2304.3.1. Foundation plates or sills shall be bolted or anchored to the foundation with not less than 1/2-inch-diameter (12.7 mm) steel bolts or approved anchors. Bolts shall be embedded at least 7 inches (178 mm) into concrete or masonry, and spaced not more than 6 feet (1829 mm) apart. There shall be a minimum of two bolts or anchor straps per piece with one bolt or anchor strap located not more than 12 inches (305 mm) or less than 4 inches (102 mm) from each end of each piece. A properly sized nut and washer shall be tightened on each bolt to the plate.

2308.7 Girders. Girders for single-story construction or girders supporting loads from a single floor shall not be less than 4 inches by 6 inches (102 mm by 152 mm) for spans 6 feet (1829 mm) or less, provided that girders are spaced not more than 8 feet (2438 mm) o.c. Spans for built-up 2-inch (51 mm) girders shall be in accordance with Table 2308.9.5 or 2308.9.6. Other girders shall be designed to support the loads specified in this code. Girder end joints shall occur over supports.

Where a girder is spliced over a support, an adequate tie shall be provided. The ends of beams or girders supported on masonry or concrete shall not have less than 4 inches (102 mm) of bearing.

2308.8 Floor joists. Spans for floor joists shall be in accordance with Table 2308.8(1) or 2308.8(2). For other grades and or species, refer to the AF&PA Span Tables for Joists and Rafters.

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2308.8.1Bearing.Except where supported on a 1-inch by 4-inch (25.4 mm by 102 mm) ribbon strip and nailed to the adjoining stud, the ends of each joist shall not have less than 11/2 inches (38 mm) of bearing on wood or metal, or less than 4 inches (102 mm) on masonry.

2308.8.2Framing details.Joists shall be supported laterally at the ends and at each support by solid blocking except where the ends of the joists are nailed to a header, band or rim joist or to an adjoining stud or by other means. Solid blocking shall not be less than 2 inches (51 mm) in thickness and the full depth of the joist. Notches on the ends of joists shall not exceed one-fourth the joist depth. Holes bored in joists shall not be within 2 inches (51 mm) of the top or bottom of the joist, and the diameter of any such hole shall not exceed one-third the depth of the joist. Notches in the top or bottom of joists shall not exceed one-sixth the depth and shall not be located in the middle third of the span.

Joist framing from opposite sides of a beam, girder or partition shall be lapped at least 3 inches (76 mm) or the opposing joists shall be tied together in an approved manner.

Joists framing into the side of a wood girder shall be supported by framing anchors or on ledger strips not less than 2 inches by 2 inches (51 mm by 51 mm).

2308.8.2.1Engineered wood products.Cuts, notches and holes bored in trusses, laminated veneer lumber, glue-laminated members or I-joists are not permitted unless the effects of such penetrations are specifically considered in the design of the member.

2308.8.3Framing around openings.Trimmer and header joists shall be doubled, or of lumber of equivalent cross section, where the span of the header exceeds 3 feet (914 mm). The ends of header joists more than 6 feet (1829 mm) long shall be supported by framing anchors or joist hangers unless bearing on a beam, partition or wall. Tail joists over 12 feet (3658 mm) long shall be supported at the header by framing anchors or on ledger strips not less than 2 inches by 2 inches (51 mm by 51 mm).

2308.8.4Supporting bearing partitions.Bearing partitions parallel to joists shall be supported on beams, girders, doubled joists, walls or other bearing partitions. Bearing partitions perpendicular to joists shall not be offset from supporting girders, walls or partitions more than the joist depth unless such joists are of sufficient size to carry the additional load.

2308.8.5Lateral support.Floor, attic and roof framing with a nominal depth-to-thickness ratio greater than or equal to 5:1 shall have one edge held in line for the entire span. Where the nominal depth-to-thickness ratio of the framing member exceeds 6:1, there shall be one line of bridging for each 8 feet (2438 mm) of span, unless both edges of the member are held in line. The bridging shall consist of not less than 1-inch by 3-inch (25 mm by 76 mm) lumber, double nailed at each end, of equivalent metal bracing of equal rigidity, full-depth solid blocking or other approved means. A line of bridging shall also be required at supports where equivalent lateral support is not otherwise provided.

2308.8.6Structural floor sheathing.Structural floor sheathing shall comply with the provisions of Section 2304.7.1.

2308.8.7Under-floor ventilation.For under-floor ventilation, see Section 1203.3.

2308.9 Wall framing.

2308.9.1 Size, height and spacing. The size, height and spacing of studs shall be in accordance with Table 2308.9.1 except that utility-grade studs shall not be spaced more than 16 inches (406 mm) o.c., or support more than a roof and ceiling, or exceed 8 feet (2438 mm) in height for exterior walls and load-bearing walls or 10 feet (3048 mm) for interior non-load-bearing walls.

[SEE graphical material in printed version]

2308.9.2 Framing details. Studs shall be placed with their wide dimension perpendicular to the wall. Not less than three studs shall be installed at each corner of an exterior wall.

Exception: At corners, two studs are permitted, provided wood spacers or backup cleats of 3/8-inch-thick (9.5 mm) wood structural panel, 3/8-inch (9.5 mm) Type M "Exterior Glue" particleboard, 1-inch-thick (25 mm) lumber or other approved devices that will serve as an adequate backing for the attachment of facing materials are used. Where fire-resistance ratings or shear values are involved, wood spacers, backup cleats or other devices shall not be used unless specifically approved for such use.

2308.9.2.1 Top plates. Bearing and exterior wall studs shall be capped with double top plates installed to provide overlapping at corners and at intersections with other partitions. End joints in double top plates shall be offset at least 48 inches (1219 mm), and shall be nailed with not less than eight 16d face nails on each side of the joint. Plates shall be a nominal 2 inches (51 mm) in depth and have a width at least equal to the width of the studs.

Exception: A single top plate is permitted, provided the plate is adequately tied at joints, corners and intersecting walls by at least the equivalent of 3-inch by 6-inch (76 mm by 152 mm) by 0.036-inch-thick (0.914 mm) galvanized steel that is nailed to each wall or segment of wall by six 8d nails or equivalent, provided the rafters, joists or trusses are centered over the studs with a tolerance of no more than 1 inch (25 mm).

2308.9.2.2 Top plates for studs spaced at 24 inches (610 mm). Where bearing studs are spaced at 24-inch (610 mm) intervals and top plates are less than two 2-inch by 6-inch (51 mm by 152 mm) or two 3-inch by 4-inch (76 mm by 102 mm) members and where the floor joists, floor trusses or roof trusses that they support are spaced at more than 16-inch (406 mm) intervals, such joists or trusses shall bear within 5 inches (127 mm) of the studs beneath or a third plate shall be installed.

2308.9.2.3 Nonbearing walls and partitions. In non-bearing walls and partitions, studs shall be spaced not more than 28 inches (711 mm) o.c. and are permitted to be set with the long dimension parallel to the wall. Interior nonbearing partitions shall be capped with no less than a single top plate installed to provide overlapping at corners and at intersections with other walls and partitions. The plate shall be continuously tied at joints by solid blocking at least 16 inches (406 mm) in length and equal in size to the plate or by 1/2-inch by 1 1/2-inch (12.7 mm by 38 mm) metal ties with spliced sections fastened with two 16d nails on each side of the joint.

2308.9.2.4 Plates or sills. Studs shall have full bearing on a plate or sill not less than 2 inches (51 mm) in thickness having a width not less than that of the wall studs.

2308.9.3 Bracing. Braced wall lines shall consist of braced wall panels that meet the requirements for location, type and amount of bracing as shown in Figure 2308.9.3, specified in Table 2308.9.3(1), and are in line or offset from each other by not more than 4 feet (1219 mm). Braced wall panels shall start not more than 8 feet (2438 mm) from each end of a braced wall line. A designed collector shall be provided if the bracing begins more than 12.5 feet (3810 mm) from an end of a braced wall line. Braced wall panels shall be clearly indicated on the plans. Construction of braced wall panels shall be by one of the following methods:

1. Nominal 1-inch by 4-inch (25 mm by 102 mm) continuous diagonal braces let into top and bottom plates and intervening studs, placed at an angle not more than 60 degrees (1.0 rad) or less than 45 degrees (0.79 rad) from the

horizontal and attached to the framing in conformance with Table 2304.9.1.

2. Wood boards of 5/8-inch (15.9 mm) net minimum thickness applied diagonally on studs spaced not over 24 inches (610 mm) o.c.

3. Wood structural panel sheathing with a thickness not less than 5/16 inch (7.9 mm) for a 16-inch (406 mm) stud spacing and not less than 3/8 inch (9.5 mm) for a 24-inch (610 mm) stud spacing in accordance with Tables 2308.9.3(2) and 2308.9.3(3).

4. Fiberboard sheathing panels not less than 1/2 inch (12.7 mm) thick applied vertically or horizontally on studs spaced not over 16 inches (406 mm) o.c. where installed with fasteners in accordance with Section 2306.4.4 and Table 2308.9.3(4).

5. Gypsum board [sheathing 1/2 inch (12.7 mm) thick by 4 feet (1219 mm) wide wallboard or veneer base] on studs spaced not over 24 inches (610 mm) o.c. and nailed at 7 inches (178 mm) o.c. with nails as required by Table 2306.4.5.

6. Particleboard wall sheathing panels where installed in accordance with Table 2308.9.3(5).

7. Portland cement plaster on studs spaced 16 inches (406 mm) o.c. installed in accordance with Section 2510.

8. Hardboard panel siding where installed in accordance with Section 2303.1.6 and Table 2308.9.3(6).

For cripple wall bracing, see Section 2308.9.4.1. For Methods 2, 3, 4, 6, 7 and 8, each panel must be at least 48 inches (1219 mm) in length, covering three stud spaces where studs are spaced 16 inches (406 mm) apart and covering two stud spaces where studs are spaced 24 inches (610 mm) apart.

For Method 5, each panel must be at least 96 inches (2438 mm) in length where applied to one face of a panel and 48 inches (1219 mm) where applied to both faces.

All vertical joints of panel sheathing shall occur over studs and adjacent panel joints shall be nailed to common framing members. Horizontal joints shall occur over blocking or other framing equal in size to the studding except where waived by the installation requirements for the specific sheathing materials.

Sole plates shall be nailed to the floor framing and top plates shall be connected to the framing above in accordance with Section 2308.3.2. Where joists are perpendicular to braced wall lines above, blocking shall be provided under and in line with the braced wall panels.

2308.9.3.1 Alternative bracing. Any bracing required by Section 2308.9.3 is permitted to be replaced by the following:

1. In one-story buildings, each panel shall have a length of not less than 2 feet 8 inches (813 mm) and a height of not more than 10 feet (3048 mm). Each panel shall be sheathed on one face with 3/8-inch-minimum-thickness (9.5 mm) wood structural panel sheathing nailed with 8d common or galvanized box nails in accordance with Table 2304.9.1 and blocked at wood structural panel edges. Two anchor bolts installed in accordance with Section 2308.6 shall be provided in each panel. Anchor bolts shall be placed at each panel outside quarter points. Each panel end stud shall have a tie-down device fastened to the foundation, capable of providing an approved uplift capacity of not less than 1,800 pounds (8006 N). The tie-down device shall be installed in accordance with the manufacturer's recommendations. The panels shall be supported directly on a foundation or on floor framing supported directly on a foundation that is continuous across the entire length of the braced wall line. This foundation shall be reinforced with not less than one No. 4 bar top and bottom.

Where the continuous foundation is required to have a depth greater than 12 inches (305 mm), a minimum 12-inch by 12-inch (305 mm by 305 mm) continuous footing or turned down slab edge is permitted at door openings in the

braced wall line. This continuous footing or turned down slab edge shall be reinforced with not less than one No. 4 bar top and bottom. This reinforcement shall be lapped 15 inches (381 mm) with the reinforcement required in the continuous foundation located directly under the braced wall line.

2. In the first story of two-story buildings, each wall panel shall be braced in accordance with Section 2308.9.3.1, Item 1, except that the wood structural panel sheathing shall be provided on both faces, three anchor bolts shall be placed at one-quarter points, and tie-down device uplift capacity shall not be less than 3,000 pounds (13 344 N). Seismic Design Category Maximum Wall Spacing (feet) Required Bracing Length, b B, and C 35'-0" Table 2308.9.3(1) and Section 2308.9.3 D and E 25'-0" Table 2308.12.4

[SEE graphical material in printed version]

Table 2308.9.3(2) Exposed Plywood Panel Siding Minimum Thicknessa Minimum Number of Plies Stud Spacing (inches) Plywood siding applied directly to studs or over sheathing 3/8 3 16b 1/2 4 24 For SI: 1 inch = 25.4 mm.a. Thickness of grooved panels is measured at bottom of grooves.b. Spans are permitted to be 24 inches if plywood siding applied with face grain perpendicular to studs or over one of the following: (1) 1-inch board sheathing, (2) 7/16-inch wood structural panel sheathing or (3) 3/4-inch wood structural panel sheathing with strength axis (which is the long direction of the panel unless otherwise marked) of sheathing perpendicular to studs. Table 2308.9.3(3) Wood Structural Panel Wall Sheathingb (Not Exposed to the Weather, Strength Axis Parallel or Perpendicular to Studs Except as Indicated Below) Minimum Thickness (inch) Panel Span Rating Stud Spacing (inches) Siding nailed to studs Nailable sheathing Sheathing parallel to studs Sheathing perpendicular to studs 5/16 12/0, 16/0, 20/0 Wall-16" o.c. 16 - 16 3/8, 15/32, 1/2 16/0, 20/0 24/0, 32/16 Wall-24" o.c. 24 16 24 7/16, 15/32, 1/2 24/0, 24/16, 32/16 Wall-24" o.c. 24 24a 24 For SI: 1 inch = 25.4 mm.a. Plywood shall consist of four or more plies.b. Blocking of horizontal joints shall not be required except as specified in Sections 2306.4 and 2308.12.4. Table 2308.9.3(4) Allowable Shear Values (plf) for Wind or Seismic Loading on Vertical Diaphragms of Fiberboard Sheathing Board Construction for Type V Construction Onlya,b,c,d,e,f,g,h Thickness and Grade Fastener Size Shear Value (pounds per linear foot) 3-Inch Nail Spacing Around Perimeter and 6-Inch at Intermediate Points 1/2" Structural No. 11 gage galvanized roofing nail 11/2" long, 7/16" head 125g 25/32" Structural No. 11 gage galvanized roofing nail 13/4" long, 7/16" head 175g For SI: 1 inch = 25.4 mm, 1 pound per foot = 14.5939 N/m.a. Fiberboard sheathing diaphragms shall not be used to brace concrete or masonry walls.b. Panel edges shall be backed with 2 inch or wider framing of Douglas fir-larch or Southern pine.c. Fiberboard sheathing on one side only.d. Fiberboard panels are installed with their long dimension parallel or perpendicular to studs.e. Fasteners shall be spaced 6 inches on center along intermediate framing members.f. For framing of other species: (1) Find specific gravity for species of lumber in AF&PA National Design Specification, and (2) Multiply the shear value from the above table by 0.82 for species with specific gravity of 0.42 or greater, or 0.65 for all other species.g. The same values can be applied when staples are used as described in Table 2304.9.1.h. Values are not permitted in Seismic Design Category D, E or F. Table 2308.9.3(5) Allowable Spans for Particleboard Wall Sheathing (Not Exposed to the Weather, Long Dimension of the Panel Parallel or Perpendicular to Studs) Grade Thickness (inch) Stud Spacing (inches) Siding nailed to studs Sheathing under coverings specified in Section 2308.9.3 parallel or perpendicular to studs M-S "Exterior Glue" and M-2 "Exterior Glue" 3/8 1/2 16 16 - 16 For SI: 1 inch = 25.4 mm. [SEE graphical material in printed version]

2308.9.4 Cripple walls. Foundation cripple walls shall be framed of studs not less in size than the studding above with a minimum length of 14 inches (356 mm), or shall be framed of solid blocking. Where exceeding 4 feet (1219 mm) in height, such walls shall be framed of studs having the size required for an additional story.

2308.9.4.1 Bracing. For the purposes of this section, cripple walls having a stud height exceeding 14 inches (356 mm) shall be considered a story and shall be braced in accordance with Table 2308.9.3(1) for Seismic Design Category B or C. See Section 2308.12.4 for Seismic Design Category D.

2308.9.4.2 Nailing of bracing. Spacing of edge nailing for required wall bracing shall not exceed 6 inches (152 mm) o.c. along the foundation plate and the top plate of the cripple wall. Nail size, nail spacing for field nailing and more restrictive boundary nailing requirements shall be as required elsewhere in the code for the specific bracing material used.

2308.9.5 Openings in exterior walls.

2308.9.5.1 Headers. Headers shall be provided over each opening in exterior-bearing walls. The spans in Table 2308.9.5 are permitted to be used for one- and two-family dwellings. Headers for other buildings shall be designed in accordance with Section 2301.2.1 or 2301.2.2. Headers shall be of two pieces of nominal 2-inch (51 mm) framing lumber set on edge as permitted by Table 2308.9.5 and nailed together in accordance with Table 2304.9.1 or of solid lumber of equivalent size.

2308.9.5.2 Header support. Wall studs shall support the ends of the header in accordance with Table 2308.9.5. Each end of a lintel or header shall have a length of bearing of not less than 11/2 inches (38 mm) for the full width of the lintel.

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2308.9.6 Openings in interior bearing partitions. Headers shall be provided over each opening in interior bearing partitions as required in Section 2308.9.5. The spans in Table 2308.9.6 are permitted to be used for one- and two-family dwellings. Wall studs shall support the ends of the header in accordance with Table 2308.9.5 or 2308.9.6 as appropriate.

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2308.9.7 Openings in interior nonbearing partitions. Openings in nonbearing partitions are permitted to be framed with single studs and headers. Each end of a lintel or header shall have a length of bearing of not less than 11/2 inches (38 mm) for the full width of the lintel.

2308.9.8 Pipes in walls. Stud partitions containing plumbing, heating or other pipes shall be so framed and the joists underneath so spaced as to give proper clearance for the piping. Where a partition containing such piping runs parallel to the floor joists, the joists underneath such partitions shall be doubled and spaced to permit the passage of such pipes and shall be bridged. Where plumbing, heating or other pipes are placed in or partly in a partition, necessitating the cutting of the soles or plates, a metal tie not less than 0.058 inch (1.47 mm) (16 galvanized gage) and 11/2 inches (38 mm) wide shall be fastened to each plate across and to each side of the opening with not less than six 16d nails.

2308.9.9 Bridging. Unless covered by interior or exterior wall coverings or sheathing meeting the minimum requirements of this code, stud partitions or walls with studs having a height-to-least-thickness ratio exceeding 50 shall have bridging not less than 2 inches (51 mm) in thickness and of the same width as the studs fitted snugly and nailed thereto to provide adequate lateral support. Bridging shall be placed in every stud cavity and at a frequency such that no stud so braced shall have a height-to-least-thickness ratio exceeding 50 with the height of the stud measured between horizontal framing and bridging or between bridging, whichever is greater.

2308.9.10 Cutting and notching. In exterior walls and bearing partitions, any wood stud is permitted to be cut or notched to a depth not exceeding 25 percent of its width. Cutting or notching of studs to a depth not greater than 40 percent of the width of the stud is permitted in nonbearing partitions supporting no loads other than the weight of the partition.

2308.9.11 Bored holes. A hole not greater in diameter than 40 percent of the stud width is permitted to be bored in

any wood stud. Bored holes not greater than 60 percent of the width of the stud are permitted in nonbearing partitions or in any wall where each bored stud is doubled, provided not more than two such successive doubled studs are so bored.

In no case shall the edge of the bored hole be nearer than 5/8 inch (15.9 mm) to the edge of the stud.

Bored holes shall not be located at the same section of stud as a cut or notch.

2308.10Roof and ceiling framing.The framing details required in this section apply to roofs having a minimum slope of three units vertical in 12 units horizontal (25-percent slope) or greater. Where the roof slope is less than three units vertical in 12 units horizontal (25-percent slope), members supporting rafters and ceiling joists such as ridge board, hips and valleys shall be designed as beams.

2308.10.1Wind uplift.Roof assemblies shall have rafter and truss ties to the wall below. Resultant uplift loads shall be transferred to the foundation using a continuous load path. The rafter or truss to wall connection shall comply with Tables 2304.9.1 and 2308.10.1.

[SEE graphical material in printed version]

2308.10.2Ceiling joist spans.Allowable spans for ceiling joists shall be in accordance with Table 2308.10.2(1) or 2308.10.2(2). For other grades and species, refer to the AF&PA Span Tables for Joists and Rafters.

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2308.10.3Rafter spans.Allowable spans for rafters shall be in accordance with Table 2308.10.3(1), 2308.10.3(2), 2308.10.3(3), 2308.10.3(4), 2308.10.3(5) or 2308.10.3(6). For other grades and species, refer to the AF&PA Span Tables for Joists and Rafters.

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2308.10.4 Ceiling joist and rafter framing. Rafters shall be framed directly opposite each other at the ridge. There shall be a ridge board at least 1-inch (25 mm) nominal thickness at ridges and not less in depth than the cut end of the rafter. At valleys and hips, there shall be a single valley or hip rafter not less than 2-inch (51 mm) nominal thickness and not less in depth than the cut end of the rafter.

2308.10.4.1 Ceiling joist and rafter connections. Ceilings joists and rafters shall be nailed to each other and the assembly shall be nailed to the top wall plate in accordance with Tables 2304.9.1 and 2308.10.1. Ceiling joists shall be continuous or securely joined where they meet over interior partitions and fastened to adjacent rafters in accordance with Tables 2308.10.4.1 and 2304.9.1 to provide a continuous rafter tie across the building where such joists are parallel to the rafters. Ceiling joists shall have a bearing surface of not less than 1 1/2 inches (38 mm) on the top plate at each end.

Where ceiling joists are not parallel to rafters, an equivalent rafter tie shall be installed in a manner to provide a continuous tie across the building, at a spacing of not more than 4 feet (1219 mm) o.c. The connections shall be in accordance with Tables 2308.10.4.1 and 2304.9.1, or connections of equivalent capacities shall be provided. Where ceiling joists or rafter ties are not provided at the top of the rafter support walls, the ridge formed by these rafters shall also be supported by a girder conforming to Section 2308.4.

Rafter ties shall be spaced not more than 4 feet (1219 mm) o.c. Rafter tie connections shall be based on the equivalent rafter spacing in Table 2308.10.4.1. Where rafter ties are spaced at 32 inches (813 mm) o.c., the number of 16d common nails shall be two times the number specified for rafters spaced 16 inches (406 mm) o.c., with a minimum of 4-16d common nails where no snow loads are indicated. Where rafter ties are spaced at 48 inches (1219 mm) o.c., the number of 16d common nails shall be two times the number specified for rafters spaced 24 inches (610 mm) o.c., with a minimum of 6-16d common nails where no snow loads are indicated. Rafter/ceiling joist connections and rafter/tie connections shall be of sufficient size and number to prevent splitting from nailing.

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[SEE graphical material in printed version]

2308.10.4.2 Notches and holes. Notching at the ends of rafters or ceiling joists shall not exceed one-fourth the depth. Notches in the top or bottom of the rafter or ceiling joist shall not exceed one-sixth the depth and shall not be located in the middle one-third of the span, except that a notch not exceeding one-third of the depth is permitted in the top of the rafter or ceiling joist not further from the face of the support than the depth of the member.

Holes bored in rafters or ceiling joists shall not be within 2 inches (51 mm) of the top and bottom and their diameter shall not exceed one-third the depth of the member.

2308.10.4.3 Framing around openings. Trimmer and header rafters shall be doubled, or of lumber of equivalent cross section, where the span of the header exceeds 4 feet (1219 mm). The ends of header rafters more than 6 feet (1829 mm) long shall be supported by framing anchors or rafter hangers unless bearing on a beam, partition or wall.

2308.10.5 Purlins. Purlins to support roof loads are permitted to be installed to reduce the span of rafters within allowable limits and shall be supported by struts to bearing walls. The maximum span of 2-inch by 4-inch (51 mm by 102 mm) purlins shall be 4 feet (1219 mm). The maximum span of the 2-inch by 6-inch (51 mm by 152 mm) purlin shall be 6 feet (1829 mm), but in no case shall the purlin be smaller than the supported rafter. Struts shall not be smaller than 2-inch by 4-inch (51 mm by 102 mm) members. The unbraced length of struts shall not exceed 8 feet (2438 mm) and the minimum slope of the struts shall not be less than 45 degrees (0.79 rad) from the horizontal.

2308.10.6 Blocking. Roof rafters and ceiling joists shall be supported laterally to prevent rotation and lateral

displacement in accordance with the provisions of Section 2308.8.5.

2308.10.7 Wood trusses.

2308.10.7.1 Design. Wood trusses shall be designed in accordance with the requirements of this chapter and accepted engineering practice. Members are permitted to be joined by nails, glue, bolts, timber connectors, metal connector plates or other approved framing devices.

2308.10.7.2 Bracing. The bracing of wood trusses shall comply with their appropriate engineered design.

2308.10.7.3 Alterations to trusses. Truss members and components shall not be cut, notched, drilled, spliced or otherwise altered in any way without written concurrence and approval of a registered design professional. Alterations resulting in the addition of loads to any member (e.g., HVAC equipment, water heater) shall not be permitted without verification that the truss is capable of supporting such additional loading.

2308.10.8 Roof sheathing. Roof sheathing shall be in accordance with Tables 2304.7(3) and 2304.7(5) for wood structural panels, and Tables 2304.7(1) and 2304.7(2) for lumber and shall comply with Section 2304.7.2.

2308.10.8.1 Joints. Joints in lumber sheathing shall occur over supports unless approved end-matched lumber is used, in which case each piece shall bear on at least two supports.

2308.10.9 Roof planking. Planking shall be designed in accordance with the general provisions of this code. In lieu of such design, 2-inch (51 mm) tongue-and groove planking is permitted in accordance with Table 2308.10.9. Joints in such planking are permitted to be randomly spaced, provided the system is applied to not less than three continuous spans, planks are center matched and end matched or splined, each plank bears on at least one support, and joints are separated by at least 24 inches (610 mm) in adjacent pieces.
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[SEE graphical material in printed version]

2308.10.10 Attic ventilation. For attic ventilation, see Section 1203.2.

2308.11 Additional requirements for conventional light-frame construction in Seismic Design Category B or C. Structures of conventional light-frame construction in Seismic Design Category B or C, as determined in Section 1616, shall comply with Sections 2308.11.1 through 2308.11.3, in addition to the provisions of Sections 2308.1 through 2308.10.

2308.11.1 Number of stories. Structures of conventional light-frame construction shall not exceed two stories in height in Seismic Design Category C.

Exception: Detached one- and two-family dwellings are permitted to be three stories in height in Seismic Design Category C.

2308.11.2 Concrete or masonry. Concrete or masonry walls, or masonry veneer shall not extend above the basement.

Exceptions:

1. Masonry veneer is permitted to be used in the first two stories above grade or the first three stories above grade where the lowest story has concrete or masonry walls in Seismic Design Category B, provided that structural use panel wall bracing is used, and the length of bracing provided is 1.5 times the required length as determined in Table 2308.9.3(1).

2. Masonry veneer is permitted to be used in the first story above grade or the first two stories above grade where

the lowest story has concrete or masonry walls in Seismic Design Category B or C.

3. Masonry veneer is permitted to be used in the first two stories above grade in Seismic Design Categories Band C provided the following criteria are met:

3.1. Type of brace per Section 2308.9.3 shall be Method 3 and the allowable shear capacity in accordance with Table 2306.4.1 shall be a minimum of 350 plf (5108 N/m) (ASD).

3.2. The bracing of the top story shall be located at each end and at least every 25 feet (7620 mm) o.c. but not less than 40 percent of the braced wall line. The bracing of the first story shall be located at each end and at least every 25 feet (7620 mm) o.c. but not less than 35 percent of the braced wall line.

3.3. Hold-down connectors shall be provided at the ends of braced walls for the second floor to first floor wall assembly with an allowable design of 2,000 pounds (907.0 kg). Hold-down connectors shall be provided at the ends of each wall segment of the braced walls for the first floor to foundation with an allowable design of 3,900 pounds (1768 kg). In all cases, the hold-down connector force shall be transferred to the foundation.

3.4. Cripple walls shall not be permitted.

2308.11.3Framing and connection details.Framing and connection details shall conform to Sections 2308.11.3.1 through 2308.11.3.3.

2308.11.3.1Anchorage.Braced wall lines shall be anchored in accordance with Section 2308.6 at foundations.

2308.11.3.2Stepped footings.Where the height of a required braced wall panel extending from foundation to floor above varies more than 4 feet (1219 mm), the following construction shall be used:

1. Where the bottom of the footing is stepped and the lowest floor framing rests directly on a sill bolted to the footings, the sill shall be anchored as required in Section 2308.3.3.

2. Where the lowest floor framing rests directly on a sill bolted to a footing not less than 8 feet (2438 mm) in length along a line of bracing, the line shall be considered to be braced. The double plate of the cripple stud wall beyond the segment of footing extending to the lowest framed floor shall be spliced to the sill plate with metal ties, one on each side of the sill and plate. The metal ties shall not be less than 0.058 inch [1.47 mm (16 galvanized gage)] by 1.5 inches (38 mm) wide by 48 inches (1219 mm) with eight 16d common nails on each side of the splice location (see Figure 2308.11.3.2). The metal tie shall have a minimum yield of 33,000 pounds per square inch (psi) (227 Mpa).

3. Where cripple walls occur between the top of the footing and the lowest floor framing, the bracing requirements for a story shall apply.

[SEE graphical material in printed version]

2308.11.3.3Openings in horizontal diaphragms.Openings in horizontal diaphragms with a dimension perpendicular to the joist that is greater than 4 feet (1.2 m) shall be constructed in accordance with the following:

1. Blocking shall be provided beyond headers.

2. Metal ties not less than 0.058 inch [1.47 mm (16 galvanized gage)] by 1.5 inches (38 mm) wide with eight 16d common nails on each side of the header-joist intersection shall be provided (see Figure 2308.11.3.3). The metal ties shall have a minimum yield of 33,000 psi (227 Mpa).

[SEE graphical material in printed version]

2308.12Additional requirements for conventional light-frame construction in Seismic Design Category D.Structures of conventional light-frame construction in Seismic Design Category D, as determined in Section 1616,

shall conform to Sections 2308.12.1 through 2308.12.8, in addition to the requirements for Seismic Design Category B or C in Section 2308.11.

2308.12.1 Number of stories. Structures of conventional light-frame construction shall not exceed one story in height in Seismic Design Category D.

Exception: Detached one- and two-family dwellings are permitted to be two stories high in Seismic Design Category D.

2308.12.2 Concrete or masonry. Concrete or masonry walls, or masonry veneer shall not extend above the basement.

Exception: Masonry veneer is permitted to be used in the first story above grade in Seismic Design Category D provided the following criteria are met:

1. Type of brace in accordance with Section 2308.9.3 shall be Method 3 and the allowable shear capacity in accordance with Table 2306.4.1 shall be a minimum of 350 plf (5108 N/m) (ASD).
2. The bracing of the first story shall be located at each end and at least every 25 feet (7620 mm) o.c. but not less than 45 percent of the braced wall line.
3. Hold-down connectors shall be provided at the ends of braced walls for the first floor to foundation with an allowable design of 2,100 pounds (1768 kg).
4. Cripple walls shall not be permitted.

2308.12.3 Braced wall line spacing. Spacing between interior and exterior braced wall lines shall not exceed 25 feet (7620 mm).

2308.12.4 Braced wall line sheathing. Braced wall lines shall be braced by one of the types of sheathing prescribed by Table 2308.12.4 as shown in Figure 2308.9.3. The sum of lengths of braced wall panels at each braced wall line shall conform to Table 2308.12.4. Braced wall panels shall be distributed along the length of the braced wall line and start at not more than 8 feet (2438 mm) from each end of the braced wall line. A designed collector shall be provided where the bracing begins more than 8 feet (2438 mm) from each end of a braced wall line. Panel sheathing joints shall occur over studs or blocking. Sheathing shall be fastened to studs and top and bottom plates and at panel edges occurring over blocking. Wall framing to which sheathing used for bracing is applied shall be nominal 2 inch wide (actual 1 1/2 inch, 38 mm) or larger members.

Cripple walls having a stud height exceeding 14 inches (356 mm) shall be considered a story for the purpose of this section and shall be braced as required for braced wall lines in accordance with Table 2308.12.4. Where interior braced wall lines occur without a continuous foundation below, the length of parallel exterior cripple wall bracing shall be one and one-half times the lengths required by Table 2308.12.4. Where the cripple wall sheathing type used is Type S-W, and this additional length of bracing cannot be provided, the capacity of Type S-W sheathing shall be increased by reducing the spacing of fasteners along the perimeter of each piece of sheathing to 4 inches (102 mm) o.c.

2308.12.5 Attachment of sheathing. Fastening of braced wall panel sheathing shall not be less than that prescribed in Table 2308.12.4 or 2304.9.1. Wall sheathing shall not be attached to framing members by adhesives.
[SEE graphical material in printed version]

2308.12.6 Irregular structures. Conventional light-frame construction shall not be used in irregular portions of structures in Seismic Design Category D. Such irregular portions of structures shall be designed to resist the forces specified in Chapter 16 to the extent such irregular features affect the performance of the conventional framing system. A portion of a structure shall be considered to be irregular where at least one of the conditions described in Items 1

through 6 below is present.

1. Where exterior braced wall panels are not in one plane vertically from the foundation to the uppermost story in which they are required, the structure shall be considered to be irregular [see Figure 2308.12.6(1)].

Exception: Floors with cantilevers or setbacks not exceeding four times the nominal depth of the floor joists [see Figure 2308.12.6(2)] are permitted to support braced wall panels provided:

1. Floor joists are 2 inches by 10 inches (51 mm by 254 mm) or larger and spaced not more than 16 inches (406 mm) o.c.

2. The ratio of the back span to the cantilever is at least 2:1.

3. Floor joists at ends of braced wall panels are doubled.

4. A continuous rim joist is connected to the ends of cantilevered joists. The rim joist is permitted to be spliced using a metal tie not less than 0.058 inch (1.47 mm) (16 galvanized gage) and 1 1/2 inches (38 mm) wide fastened with six 16d common nails on each side. The metal tie shall have a minimum yield of 33,000 psi (227 Mpa).

5. Joists at setbacks or the end of cantilevered joists shall not carry gravity loads from more than a single story having uniform wall and roof loads, nor carry the reactions from headers having a span of 8 feet (2438 mm) or more.

2. Where a section of floor or roof is not laterally supported by braced wall lines on all edges, the structure shall be considered to be irregular [see Figure 2308.12.6(3)].

Exception: Portions of roofs or floors that do not support braced wall panels above are permitted to extend up to 6 feet (1829 mm) beyond a braced wall line [see Figure 2308.12.6(4)].

3. Where the end of a required braced wall panel extends more than 1 foot (305 mm) over an opening in the wall below, the structure shall be considered to be irregular. This requirement is applicable to braced wall panels offset in plane and to braced wall panels offset out of plane as permitted by the exception to Item 1 above in this section [see Figure 2308.12.6(5)].

Exception: Braced wall panels are permitted to extend over an opening not more than 8 feet (2438 mm) in width where the header is a 4-inch by 12-inch (102 mm by 305 mm) or larger member.

4. Where portions of a floor level are vertically offset such that the framing members on either side of the offset cannot be lapped or tied together in an approved manner, the structure shall be considered to be irregular [see Figure 2308.12.6(6)].

Exception: Framing supported directly by foundations need not be lapped or tied directly together.

5. Where braced wall lines are not perpendicular to each other, the structure shall be considered to be irregular [see Figure 2308.12.6(7)].

6. Where openings in floor and roof diaphragms having a maximum dimension greater than 50 percent of the distance between lines of bracing or an area greater than 25 percent of the area between orthogonal pairs of braced wall lines are present, the structure shall be considered to be irregular [see Figure 2308.12.6(8)].
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2308.12.7Exit facilities.Exterior exit balconies, stairs and similar exit facilities shall be positively anchored to the primary structure at not over 8 feet (2438 mm) o.c. or shall be designed for lateral forces. Such attachment shall not be accomplished by use of toenails or nails subject to withdrawal.

2308.12.8Steel plate washers.Steel plate washers shall be placed between the foundation sill plate and the nut. Such washers shall be a minimum of 3/16 inch by 2 inches by 2 inches (4.76 mm by 51 mm by 51 mm) in size.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

2308.12.4 Table repealed and added L.L. 8/2008 § 159, eff. July 1, 2008.

2308.12.6(1) Figure repealed and added L.L. 8/2008 § 160, eff. July 1, 2008.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 24: GLASS AND GLAZING
SECTION BC 2401: GENERAL

NYC Administrative Code § 28-BC 2401

2401.1 Scope.

The provisions of this chapter shall govern the materials, design, construction and quality of glass, light transmitting ceramic and light-transmitting plastic panels for exterior and interior use in both vertical and sloped applications in buildings and structures.

2401.2 Glazing replacement. The installation of replacement glass shall be as required for new installations.



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Chapter 24: GLASS AND GLAZING
SECTION BC 2402: DEFINITIONS

NYC Administrative Code § 28-BC 2402

2402.1 Definitions.

The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

DALLE GLASS. A decorative composite glazing material made of individual pieces of glass that are embedded in a cast matrix of concrete or epoxy.

DECORATIVE GLASS. A carved, leaded or Dalle glass or glazing material whose purpose is decorative or artistic, not functional; whose coloring, texture or other design qualities or components cannot be removed without destroying the glazing material and whose surface, or assembly into which it is incorporated, is divided into segments.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 24: GLASS AND GLAZING
SECTION BC 2403: GENERAL REQUIREMENTS FOR GLASS

NYC Administrative Code § 28-BC 2403

2403.1 Identification.

Each pane shall bear the manufacturer's label designating the type and thickness of the glass or glazing material. The identification shall not be omitted unless approved and an affidavit is furnished by the glazing contractor certifying that each light is glazed in accordance with approved construction documents that comply with the provisions of this chapter. Safety glazing shall be identified in accordance with Section 2406.2.

Each pane of tempered glass, except tempered spandrel glass, shall be permanently identified by the manufacturer. The identification label shall be acid etched, sand blasted, ceramic fired, embossed or shall be of a type that once applied cannot be removed without being destroyed. Tempered spandrel glass shall be provided with a removable paper marking by the manufacturer.

2403.2Glass supports.Where one or more sides of any pane of glass are not firmly supported, or are subjected to unusual load conditions, detailed construction documents, detailed shop drawings and analysis or test data assuring safe performance for the specific installation shall be prepared by an architect or engineer.

2403.3Framing.To be considered firmly supported, the framing members for each individual pane of glass shall be designed so the deflection of the edge of the glass perpendicular to the glass pane shall not exceed 1/175 of the glass edge length or 3/4 inch (19.1 mm), whichever is less, when subjected to the larger of the positive or negative load where loads are combined as specified in Section 1605.

2403.4Interior glazed areas.Where interior glazing is installed adjacent to a walking surface, the differential deflection of two adjacent unsupported edges shall not be greater than the thickness of the panels when a force of 50 pounds per linear foot (plf) (730 N/m) is applied horizontally to one panel at any point up to 42 inches (1067 mm) above the walking surface.

2403.5Louvered windows or жалousies.Float, wired and patterned glass in louvered windows and жалousies shall be

no thinner than nominal 3/16 inch (4.8 mm) and no longer than 48 inches (1219 mm). Exposed glass edges shall be smooth.

Wired glass with wire exposed on longitudinal edges shall not be used in louvered windows or jalousies.

Where other glass types are used, the design shall be submitted to the Department for approval.

2403.6Protection of glass panels.Glass panels installed in areas where they will be subject to unusual conditions of construction damage, such as spatter from welds or locations near materials hoists, shall be protected by a hardboard covering or its equivalent during the period that such work is in progress.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 24: GLASS AND GLAZING
SECTION BC 2404: WIND, SNOW, SEISMIC AND DEAD LOADS ON GLASS

NYC Administrative Code § 28-BC 2404

2404.1 Vertical glass.

Glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads in Section 1609 for components and cladding. Glass in glazed curtain walls, glazed storefronts and glazed partitions shall meet the seismic requirements of ASCE 7, Section 9.6.2.10. Glazing firmly supported on all four edges is permitted to be designed by the following provisions. Where the glass is not firmly supported on all four edges, analysis or test data ensuring safe performance for the specific installation shall be prepared by an approved agency or special inspector. The design of vertical glazing shall be based on the following equation:

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3]Table 2404.1 c1 Factors for Vertical and Sloped Glassa [For use with Figures 2404(1) through 2404(12)] Glass Type
Factor 1]Glass Type Factor 2]Single Glass

Regular (annealed)1.0

Heat strengthened2.0

Fully tempered4.0

Wired0.50

Patternedc1.0

Sandblasteredd0.50

Laminated-regular pliese0.7/0.90f

Laminated-heat-strengthened pliese1.5/1.8f

Laminated-fully tempered pliese3.0/3.6f Insulating Glassb

Regular (annealed)1.8

Heat strengthened3.6

Fully tempered7.2

Laminated-regular pliese1.4/1.6f

Laminated-heat-strengthened pliese2.7/3.2f

Laminated-fully tempered pliese5.4/6.5f 4]a. Either Table 2404.1 or 2404.2 shall be appropriate for sloped glass depending on whether the snow or wind load is dominant (see Section 2404.2). For glass types (vertical or sloped) not included in the tables, refer to ASTM E 1300 for guidance.b. Values apply for insulating glass with identical panes.c. The value for patterned glass is based on the thinnest part of the pattern; interpolation between graphs is permitted.d. The value for sandblasted glass is for moderate levels of sandblasting.e. Values for laminated glass are based on the total thickness of the glass and apply for glass with two equal glass ply thicknesses.f. The lower value applies if, for any laminated glass pane, either the ratio of the long to short dimension is greater than 2.0 or the lesser dimension divided by the thickness of the pane is 150 or less; the higher value applies in all other cases.

2404.2Sloped glass.Glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunrooms, sloped roofs and other exterior applications shall be designed to resist the most critical of the following combinations of loads.
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Exception: Unit skylights shall be designed in accordance with Section 2405.5. The design of sloped glazing shall

be based on the following equation:

[SEE graphical material in printed version]

3]Table 2404.2 c2 Factors for Sloped Glassa [For use with Figures 2404(1) through 2404(12)] Glass Type Factor

1]Glass Type Factor 2]Single Glass

Regular (annealed)0.6

Heat strengthened1.6

Fully tempered3.6

Wired0.3

Patternedc0.6

Laminated-regular pliesd0.3/0.45e

Laminated-heat-strengthened pliesd0.8/1.2e

Laminated-fully tempered pliesd1.8/2.7e Insulating Glassb

Regular (annealed)1.1

Heat strengthened2.9

Fully tempered6.5

Laminated-regular pliesd0.54/0.81e

Laminated-heat-strengthened pliesd1.4/2.2e

Laminated-fully tempered pliesd3.3/4.9e 4]a. Either Table 2404.1 or 2404.2 shall be appropriate for sloped glass depending on whether the snow or wind load is dominant (see Section 2404.2). For glass types (vertical or sloped) not included in the tables, refer to ASTM E 1300 for guidance.b. Values apply for insulating glass with identical panes.c. The value for patterned glass is based on the thinnest part of the pattern; interpolation between graphs is permitted.d. Values for laminated glass are based on the total thickness of the glass and apply for glass with two equal glass ply thicknesses.e. The lower value applies if, for any laminated glass pane, either the ratio of the long to short dimension is greater than 2.0 or the lesser dimension divided by the thickness of the pane is 150 or less. The higher value applies in all other cases.



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 CHAPTER 7: THE NEW YORK CITY BUILDING CODE
 Chapter 24: GLASS AND GLAZING
 SECTION BC 2405: SLOPED GLAZING AND SKYLIGHTS

NYC Administrative Code § 28-BC 2405

2405.1 Scope.

This section applies to the installation of glass and other transparent, translucent or opaque glazing material installed at a slope more than 15 degrees (0.26 rad) from the vertical plane, including glazing materials in skylights, roofs and sloped walls.

2405.2 Allowable glazing materials and limitations. Sloped glazing shall be any of the following materials, subject to the listed limitations:

1. For monolithic glazing systems, the glazing material of the single light or layer shall be laminated glass with a minimum 30-mil (0.76 mm) polyvinyl butyral (or equivalent) interlayer, wired glass, light-transmitting plastic materials meeting the requirements of Section 2607, heat-strengthened glass or fully tempered glass.

2. For multiple-layer glazing systems, each light or layer shall consist of any of the glazing materials specified in Item 1 above. Annealed glass is permitted to be used as specified within Exceptions 2 and 3 of Section 2405.3. For additional requirements for plastic skylights, see Section 2610. Glass-block construction shall conform to the requirements of Section 2101.2.5.

2405.3 Screening. Where used in monolithic glazing systems, heat-strengthened glass and fully tempered glass shall have screens installed below the glazing material. The screens and their fastenings shall: (1) be capable of supporting twice the weight of the glazing; (2) be firmly and substantially fastened to the framing members and (3) be installed within 4 inches (102 mm) of the glass. The screens shall be constructed of a noncombustible material not thinner than No. 12 B&S gage (0.0808 inch) with mesh not larger than 1 inch by 1 inch (25 mm by 25 mm). In a corrosive atmosphere, structurally equivalent noncorrosive screen materials shall be used. Heat-strengthened glass, fully tempered glass and wired glass, when used in multiple-layer glazing systems as the bottom glass layer over the walking surface, shall be equipped with screening that conforms to the requirements for monolithic glazing systems.

Exception: In monolithic and multiple-layer sloped glazing systems, the following applies:

1. Fully tempered glass installed without protective screens where glazed between intervening floors at a slope of 30 degrees (0.52 rad) or less from the vertical plane shall have the highest point of the glass 10 feet (3048 mm) or less above the walking surface.
2. Screens are not required below any glazing material, including annealed glass, where the walking surface below the glazing material is permanently protected from the risk of falling glass or the area below the glazing material is not a walking surface.
3. Any glazing material, including annealed glass, is permitted to be installed without screens in the sloped glazing systems of commercial or detached noncombustible greenhouses used exclusively for growing plants and not open to the public, provided that the height of the greenhouse at the ridge does not exceed 30 feet (9144 mm) above grade.
4. Screens shall not be required within individual dwelling units in Groups R-2 and R-3 where fully tempered glass is used as single glazing or as both panes in an insulating glass unit, and the following conditions are met:
 - 4.1. Each pane of the glass is 16 square feet (1.5 m²) or less in area.
 - 4.2. The highest point of the glass is 12 feet (3658 mm) or less above any walking surface or other accessible area.
 - 4.3. The glass thickness is 3/16 inch (4.8 mm) or less.
5. Screens shall not be required for laminated glass with a 15-mil (0.38 mm) polyvinyl butyral (or equivalent) interlayer used within individual dwelling units in Groups R-2 and R-3 within the following limits:
 - 5.1. Each pane of glass is 16 square feet (1.5m²) or less in area.
 - 5.2. The highest point of the glass is 12 feet (3658 mm) or less above a walking surface or other accessible area.

2405.4Framing.In Type I and II construction, sloped glazing and skylight frames shall be constructed of noncombustible materials. In structures where acid fumes deleterious to metal are incidental to the use of the buildings, approved pressure-treated wood or other approved noncorrosive materials are permitted to be used for sash and frames. Framing supporting sloped glazing and skylights shall be designed to resist the tributary roof loads in Chapter 16. Skylights set at an angle of less than 45 degrees (0.79 rad) from the horizontal plane shall be mounted at least 4 inches (102 mm) above the plane of the roof on a curb constructed as required for the frame. Skylights shall not be installed in the plane of the roof where the roof pitch is less than 45 degrees (0.79 rad) from the horizontal.

Exception: Installation of a skylight without a curb shall be permitted on roofs with a minimum slope of 14 degrees (three units vertical in 12 units horizontal) in Group R-3 occupancies. All unit skylights installed in a roof with a pitch flatter than 14 degrees (0.24 rad) shall be mounted at least 4 inches (102 mm) above the plane of the roof on a curb constructed as required for the frame unless otherwise specified in the manufacturer's installation instructions.

2405.5Unit skylights.Unit skylights shall be tested and labeled as complying with 101/I.S.2/NAFS Voluntary Performance Specification for Windows, Skylights and Glass. The label shall state the name of the manufacturer, the approved agency, the product designation and the performance grade rating as specified in 101/I.S.2/NAFS. If the product manufacturer has chosen to have the performance grade of the skylight rated separately for positive and negative design pressure, then the label shall state both performance grade ratings as specified in 101/I.S.2/NAFS and the skylight shall comply with Section 2405.5.2. If the skylight is not rated separately for positive and negative pressure, then the performance grade rating shown on the label shall be the performance grade rating determined in accordance with 101/I.S.2/NAFS for both positive and negative design pressure, and the skylight shall conform to Section 2405.5.1.

2405.5.1Unit skylights rated for the same performance grade for both positive and negative design pressure.The

design of unit skylights shall be based on the following equation:

$F_g \leq PG$ (Equation 24-8)

where:

F_g is the maximum load on the skylight determined from Equations 24-3

through 24-5 in Section 2404.2.

PG is the performance grade rating of the skylight.

2405.5.2 Unit skylights rated for separate performance grades for positive and negative design pressure. The design of unit skylights rated for performance grade for both positive and negative design pressures shall be based on the following equations: $F_{gi} \leq PG_{Pos}$ (Equation 24-9) $F_{go} \leq PG_{Neg}$ (Equation 24-10)

where: PG_{Pos} is the performance grade rating of the skylight under positive design pressure. PG_{Neg} is the performance grade rating of the skylight under negative design pressure, and F_{gi} and F_{go} are determined in accordance with the following: If $W_o \geq D$, where W_o is the outward wind force, psf (kN/m²) as calculated in Section 1609 and D is the dead weight of the glazing, psf (kN/m²) as determined in Section 2404.2 for glass, or by the weight of the plastic, psf (kN/m²) for plastic glazing. F_{gi} is the maximum load on the skylight determined from Equations 24-4 and 24-5 in Section 2404.2. F_{go} is the maximum load on the skylight determined from Equation 24-3. If $W_o < D$, where W_o is the outward wind force, psf (kN/m²) as calculated in Section 1609 and D is the dead weight of the glazing, psf (kN/m²) as determined in Section 2404.2 for glass, or by the weight of the plastic for plastic glazing. F_{gi} is the maximum load on the skylight determined from Equations 24-3 through 24-5 in Section 2404.2. $F_{go} = 0$.



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SECTION BC 2406: SAFETY GLAZING

NYC Administrative Code § 28-BC 2406

2406.1 Human impact loads.

Individual glazed areas, including glass mirrors, in hazardous locations as defined in Section 2406.3 shall comply with Sections 2406.1.1 through 2406.1.5.

2406.1.1 CPSC 16 CFR 1201. Except as provided in Sections 2406.1.2 through 2406.1.5, all glazing shall pass the test requirements of CPSC 16 CFR 1201, listed in Chapter 35. Glazing shall comply with the CPSC 16 CFR, Part 1201 criteria, for Category I or II as indicated in Table 2406.1.

2406.1.2 Wired glass. In other than Group E, wired glass installed in fire doors, fire windows and view panels in fire-resistant walls shall comply with ANSI Z97.1.

2406.1.3 Plastic glazing. Plastic glazing shall meet the weathering requirements of ANSI Z97.1.

2406.1.4 Glass block. Glass-block walls shall comply with Section 2101.2.5.

2406.1.5 Louvered windows and jalousies. Louvered windows and jalousies shall comply with Section 2403.5.

2406.2 Identification of safety glazing. Except as indicated in Section 2406.2.1, each pane of safety glazing installed in hazardous locations shall be identified by a label specifying the labeler, whether the manufacturer or installer, and the safety glazing standard with which it complies, as well as the information specified in Section 2403.1. The label shall be acid etched, sand blasted, ceramic fired or an embossed mark, or shall be of a type that once applied cannot be removed without being destroyed.

Exceptions:

1. For other than tempered glass, labels are not required, provided the Department approves the use of a certificate, affidavit or other evidence confirming compliance with this code.

2. Tempered spandrel glass is permitted to be identified by the manufacturer with a removable paper label.

2406.2.1 Multilight assemblies. Multilight glazed assemblies having individual lights not exceeding 1 square foot (0.09 square meter) in exposed area shall have at least one light in the assembly marked as indicated in Section 2406.2. Other lights in the assembly shall be marked "CPSC 16 CFR 1201" or "ANSI Z97.1," as appropriate.

2406.3 Hazardous locations. The following shall be considered specific hazardous locations requiring safety glazing materials:

1. Glazing in swinging doors except jalousies (see Section 2406.3.1).

2. Glazing in fixed and sliding panels of sliding door assemblies and panels in sliding and bifold closet door assemblies.

3. Glazing in storm doors.

4. Glazing in unframed swinging doors.

[SEE graphical material in printed version]

5. Glazing in doors and enclosures for hot tubs, whirlpools, saunas, steam rooms, bathtubs and showers. Glazing in any portion of a building wall enclosing these compartments where the bottom exposed edge of the glazing is less than 60 inches (1524 mm) above a standing surface.

6. Glazing in an individual fixed or operable panel adjacent to a door where the nearest exposed edge of the glazing is within a 24-inch (610 mm) arc of either vertical edge of the door in a closed position and where the bottom exposed edge of the glazing is less than 60 inches (1524 mm) above the walking surface.

Exceptions:

1. Panels where there is an intervening wall or other permanent barrier between the door and glazing.

2. Where access through the door is to a closet or storage area 3 feet (914 mm) or less in depth. Glazing in this application shall comply with Section 2406.3, Item 7.

3. Glazing in walls perpendicular to the plane of the door in a closed position, other than the wall towards which the door swings when opened within dwelling units in Group R-2 or R-3.

7. Glazing in an individual fixed or operable panel, other than in those locations described in preceding Items 5 and 6, which meets all of the following conditions:

7.1. Exposed area of an individual pane greater than 9 square feet (0.84 m²);

7.2. Exposed bottom edge less than 18 inches (457 mm) above the floor;

7.3. Exposed top edge greater than 36 inches (914 mm) above the floor; and

7.4. One or more walking surface(s) within 36 inches (914 mm) horizontally of the plane of the glazing.

Exception: Safety glazing for Item 7 is not required for the following installations:

1. A horizontal protective bar 1 1/2 inches (38 mm) or more in height, capable of withstanding a horizontal load of 50 pounds p/f (730 N/m) without contacting the glass, is installed on the accessible sides of the glazing 34 inches to 38 inches (864 mm to 965 mm) above the floor.

2. The outboard pane in insulating glass units or multiple glazing where the bottom exposed edge of the glass is 25 feet (7620 mm) or more above any grade, roof, walking surface or other horizontal or sloped (within 45 degrees of horizontal) (0.78 rad) surface adjacent to the glass exterior.

8. Glazing in guards and railings, including structural baluster panels and nonstructural in-fill panels, regardless of area or height above a walking surface.

9. Glazing in walls and fences enclosing indoor and outdoor swimming pools, hot tubs and spas where all of the following conditions are present:

9.1. The bottom edge of the glazing on the pool or spa side is less than 60 inches (1524 mm) above a walking surface on the pool or spa side of the glazing; and

9.2. The glazing is within 60 inches (1524 mm) horizontally of the water's edge of a swimming pool or spa.

10. Glazing adjacent to stairways, landings and ramps within 36 inches (914 mm) horizontally of a walking surface; when the exposed surface of the glass is less than 60 inches (1524 mm) above the plane of the adjacent walking surface.

11. Glazing adjacent to stairways within 60 inches (1524 mm) horizontally of the bottom tread of a stairway in any direction when the exposed surface of the glass is less than 60 inches (1524 mm) above the nose of the tread.

Exception: Safety glazing for Item 10 or 11 is not required for the following installations where:

1. The side of a stairway, landing or ramp which has a guardrail or handrail, including balusters or in-fill panels, complying with the provisions of Sections 1012 and 1607.7; and

2. The plane of the glass is greater than 18 inches (457 mm) from the railing.

2406.3.1 Exceptions. The following products, materials and uses shall not be considered specific hazardous locations:

1. Openings in doors through which a 3-inch (76 mm) sphere is unable to pass.

2. Decorative glass in Section 2406.3, Item 1, 6 or 7.

3. Glazing materials used as curved glazed panels in revolving doors.

4. Commercial refrigerated cabinet glazed doors.

5. Glass-block panels complying with Section 2101.2.5.

6. Louvered windows and jalousies complying with the requirements of Section 2403.5.

7. Mirrors and other glass panels mounted or hung on a surface that provides a continuous backing support.

2406.4 Fire department access panels. Fire department glass access panels shall be of tempered glass. For insulating glass units, all panes shall be tempered glass.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

2406.2 open par amended L.L. 8/2008 § 161, eff. July 1, 2008.



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SECTION BC 2407: GLASS IN HANDRAILS AND GUARDS

NYC Administrative Code § 28-BC 2407

2407.1 Materials.

Glass used as structural balustrade panels in railings shall be constructed of either single fully tempered glass, laminated fully tempered glass or laminated heat-strengthened glass. Glazing in railing in-fill panels shall be of an approved safety glazing material that conforms to the provisions of Section 2406.1.1. For all glazing types, the minimum nominal thickness shall be 1/4 inch (6.4 mm). Fully tempered glass and laminated glass shall comply with Category II of CPSC 16 CFR 1201, listed in Chapter 35.

2407.1.1Loads. The panels and their support system shall be designed to withstand the loads specified in Section 1607.7. A safety factor of four shall be used.

2407.1.2Support. Each handrail or guard section shall be supported by a minimum of three glass balusters or shall be otherwise supported to remain in place should one baluster panel fail. Glass balusters shall not be installed without an attached handrail or guard.

2407.1.3Parking garages. Glazing materials shall not be installed in railings in parking garages except for pedestrian areas not exposed to impact from vehicles.



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SECTION BC 2408: GLAZING IN ATHLETIC FACILITIES

NYC Administrative Code § 28-BC 2408

2408.1 General.

Glazing in athletic facilities and similar uses subject to impact loads, which forms whole or partial wall sections or which is used as a door or part of a door, shall comply with this section.

2408.2 Racquetball and squash courts.

2408.2.1 Testing. Test methods and loads for individual glazed areas in racquetball and squash courts subject to impact loads shall conform to those of CPSC 16 CFR, Part 1201, listed in Chapter 35, with impacts being applied at a height of 59 inches (1499 mm) above the playing surface to an actual or simulated glass wall installation with fixtures, fittings and methods of assembly identical to those used in practice.

Glass walls shall comply with the following conditions:

1. A glass wall in a racquetball or squash court, or similar use subject to impact loads, shall remain intact following a test impact.
2. The deflection of such walls shall not be greater than 1 1/2-inches (38 mm) at the point of impact for a drop height of 48 inches (1219 mm).

Glass doors shall comply with the following conditions:

1. Glass doors shall remain intact following a test impact at the prescribed height in the center of the door.
2. The relative deflection between the edge of a glass door and the adjacent wall shall not exceed the thickness of the wall plus 1/2 inch (12.7 mm) for a drop height of 48 inches (1219 mm).

2408.3 Gymnasium and basketball courts. Glazing in multipurpose gymnasiums, basketball courts and similar

athletic facilities subject to human impact loads shall comply with Category II of CPSC 16 CFR 1201, listed in Chapter 35.



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SECTION BC 2409: GLASS IN FLOORS AND SIDEWALKS

NYC Administrative Code § 28-BC 2409

2409.1 General.

Glass installed in the walking surface of floors, landings, stairwells and similar locations shall comply with Sections 2409.2 through 2409.4.

2409.2 Design load. The design for glass used in floors, landings, stair treads and similar locations shall be determined as indicated in Section 2409.4 based on the load that produces the greater stresses from the following:

1. The uniformly distributed unit load (F_u) from Section 1607;
2. The concentrated load (F_c) from Table 1607.1; or
3. The actual load (F_a) produced by the intended use.

The dead load (D) for glass in psf (kN/m^2) shall be taken as the total thickness of the glass plies in inches by 13 (For SI: glass plies in mm by 0.0245). Load reductions allowed by Section 1607.9 are not permitted.

2409.3 Laminated glass. Laminated glass having a minimum of two plies shall be used. The glass shall be capable of supporting the total design load, as indicated in Section 2409.4, with any one ply broken.

2409.4 Design formula. Glass in floors and sidewalks shall be designed to resist the most critical of the following combinations of loads:
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Chapter 25: GYPSUM BOARD AND PLASTER
SECTION BC 2501: GENERAL

NYC Administrative Code § 28-BC 2501

2501.1 Scope.

2501.1.1 General. Provisions of this chapter shall govern the materials, design, construction and quality of gypsum board, lath, gypsum plaster and cement plaster.

2501.1.2 Performance. Lathing, plastering and gypsum board construction shall be done in the manner, and with the materials, specified in this chapter and referenced standards listed in Chapter 35. When fire protection is required, such construction shall also comply with the provisions of Chapter 7.

2501.1.3 Other materials. Other approved wall or ceiling coverings shall be permitted to be installed in accordance with the recommendations of the manufacturer and the approval of the commissioner.



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SECTION BC 2502: DEFINITIONS

NYC Administrative Code § 28-BC 2502

2502.1 Definitions.

The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

CEMENT PLASTER. A mixture of portland or blended cement, portland cement or blended cement and hydrated lime, masonry cement or plastic cement and aggregate and other approved materials as specified in this code.

EXTERIOR SURFACES. Weather-exposed surfaces.

GYPSUM BOARD. Gypsum wallboard, gypsum sheathing, gypsum base for gypsum veneer plaster, exterior gypsum soffit board, predecorated gypsum board or water-resistant gypsum backing board complying with the standards listed in Tables 2506.2, 2507.2 and Chapter 35.

GYPSUM PLASTER. A mixture of calcined gypsum or calcined gypsum and lime and aggregate and other approved materials as specified in this code.

GYPSUM VENEER PLASTER. Gypsum plaster applied to an approved base in one or more coats normally not exceeding 1 inch (6.4 mm) in total thickness.

INTERIOR SURFACES. Surfaces other than weather-exposed surfaces.

WEATHER-EXPOSED SURFACES. Surfaces of walls, ceilings, floors, roofs, soffits and similar surfaces exposed to the weather except the following:

1. Ceilings and roof soffits enclosed by walls, fascia, bulkheads or beams that extend a minimum of 12 inches (305 mm) below such ceiling or roof soffits.

2. Walls or portions of walls beneath an unenclosed roof area, where located a horizontal distance from an open exterior opening equal to at least twice the height of the opening.

3. Ceiling and roof soffits located a minimum horizontal distance of 10 feet (3048 mm) from the outer edges of the ceiling or roof soffits.

WIRE BACKING. Horizontal strands of tautened wire attached to surfaces of vertical supports which, when covered with the building paper, provide a backing for cement plaster.



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SECTION BC 2504: VERTICAL AND HORIZONTAL ASSEMBLIES

NYC Administrative Code § 28-BC 2504

2504.1 Scope.

The following requirements shall be met where construction involves gypsum board, lath and plaster in vertical and horizontal assemblies.

2504.1.1 Wood framing. Wood supports for lath or gypsum board, as well as wood stripping or furring, shall not be less than 2 inches (51 mm) nominal thickness in the least dimension.

Exception: The minimum nominal dimension of wood furring strips installed over solid backing shall not be less than 1 inch by 2 inches (25 mm by 51 mm).

2504.1.2 Studless partitions. The minimum thickness of vertically erected studless solid plaster partitions of 3/8-inch (9.5 mm) and 3-inch (19.1 mm) rib metal lath or 1/2-inch-thick (12.7 mm) long-length gypsum lath and gypsum board partitions shall be 2 inches (51 mm).



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SECTION BC 2505: SHEAR WALL CONSTRUCTION

NYC Administrative Code § 28-BC 2505

2505.1 Resistance to shear (wood framing).

Wood-framed shear walls sheathed with gypsum board, lath and plaster shall be designed and constructed in accordance with Section 2306.4 and are permitted to resist wind and seismic loads. Walls resisting seismic loads shall be subject to the limitations in Section 1617.6.

2505.2 Resistance to shear (steel framing). Cold-formed steel framed shear walls sheathed with gypsum board and constructed in accordance with the materials and provisions of Sections 2211.1, 2211.2, 2211.2.1 and 2211.2.2.3 are permitted to resist wind and seismic loads. Walls resisting seismic loads shall be subject to the limitations in Section 1617.6.



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SECTION BC 2506: GYPSUM BOARD MATERIALS

NYC Administrative Code § 28-BC 2506

2506.1 General.

Gypsum board materials and accessories shall be identified by the manufacturer's designation to indicate compliance with the appropriate standards referenced in this section and stored to protect such materials from the weather.

2506.2 Standards. Gypsum board materials shall conform to the appropriate standards listed in Table 2506.2 and Chapter 35 and, where required for fire protection, shall conform to the provisions of Chapter 7.

2506.2.1 Other materials. Metal suspension systems for acoustical and lay-in panel ceilings shall conform with Section 803.9.3] Table 2506.2 Gypsum Board Materials and Accessories Material Standard 1] Material Standard 2] Accessories for gypsum board ASTM C 1047 Gypsum sheathing ASTM C 79 Gypsum wallboard ASTM C 36 Joint reinforcing tape and compound ASTM C 474; C 475 Nails for gypsum boards ASTM C 514, F 547, F 1667 Steel screws ASTM C 954; C 1002 Steel studs, nonload bearing ASTM C 645 Steel studs, load bearing ASTM C 955 Water-resistant gypsum backing board ASTM C 630 Exterior soffit board ASTM C 931 Fiber-reinforced gypsum panels ASTM C 1278 Gypsum backing board and gypsum shaft liner board ASTM C 442 Gypsum ceiling board ASTM C 1395 Standard specification for gypsum board ASTM C 1396 Predecorated gypsum board ASTM C 960 Adhesives for fastening gypsum wallboard ASTM C 557 Testing gypsum and gypsum products ASTM C 22; C 472; C 473 Glass mat gypsum substrate ASTM C 1177 Glass mat gypsum backing panel ASTM C 11784]



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SECTION BC 2507: LATHING AND PLASTERING

NYC Administrative Code § 28-BC 2507

2507.1 General.

Lathing and plastering materials and accessories shall be marked by the manufacturer's designation to indicate compliance with the appropriate standards referenced in this section and stored in such a manner to protect them from the weather.

2507.2 Standards. Lathing and plastering materials shall conform to the standards listed in Table 2507.2 and Chapter 35 and, where required for fire protection, shall also conform to the provisions of Chapter 7.3] Table 2507.2 Lath, Plastering Materials and Accessories Material Standard 1] Material Standard 2] Accessories for gypsum veneer base ASTM C 1047 Exterior plaster bonding compounds ASTM C 932 Gypsum base for veneer plasters ASTM C 588 Gypsum casting and molding plaster ASTM C 59 Gypsum Keene's cement ASTM C 61 Gypsum lath ASTM C 37 Gypsum plaster ASTM C 28 Gypsum veneer plaster ASTM C 587 Interior bonding compounds, gypsum ASTM C 631 Lime plasters ASTM C 5; C 206 Masonry cement ASTM C 91 Metal lath ASTM C 847 Plaster aggregates

Sand ASTM C 35; C 897

Perlite ASTM C 35

Vermiculite ASTM C 35 Plastic cement ASTM C 1328 Blended cement ASTM C 595 Portland cement ASTM C 150 Steel studs and track ASTM C 645; C 995 Steel screws ASTM C 1002; C 954 Welded wire lath ASTM C 933 Woven wire plaster base ASTM C 10324]



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 25: GYPSUM BOARD AND PLASTER
SECTION BC 2508: GYPSUM CONSTRUCTION

NYC Administrative Code § 28-BC 2508

2508.1 General.

Gypsum board and gypsum plaster construction shall be of the materials listed in Tables 2506.2 and 2507.2. These materials shall be assembled and installed in compliance with the appropriate standards listed in Tables 2508.1 and 2511.1, and Chapter 35. Table 2508.1 Installation of Gypsum Construction Material Standard Gypsum sheathing ASTM C 1280 Gypsum veneer base ASTM C 844 Gypsum board GA-216; ASTM C 840 Interior bathing and furring ASTM C 841 Steel framing for gypsum boards ASTM C 754; C 1007

2508.2 Limitations. Gypsum wallboard or gypsum plaster shall not be used in any exterior surface where such gypsum construction will be exposed directly to the weather. Gypsum wallboard shall not be used where there will be direct exposure to water or continuous high humidity conditions. Gypsum sheathing shall be installed on exterior surfaces in accordance with ASTM C 1280.

2508.2.1 Weather protection. Gypsum wallboard, gypsum lath or gypsum plaster shall not be installed until weather protection for the installation is provided.

2508.3 Single-ply application. Edges and ends of gypsum board shall occur on the framing members, except those edges and ends that are perpendicular to the framing members. Edges and ends of gypsum board shall be in moderate contact except in concealed spaces where fire-resistance-rated construction, shear resistance or diaphragm action is not required.

2508.3.1 Floating angles. Fasteners at the top and bottom plates of vertical assemblies, or the edges and ends of horizontal assemblies perpendicular to supports, and at the wall line are permitted to be omitted except on shear resisting elements or fire-resistance-rated assemblies. Fasteners shall be applied in such a manner as not to fracture the face paper with the fastener head.

2508.4 Joint treatment. Gypsum board fire-resistance-rated assemblies shall have joints and fasteners treated.

Exception: Joint and fastener treatment need not be provided where any of the following conditions occur:

1. Where the gypsum board is to receive a decorative finish such as wood paneling, battens, acoustical finishes or any similar application that would be equivalent to joint treatment.
2. On single-layer systems where joints occur over wood framing members.
3. Square edge or tongue-and-groove edge gypsum board (V-edge), gypsum backing board or gypsum sheathing.
4. On multilayer systems where the joints of adjacent layers are offset from one to another.
5. Assemblies tested without joint treatment.

[SEE graphical material in printed version]

2508.5 Horizontal gypsum board diaphragm ceilings. Gypsum board shall be permitted to be used on wood joists to create a horizontal diaphragm ceiling in accordance with Table 2508.5.

2508.5.1 Diaphragm proportions. The maximum allowable diaphragm proportions shall be 11/2:1 between shear resisting elements. Rotation or cantilever conditions shall not be permitted.

2508.5.2 Installation. Gypsum board used in a horizontal diaphragm ceiling shall be installed perpendicular to ceiling framing members. End joints of adjacent courses of gypsum board shall not occur on the same joist.

2508.5.3 Blocking of perimeter edges. All perimeter edges shall be blocked using a wood member not less than 2-inch by 6-inch (51 mm by 152 mm) nominal dimension. Blocking material shall be installed flat over the top plate of the wall to provide a nailing surface not less than 2 inches (51 mm) in width for the attachment of the gypsum board.

2508.5.4 Fasteners. Fasteners used for the attachment of gypsum board to a horizontal diaphragm ceiling shall be as defined in Table 2508.5. Fasteners shall be spaced not more than 7 inches (178 mm) on center (o.c.) at all supports, including perimeter blocking, and not more than 3/8 inch (9.5 mm) from the edges and ends of the gypsum board.

2508.5.5 Lateral force restrictions. Gypsum board shall not be used in diaphragm ceilings to resist lateral forces imposed by masonry or concrete construction.



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SECTION BC 2509: GYPSUM BOARD IN SHOWERS AND WATER CLOSETS

NYC Administrative Code § 28-BC 2509

2509.1 Wet areas.

Showers and public toilet walls shall conform to Sections 1210.2 and 1210.3.

2509.2 Base for tile. When gypsum board is used as a base for tile or wall panels for tubs, shower or water closet compartment walls, water-resistant gypsum backing board shall be used as a substrate. Regular gypsum wallboard is permitted under tile or wall panels in other wall and ceiling areas when installed in accordance with GA-216 or ASTM C 840.

2509.3 Limitations. Water-resistant gypsum backing board shall not be used in the following locations:

1. Over a vapor retarder in shower or bathtub compartments.
2. Where there will be direct exposure to water or in areas subject to continuous high humidity.
3. On ceilings where frame spacing exceeds 12 inches (305 mm) o.c. for 1/2-inch-thick (12.7 mm) water-resistant gypsum backing board and more than 16 inches (406 mm) o.c. for 5/8-inch-thick (15.9 mm) water-resistant gypsum backing board.



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SECTION BC 2510: LATHING AND FURRING FOR CEMENT PLASTER (STUCCO)

NYC Administrative Code § 28-BC 2510

2510.1 General.

Exterior and interior cement plaster and lathing shall be done with the appropriate materials listed in Table 2507.2 and Chapter 35.

2510.2Weather protection.Materials shall be stored in such a manner as to protect such materials from the weather.

2510.3Installation.Installation of these materials shall be in compliance with ASTM C 926 and ASTM C 1063.

2510.4Corrosion resistance.Metal lath and lath attachments shall be of corrosion-resistant material.

2510.5Backing.Backing or a lath shall provide sufficient rigidity to permit plaster applications.

2510.5.1Support of lath.Where lath on vertical surfaces extends between rafters or other similar projecting members, solid backing shall be installed to provide support for lath and attachments.

2510.5.2Use of gypsum backing board.

2510.5.2.1Use of gypsum board as a backing board.Gypsum lath or gypsum wallboard shall not be used as a backing for cement plaster.

Exception: Gypsum lath or gypsum wallboard is permitted, with a weather-resistant barrier, as a backing for self-furred metal lath or self-furred wire fabric lath and cement plaster where either of the following conditions occur:

1. On horizontal supports of ceilings or roof soffits.
2. On interior walls.

2510.5.2.2 Use of gypsum sheathing backing. Gypsum sheathing is permitted as a backing for metal or wire fabric lath and cement plaster on walls. A weather-resistant barrier shall be provided in accordance with Section 2510.6.

2510.5.3 Backing not required. Wire backing is not required under expanded metal lath or paperbacked wire fabric lath.

2510.6 Weather-resistant barriers. Weather-resistant barriers shall be installed as required in Section 1404.2 and, where applied over wood-based sheathing, shall include a weather-resistant vapor-permeable barrier with a performance at least equivalent to two layers of Grade D paper.

2510.7 Preparation of masonry and concrete. Surfaces shall be clean, free from efflorescence, sufficiently damp and rough for proper bond. If the surface is insufficiently rough, approved bonding agents or a portland cement dash bond coat mixed in proportions of not more than two parts volume of sand to one part volume of portland cement or plastic cement shall be applied. The dash bond coat shall be left undisturbed and shall be moist cured not less than 24 hours.



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SECTION BC 2511: INTERIOR PLASTER

NYC Administrative Code § 28-BC 2511

2511.1 General.

Plastering gypsum plaster or cement plaster shall not be less than three coats where applied over metal lath or wire fabric lath and not less than two coats where applied over other bases permitted by this chapter.

Exception: Gypsum veneer plaster and cement plaster specifically designed and approved for one-coat applications. Table 2511.1 Installation of Plaster Construction Material Standard Gypsum plaster ASTM C 842 Gypsum veneer plaster ASTM C 843 Interior lathing and furring (gypsum plaster) ASTM C 841 Lathing and furring (cement plaster) ASTM C 1063 Portland cement plaster ASTM C 926 Steel framing ASTM C 754; C 1007

2511.1.1 Installation. Installation of lathing and plaster materials shall conform with Table 2511.1 and Section 2507.

2511.2 Limitations. Plaster shall not be applied directly to fiber insulation board. Cement plaster shall not be applied directly to gypsum lath or gypsum plaster except as specified in Sections 2510.5.1 and 2510.5.2.

2511.3 Grounds. Where installed, grounds shall ensure the minimum thickness of plaster as set forth in ASTM C 842 and ASTM C 926. Plaster thickness shall be measured from the face of lath and other bases.

2511.4 Interior masonry or concrete. Condition of surfaces shall be as specified in Section 2510.7. Approved specially prepared gypsum plaster designed for application to concrete surfaces or approved acoustical plaster is permitted. The total thickness of base coat plaster applied to concrete ceilings shall be as set forth in ASTM C 842 or ASTM C 926. Should ceiling surfaces require more than the maximum thickness permitted in ASTM C 842 or ASTM C 926, metal lath or wire fabric lath shall be installed on such surfaces before plastering.

2511.5 Wet areas. Showers and public toilet walls shall conform to Sections 1210.2 and 1210.3. When wood frame walls and partitions are covered on the interior with cement plaster or tile of similar material and are subject to water splash, the framing shall be protected with an approved moisture barrier.



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SECTION BC 2512: EXTERIOR PLASTER

NYC Administrative Code § 28-BC 2512

2512.1 General.

Plastering with cement plaster shall not be less than three coats where applied over metal lath or wire fabric lath and not less than two coats where applied over masonry, concrete or gypsum board backing as specified in Section 2510.5. If the plaster surface is to be completely covered by veneer or other facing material, or is completely concealed by another wall, plaster application need be only two coats, provided the total thickness is as set forth in ASTM C 926.

2512.1.1 On-grade floor slab. On wood framed or steel stud construction with an on-grade concrete floor slab system, exterior plaster shall be applied in such a manner as to cover, but not to extend below, the lath and paper. The application of lath, paper and flashing or drip screeds shall comply with ASTM C 1063.

2512.1.2 Weep screeds. A minimum 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage), corrosion-resistant weep screed with a minimum vertical attachment flange of 3 1/2 inches (89 mm) shall be provided at or below the foundation plate line on exterior stud walls in accordance with ASTM C 926. The weep screed shall be placed a minimum of 4 inches (102 mm) above the earth or 2 inches (51 mm) above paved areas and be of a type that will allow trapped water to drain to the exterior of the building. The weather-resistant barrier shall lap the attachment flange. The exterior lath shall cover and terminate on the attachment flange of the weep screed.

2512.2 Plasticity agents. Only approved plasticity agents and approved amounts thereof shall be added to portland cement. When plastic cement or masonry cement is used, no additional lime or plasticizers shall be added. Hydrated lime or the equivalent amount of lime putty used as a plasticizer is permitted to be added to cement plaster or cement and lime plaster in an amount not to exceed that set forth in ASTM C 926.

2512.3 Limitations. Gypsum plaster shall not be used on exterior surfaces.

2512.4 Cement plaster. Plaster coats shall be protected from freezing for a period of not less than 24 hours after set has occurred. Plaster shall be applied when the ambient temperature is higher than 40(degrees)F (4(degrees)C), unless

provisions are made to keep cement plaster work above 40(degrees)F (4(degrees)C) during application and 48 hours thereafter.

2512.5Second-coat application.The second coat shall be brought out to proper thickness, rodded and floated sufficiently rough to provide adequate bond for the finish coat. The second coat shall have no variation greater than 1/4 inch (6.4 mm) in any direction under a 5-foot (1524 mm) straight edge.

2512.6Curing and interval.First and second coats of cement plaster shall be applied and moist cured as set forth in ASTM C 926 and Table 2512.6.Table 2512.6 Cement Plastersa Coat Minimum Period Moist Curing Minimum Interval Between Coats First48 hoursa 48 hoursb Second48 hours 7 daysc Finish- Note c a. The first two coats shall be as required for the first coats of exterior plaster, except that the moist-curing time period between the first and second coats shall not be less than 24 hours. Moist curing shall not be required where job and weather conditions are favorable to the retention of moisture in the cement plaster for the required time period.b. Twenty-four-hour minimum interval between coats of interior cement plaster. For alternate method of application, see Section 2512.8.c. Finish coat plaster is permitted to be applied to interior portland cement base coats after a 48-hour period.

2512.7Application to solid backings.Where applied over gypsum backing as specified in Section 2510.5 or directly to unit masonry surfaces, the second coat is permitted to be applied as soon as the first coat has attained sufficient hardness.

2512.8Alternate method of application.The second coat is permitted to be applied as soon as the first coat has attained sufficiently rigidity to receive the second coat.

2512.8.1Admixtures.When using this method of application, calcium aluminate cement up to 15 percent of the weight of the portland cement is permitted to be added to the mix.

2512.8.2Curing.Curing of the first coat is permitted to be omitted and the second coat shall be cured as set forth in ASTM C 926 and Table 2512.6.

2512.9Finish coats.Cement plaster finish coats shall be applied over base coats that have been in place for the time periods set forth in ASTM C 926. The third or finish coat shall be applied with sufficient material and pressure to bond and to cover the brown coat and shall be of sufficient thickness to conceal the brown coat.



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SECTION BC 2513: EXPOSED AGGREGATE PLASTER

NYC Administrative Code § 28-BC 2513

2513.1 General.

Exposed natural or integrally colored aggregate is permitted to be partially embedded in a natural or colored bedding coat of cement plaster or gypsum plaster, subject to the provisions of this section.

2513.2Aggregate. The aggregate shall be applied manually or mechanically and shall consist of marble chips, pebbles or similar durable, moderately hard (three or more on the Mohs hardness scale), nonreactive materials.

2513.3Bedding coat proportions. The bedding coat for interior or exterior surfaces shall be composed of one-part portland cement, one-part Type S lime and a maximum of three parts of graded white or natural sand by volume. The bedding coat for interior surfaces shall be composed of 100 pounds (45.4 kg) of neat gypsum plaster and a maximum of 200 pounds (90.8 kg) of graded white sand. A factory-prepared bedding coat for interior or exterior use is permitted. The bedding coat for exterior surfaces shall have a minimum compressive strength of 1,000 pounds per square inch (psi) (6895 kPa).

2513.4Application. The bedding coat is permitted to be applied directly over the first (scratch) coat of plaster, provided the ultimate overall thickness is a minimum of 7/8 inch (22 mm), including lath. Over concrete or masonry surfaces, the overall thickness shall be a minimum of 1/2 inch (12.7 mm).

2513.5Bases. Exposed aggregate plaster is permitted to be applied over concrete, masonry, cement plaster base coats or gypsum plaster base coats installed in accordance with Section 2511 or 2512.

2513.6Preparation of masonry and concrete. Masonry and concrete surfaces shall be prepared in accordance with the provisions of Section 2510.7.

2513.7Curing of base coats. Cement plaster base coats shall be cured in accordance with ASTM C926. Cement plaster bedding coats shall retain sufficient moisture for hydration (hardening) for 24 hours minimum or, where

necessary, shall be kept damp for 24 hours by light water spraying.



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Chapter 26: PLASTIC

SECTION BC 2601: GENERAL

NYC Administrative Code § 28-BC 2601

2601.1 Scope.

These provisions shall govern the materials, design, application, construction and installation of foam plastic, foam plastic insulation, plastic veneer, interior plastic finish and trim, and light-transmitting plastics. See Chapter 14 for requirements for exterior wall finish and trim.



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SECTION BC 2602: DEFINITIONS

NYC Administrative Code § 28-BC 2602

2602.1 General.

The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

FOAM PLASTIC INSULATION. A plastic that is intentionally expanded by the use of a foaming agent to produce a reduced-density plastic containing voids consisting of open or closed cells distributed throughout the plastic for thermal insulating or acoustical purposes and that has a density less than 20 pounds per cubic foot (pcf) (320 kg/m³).

LIGHT-DIFFUSING SYSTEM. Construction consisting in whole or in part of lenses, panels, grids or baffles made with light-transmitting plastics positioned below independently mounted electrical light sources, skylights or light-transmitting plastic roof panels. Lenses, panels, grids and baffles that are part of an electrical fixture shall not be considered as a light-diffusing system.

LIGHT-TRANSMITTING PLASTIC ROOF PANELS. Structural plastic panels other than skylights that are fastened to structural members, or panels or sheathing, and that are used as light-transmitting media in the plane of the roof.

LIGHT-TRANSMITTING PLASTIC WALL PANELS. Plastic materials that are fastened to structural members, or to structural panels or sheathing, and that are used as light-transmitting media in exterior walls.

PLASTIC, APPROVED. Any thermoplastic, thermosetting or reinforced thermosetting plastic material that conforms to combustibility classifications specified in the section applicable to the application and plastic type.

PLASTIC GLAZING. Plastic materials that are glazed or set in frame or sash and not held by mechanical fasteners that pass through the glazing material.

REINFORCED PLASTIC, GLASS FIBER. Plastic reinforced with glass fiber having not less than 20 percent of

glass fibers by weight.

THERMOPLASTIC MATERIAL. A plastic material that is capable of being repeatedly softened by increase of temperature and hardened by decrease of temperature.

THERMOSETTING MATERIAL. A plastic material that is capable of being changed into a substantially nonreformable product when cured.



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SECTION BC 2603: FOAM PLASTIC INSULATION

NYC Administrative Code § 28-BC 2603

2603.1 General.

The provisions of this section shall govern the requirements and uses of foam plastic insulation in buildings and structures.

2603.2 Labeling and identification. Packages and containers of foam plastic insulation and foam plastic insulation components delivered to the job site shall bear the label of an approved agency showing the manufacturer's name, the product listing, product identification and information sufficient to determine that the end use will comply with the code requirements.

2603.3 Surface-burning characteristics. Unless otherwise indicated in this section, foam plastic insulation and foam plastic cores of manufactured assemblies shall have a flame spread index of not more than 75 and a smoke-developed index of not more than 450 where tested in the maximum thickness intended for use in accordance with ASTM E 84. Loose fill-type foam plastic insulation shall be tested as board stock for the flame spread index and smoke-developed index.

Exceptions:

1. Foam plastic interior trim shall comply with the flame spread and smoke-developed indexes as provided for in Section 2604.2.
2. In cold storage buildings, ice plants, food plants, food processing rooms and similar areas, foam plastic insulation where tested in a thickness of 4 inches (102 mm) shall be permitted in a thickness up to 10 inches (254 mm) where the building is equipped throughout with an automatic fire sprinkler system in accordance with Section 903.3.1.1. The approved automatic sprinkler system shall be provided in both the room and that part of the building in which the room is located.

3. Foam plastic insulation that is a part of a Class A, B or C roof-covering assembly shall be exempt from the flame spread requirements of this section provided the assembly with the foam plastic insulation satisfactorily passes FM 4450 or UL 1256. The smoke-developed index shall not be limited for roof applications.

4. Foam plastic insulation greater than 4 inches (102 mm) in thickness shall have a maximum flame spread index of 75 and a smoke-developed index of 450 where tested at a minimum thickness of 4 inches (102 mm), provided the end use is approved in accordance with Section 2603.8 using the thickness and density intended for use.

5. Foam plastic interior signs in covered mall buildings shall not be required to comply with the flame spread and smoke-developed indexes of this section, provided the signs comply with Section 402.14.

2603.4 Thermal barrier. Except as provided for in Sections 2603.4.1 and 2603.8, foam plastic shall be separated from the interior of a building by an approved thermal barrier of 0.5-inch (12.7 mm) gypsum wallboard or equivalent thermal barrier material that will limit the average temperature rise of the unexposed surface to not more than 250(degrees)F (120(degrees)C) after 15 minutes of fire exposure, complying with the standard time-temperature curve of ASTM E 119. The thermal barrier shall be installed in such a manner that it will remain in place for 15 minutes based on FM 4880, UL 1040, NFPA 286 or UL 1715. Combustible concealed spaces shall comply with Section 717.

2603.4.1 Thermal barrier not required. The thermal barrier specified in Section 2603.4 is not required under the conditions set forth in Sections 2603.4.1.1 through 2603.4.1.13.

2603.4.1.1 Masonry or concrete construction. Foam plastic insulation in a masonry or concrete wall, floor or roof system shall be permitted without a thermal barrier provided that each face is covered by a minimum of 1 inch (25 mm) thickness of masonry or concrete.

2603.4.1.2 Cooler and freezer walls. Foam plastic installed in a maximum thickness of 10 inches (254 mm) in cooler and freezer walls shall be permitted without thermal barrier, provided that the walls:

1. Have a flame spread index of 25 or less and a smoke-developed index of not more than 450, where tested in a minimum 4-inch (102 mm) thickness.

2. Have flash ignition and self-ignition temperatures of not less than 600(degrees)F and 800(degrees)F (316(degrees)C and 427(degrees)C), respectively.

3. Have a covering of not less than 0.032-inch (0.8 mm) aluminum or corrosion-resistant steel having a base metal thickness not less than 0.0160 inch (0.4 mm) at any point.

4. Are protected by an automatic sprinkler system. Where the cooler or freezer is within a building, both the cooler or freezer and that part of the building in which it is located shall be sprinklered.

2603.4.1.3 Walk-in coolers. In nonsprinklered buildings, foam plastic having a thickness that does not exceed 4 inches (102 mm) and a maximum flame spread index of 75 is permitted without thermal barrier in walk-in coolers or freezer units where the aggregate floor area does not exceed 400 square feet (37 m²) and the foam plastic is covered by a metal facing not less than 0.032-inch-thick (0.81 mm) aluminum or corrosion-resistant steel having a minimum base metal thickness of 0.016 inch (0.41 mm). A thickness of up to 10 inches (254 mm) is permitted where protected by a thermal barrier.

2603.4.1.4 Exterior walls-one-story buildings. For one-story buildings, foam plastic having a flame spread index of 25 or less, and a smoke-developed index of not more than 450, shall be permitted without thermal barriers in or on exterior walls in a thickness not more than 4 inches (102 mm) where the foam plastic is covered by a thickness of not less than 0.032-inch-thick (0.81 mm) aluminum or corrosion-resistant steel having a base metal thickness of 0.0160 inch (0.41 mm) and the building is equipped throughout with an automatic sprinkler system in accordance with Section

903.3.1.1.

2603.4.1.5Roofing.In construction classes that permit wood sheathing, foam plastic insulation under a roof assembly or roof covering shall be permitted without a thermal barrier, provided that it is installed in accordance with the code and the manufacturer's instructions. It shall be separated from the interior of the building by wood structural panel sheathing not less than 0.47 inch (11.9 mm) in thickness bonded with exterior glue, with edges supported by blocking, tongue-and-groove joints or other approved type of edge support, or an equivalent material. A thermal barrier is not required for foam plastic insulation that is a part of a Class A, B or C roof-covering assembly, provided the assembly with the foam plastic insulation satisfactorily passes FM 4450 or UL 1256.

2603.4.1.6Attics and crawl spaces.Within an attic or crawl space where entry is made only for service of utilities, foam plastic insulation shall be permitted without thermal barrier if protected against ignition by 1.5-inch-thick (38 mm) mineral fiber insulation; 0.25-inch-thick (6.4 mm) wood structural panel, particleboard or hardboard; 0.375-inch (9.5 mm) gypsum wallboard, corrosion-resistant steel having a base metal thickness of 0.016 inch (0.4 mm) or other approved material installed in such a manner that the foam plastic insulation is not exposed. The protective covering shall be consistent with the requirements for the type of construction.

2603.4.1.7Doors not required to have a fire protection rating.Where pivoted or side-hinged doors are permitted without a fire protection rating, foam plastic insulation, having a flame spread index of 75 or less and a smoke-developed index of not more than 450, shall be permitted as a core material without a thermal barrier where the door facing is of metal having a minimum thickness of 0.032-inch (0.8 mm) aluminum or steel having a base metal thickness of not less than 0.016 inch (0.4 mm) at any point.

2603.4.1.8Exterior doors in buildings of Group R-2 or R-3.In occupancies classified as Group R-2 or R-3, foam-filled exterior entrance doors to individual dwelling units that do not require a fire-resistance rating shall be permitted without a thermal barrier, provided that the doors are faced with wood or other approved materials.

2603.4.1.9Garage doors.Where garage doors are permitted without a fire-resistance rating, foam plastic is permitted as a core material, provided that the door facing shall be metal having a minimum thickness of 0.032-inch (0.8 mm) aluminum or 0.010-inch (0.25 mm) steel or the facing shall be minimum 0.125-inch-thick (3.2 mm) wood. Garage doors having facings other than those described above shall be tested in accordance with, and meet the acceptance criteria of DASMA 107.

2603.4.1.9.1Garage doors in one- and two-family dwellings.Garage doors using foam plastic insulation complying with Section 2603.3 in detached and attached garages associated with one- and two-family dwellings need not be provided with a thermal barrier.

2603.4.1.10Siding backer board.Foam plastic insulation of not more than 2,000 British thermal units per square feet (Btu/sq. ft.) (22.7 MJ/m²) as determined by NFPA 259 shall be permitted as a siding backer board with a maximum thickness of 0.5 inch (12.7 mm) without a thermal barrier, provided it is separated from the interior of the building by not less than 2 inches (51 mm) of mineral fiber insulation or equivalent or where applied as insulation over existing wall construction.

2603.4.1.11Interior trim.Foam plastic used as interior trim in accordance with Section 2604 shall be permitted without a thermal barrier.

2603.4.1.12Interior signs.Foam plastic used for interior signs in covered mall buildings in accordance with Section 402.14 shall be permitted without a thermal barrier.

2603.4.1.13Type V construction.Foam plastic spray applied to a sill plate and header of Type V construction is permitted without a thermal barrier, subject to all of the following:

1. The maximum thickness of the foam plastic shall be 3 1/4 inches (82.6 mm).
2. The density of the foam plastic shall be in the range of 1.5 to 2.0 pcf (24 to 32 kg/m³).
3. The foam plastic shall have a flame spread index of 25 or less and an accompanying smoke-developed index of 450 or less when tested in accordance with ASTM E84.

2603.5 Exterior walls of buildings of any height. Exterior walls of buildings of Type I, II, III or IV construction of any height shall comply with 2603.5.1 through 2603.5.7. Exterior walls of cold storage buildings required to be constructed of noncombustible materials, where the building is more than one story in height, shall also comply with the provisions of Sections 2603.5.1 through 2603.5.7. Exterior walls of buildings of Type V construction shall comply with Sections 2603.2, 2603.3 and 2603.4.

2603.5.1 Fire-resistance-rated walls. Where the wall is required to have a fire-resistance rating, data based on tests conducted in accordance with ASTM E 119 shall be provided to substantiate that the fire-resistance rating is maintained.

2603.5.2 Reserved.

2603.5.3 Potential heat. The potential heat of foam plastic insulation in any portion of the wall or panel shall not exceed the potential heat expressed in Btu per square feet (mJ/m²) of the foam plastic insulation contained in the wall assembly tested in accordance with Section 2603.5.5. The potential heat of the foam plastic insulation shall be determined by tests conducted in accordance with NFPA 259 and the results shall be expressed in Btu per square feet (mJ/m²).

Exception: One-story buildings complying with Section 2603.4.1.4.

2603.5.4 Flame spread and smoke-developed indexes. Foam plastic insulation, exterior coatings and facings shall be tested separately in the thickness intended for use, but not to exceed 4 inches (102 mm), and shall each have a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E 84.

Exception: Prefabricated or factory-manufactured panels having minimum 0.020-inch (0.51 mm) aluminum facings and a total thickness of 0.25 inch (6.4 mm) or less are permitted to be tested as an assembly where the foam plastic core is not exposed in the course of construction.

2603.5.5 Test standard. The wall assembly shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.

Exception: One-story buildings complying with Section 2603.4.1.4.

2603.5.6 Label required. The edge or face of each piece of foam plastic insulation shall bear the label of an approved agency. The label shall contain the manufacturer's or distributor's identification, model number, serial number or definitive information describing the product or materials' performance characteristics and approved agency's identification.

2603.5.7 Ignition. Exterior walls shall not exhibit sustained flaming where tested in accordance with NFPA 268. Where a material is intended to be installed in more than one thickness, tests of the minimum and maximum thickness intended for use shall be performed.

Exception: Assemblies protected on the outside with one of the following:

1. A thermal barrier complying with Section 2603.4.

2. A minimum 1-inch (25 mm) thickness of concrete or masonry.
3. Glass-fiber-reinforced concrete panels of a minimum thickness of 0.375 inch (9.5 mm).
4. Metal-faced panels having minimum 0.019-inch-thick (0.48 mm) aluminum or 0.016-inch thick (0.41 mm) corrosion-resistant steel outer facings.
5. A minimum 0.875-inch (22.2 mm) thickness of stucco complying with Section 2510.

2603.6Roofing assembly.Foam plastic insulation meeting the requirements of Sections 2603.2, 2603.3 and 2603.4 shall be permitted as part of a roof-covering assembly, provided the assembly with the foam plastic insulation is a Class A, B or C roofing assembly where tested in accordance with ASTM E 108 or UL 790.

2603.7Plenums.Foam plastic insulation shall not be used as interior wall or ceiling finish in plenums except as permitted in Section 2604 or when protected by a thermal barrier in accordance with Section 2603.4.

2603.8Special approval.Foam plastic shall not be required to comply with the requirements of Sections 2603.4 through 2603.7, where specifically approved by the department based on large-scale tests such as, but not limited to, FM 4880, UL 1040, NFPA 286 or UL 1715. Such testing shall be related to the actual end-use configuration and be performed on the finished manufactured foam plastic assembly in the maximum thickness intended for use. Foam plastics that are used as interior finish on the basis of special tests shall also conform to the flame spread requirements of Chapter 8. Assemblies tested shall include seams, joints and other typical details used in the installation of the assembly and shall be tested in the manner intended for use.



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SECTION BC 2604: INTERIOR FINISH AND TRIM

NYC Administrative Code § 28-BC 2604

2604.1 General.

Plastic materials installed as interior finish or trim shall comply with Chapter 8. Foam plastics shall only be installed as interior finish where approved in accordance with the special provisions of Section 2603.8. Foam plastics that are used as interior finish shall also meet the flame spread index requirements for interior finish in accordance with Chapter 8. Foam plastics installed as interior trim shall comply with Section 2604.2.

2604.2 Foam plastic interior trim. Foam plastic used as interior trim shall comply with Sections 2604.2.1 through 2604.2.4.

2604.2.1 Density. The minimum density of the interior trim shall be 20 pcf (320 kg/m³).

2604.2.2 Thickness. The maximum thickness of the interior trim shall be 0.5 inch (12.7 mm) and the maximum width shall be 8 inches (204 mm).

2604.2.3 Area limitation. The interior trim shall not constitute more than 10 percent of the aggregate wall and ceiling area of any room or space.

2604.2.4 Flame spread. The flame spread index shall not exceed 75 where tested in accordance with ASTM E 84. The smoke-developed index shall not be limited.



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SECTION BC 2605: PLASTIC VENEER

NYC Administrative Code § 28-BC 2605

2605.1 Interior use.

Where used within a building, plastic veneer shall comply with the interior finish requirements of Chapter 8.

2605.2 Exterior use. Exterior plastic veneer shall be permitted to be installed on the exterior walls of buildings of any type of construction in accordance with all of the following requirements:

1. Plastic veneer shall comply with Section 2606.4.
2. Plastic veneer shall not be attached to any exterior wall to a height greater than 50 feet (15 240 mm) above grade.
3. Sections of plastic veneer shall not exceed 300 square feet (27.9 m²) in area and shall be separated by a minimum of 4 feet (1219 mm) vertically.

Exception: The area and separation requirements and the smoke-density limitation are not applicable to plastic veneer applied to buildings constructed of Type VB construction, provided the walls are not required to have a fire-resistance rating.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 26: PLASTIC
SECTION BC 2606: LIGHT-TRANSMITTING PLASTICS

NYC Administrative Code § 28-BC 2606

2606.1 General.

The provisions of this section and Sections 2607 through 2611 shall govern the quality and methods of application of light-transmitting plastics for use as light-transmitting materials in buildings and structures. Foam plastics shall comply with Section 2603. Light-transmitting plastic materials that meet the other code requirements for walls and roofs shall be permitted to be used in accordance with the other applicable chapters of the code.

2606.2 Approval for use. Sufficient technical data shall be submitted to substantiate the proposed use of any light-transmitting material, as approved by the department and subject to the requirements of this section.

2606.3 Identification. Each unit or package of light-transmitting plastic shall be identified with a mark or decal satisfactory to the commissioner, which includes identification as to the material classification.

2606.4 Specifications. Light-transmitting plastics, including thermoplastic, thermosetting or reinforced thermosetting plastic material, shall have a self-ignition temperature of 650(degrees)F (343(degrees)C) or greater where tested in accordance with ASTM D 1929; a smoke-developed index not greater than 450 where tested in the manner intended for use in accordance with ASTM E 84, or not greater than 75 where tested in the thickness intended for use in accordance with ASTM D 2843 and shall conform to one of the following combustibility classifications:

Class CC1: Plastic materials that have a burning extent of 1 inch (25 mm) or less where tested at a nominal thickness of 0.060 inch (1.5 mm), or in the thickness intended for use, in accordance with ASTM D 635,

Class CC2: Plastic materials that have a burning rate of 2.5 inches per minute (1.06 mm/s) or less where tested at a nominal thickness of 0.060 inch (1.5 mm), or in the thickness intended for use, in accordance with ASTM D 635.

2606.5 Structural requirements. Light-transmitting plastic materials in their assembly shall be of adequate strength and durability to withstand the loads indicated in Chapter 16. Technical data shall be submitted to establish stresses,

maximum unsupported spans and such other information for the various thicknesses and forms used as deemed necessary by the department.

2606.6Fastening.Fastening shall be adequate to withstand the loads in Chapter 16. Proper allowance shall be made for expansion and contraction of light-transmitting plastic materials in accordance with accepted data on the coefficient of expansion of the material and other material in conjunction with which it is employed.

2606.7Light-diffusing systems.Light diffusing systems shall comply with Sections 2603.7.1 through 2603.7.6. Light-diffusing systems shall not be installed in the following occupancies and locations:

1. Any room in which the net floor area per occupant is 20 square feet (1.86 m²) or less, or any room leading therefrom through which it is necessary for occupants to pass in order to reach the only exit.
2. Group I-2.
3. Group I-3.
4. Exit stairways and exit passageways.

2606.7.1Support.Light-transmitting plastic diffusers shall be supported directly or indirectly from ceiling or roof construction by use of noncombustible hangers. Hangers shall be at least No. 12 steel-wire gage (0.106 inch) galvanized wire or equivalent.

Exception: Light-transmitting plastic diffusers used in suspended acoustical ceiling systems shall conform with the support requirements as set forth in Section 803.9.

2606.7.2Installation.Light-transmitting plastic diffusers shall comply with Chapter 8 unless the light-transmitting plastic diffusers will fall from the mountings before igniting, at an ambient temperature of at least 200(degrees)F (93(degrees)C) below the ignition temperature of the panels. The panels shall remain in place at an ambient room temperature of 175(degrees)F (79(degrees)C) for a period of not less than 15 minutes.

2606.7.3Size limitations.Individual panels or units shall not exceed 10 feet (3048 mm) in length nor 30 square feet (2.79 m²) in area.

2606.7.4Fire suppression system.In buildings that are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, plastic light-diffusing systems shall be protected both above and below unless the sprinkler system has been specifically approved for installation only above the light-diffusing system. Areas of light-diffusing systems that are protected in accordance with this section shall not be limited.

2606.7.5Electrical lighting fixtures.Light-transmitting plastic panels and light-diffuser panels that are installed in approved electrical lighting fixtures shall comply with the requirements of Chapter 8 unless the light-transmitting plastic panels conform to the requirements of Section 2606.7.2.

2606.8Partitions.Light-transmitting plastics used in or as partitions shall comply with the requirements of Chapters 6 and 8.

2606.9Bathroom accessories.Light-transmitting plastics shall be permitted as glazing in shower stalls, shower doors, bathtub enclosures and similar accessory units. Safety glazing shall be provided in accordance with Chapter 24.

2606.10Awnings, patio covers and similar structures.Awnings constructed of light-transmitting plastics shall be constructed in accordance with provisions specified in Section 3105 and Chapter 32 for projections and appendages. Patio covers constructed of light-transmitting plastics shall comply with Section 2606. Light-transmitting plastics used in canopies at motor fuel-dispensing facilities shall comply with Section 2606 except as modified by Section 406.5.2.

2606.11 Greenhouses. Light-transmitting plastics shall be permitted in lieu of plain glass in greenhouses.

2606.12 Solar collectors. Light-transmitting plastic covers on solar collectors having noncombustible sides and bottoms shall be permitted on buildings not over three stories in height or 9,000 square feet (836.1 m²) in total floor area, provided the light-transmitting plastic cover does not exceed 33.33 percent of the roof area for CC1 materials or 25 percent of the roof area for CC2 materials.

Exception: Light-transmitting plastic covers having a thickness of 0.010 inch (0.3 mm) or less shall be permitted to be of any plastic material provided the area of the solar collectors does not exceed 33.33 percent of the roof area.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 26: PLASTIC
SECTION BC 2607: LIGHT-TRANSMITTING PLASTIC WALL PANELS

NYC Administrative Code § 28-BC 2607

2607.1 General.

Light-transmitting plastics shall be permitted to be used as wall panels in exterior walls, provided that the walls are not required to have a fire-resistance rating and the installation conforms to the requirements of this section. Such panels shall be erected and anchored on a foundation, waterproofed or otherwise protected from moisture absorption and sealed with a coat of mastic or other approved waterproof coating. Light-transmitting plastic wall panels shall also comply with Section 2606.

Exception: Light-transmitting plastics shall not be used as wall panels in exterior walls in occupancies in Groups A-1, A-2, H, I-2 and I-3.

2607.2 Installation. Exterior wall panels installed as provided for herein shall not alter the type of construction classification of the building.

2607.3 Height limitation. Light-transmitting plastics shall not be installed more than 75 feet (22 860 mm) above grade plane, except as allowed by Section 2607.5.

2607.4 Area limitation and separation. The maximum area of a single wall panel and minimum vertical and horizontal separation requirements for exterior light-transmitting plastic wall panels shall be as provided for in Table 2607.4. The maximum percentage of wall area of any story in light-transmitting plastic wall panels shall not exceed that indicated in Table 2607.4 or the percentage of unprotected openings permitted by Section 704.8, whichever is smaller.

Exceptions:

1. In structures provided with approved flame barriers extending 30 inches (760 mm) beyond the exterior wall in the plane of the floor, a vertical separation is not required at the floor except that provided by the vertical thickness of the flame barrier projection.

2. Veneers of approved weather-resistant light-transmitting plastics used as exterior siding in buildings of Type V construction in compliance with Section 1406.

3. The area of light-transmitting plastic wall panels in exterior walls of greenhouses shall be exempt from the area limitations of Table 2607.4 but shall be limited as required for unprotected openings in accordance with Section 704.8. [SEE graphical material in printed version]

2607.5 Automatic sprinkler system. Where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the maximum percentage area of exterior wall in any story in light-transmitting plastic wall panels and the maximum square footage of a single area given in Table 2607.4 shall be increased 100 percent, but the area of light-transmitting plastic wall panels shall not exceed 50 percent of the wall area in any story, or the area permitted by Section 704.8 for unprotected openings, whichever is smaller. These installations shall be exempt from height limitations.

2607.6 Combinations of glazing and wall panels. Combinations of light-transmitting plastic glazing and light-transmitting plastic wall panels shall be subject to the area, height and percentage limitations and the separation requirements applicable to the class of light-transmitting plastic as prescribed for light-transmitting plastic wall panel installations.



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SECTION BC 2608: LIGHT-TRANSMITTING PLASTIC GLAZING

NYC Administrative Code § 28-BC 2608

2608.1 Buildings of Type VB construction.

Openings in the exterior walls of buildings of Type VB construction, where not required to be protected by Section 704, shall be permitted to be glazed or equipped with light-transmitting plastic. Light-transmitting plastic glazing shall also comply with Section 2606.

2608.2 Buildings of other types of construction. Openings in the exterior walls of buildings of types of construction other than Type VB, where not required to be protected by Section 704, shall be permitted to be glazed or equipped with light-transmitting plastic in accordance with Section 2606 and all of the following:

1. The aggregate area of light-transmitting plastic glazing shall not exceed 25 percent of the area of any wall face of the story in which it is installed. The area of a single pane of glazing installed above the first story above grade plane shall not exceed 16 square feet (1.5 m²) and the vertical dimension of a single pane shall not exceed 4 feet (1219 mm).

Exception: Where an automatic sprinkler system is provided throughout in accordance with Section 903.3.1.1, the area of allowable glazing shall be increased to a maximum of 50 percent of the wall face of the story in which it is installed with no limit on the maximum dimension or area of a single pane of glazing.

2. Approved flame barriers extending 30 inches (762 mm) beyond the exterior wall in the plane of the floor, or approved vertical panels not less than 4 feet (1219 mm) in height, shall be installed between glazed units located in adjacent stories.

Exception: Approved vertical panels not less than 3 feet (914 mm) in height or flame barriers extending 30 inches (762 mm) beyond the exterior wall shall be installed between glazed units located in adjacent stories in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

3. Light-transmitting plastics shall not be installed more than 75 feet (22 860 mm) above grade level.

Exception: Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.



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SECTION BC 2609: LIGHT-TRANSMITTING PLASTIC ROOF PANELS

NYC Administrative Code § 28-BC 2609

2609.1 General.

Light-transmitting plastic roof panels shall comply with this section and Section 2606. Light-transmitting plastic roof panels shall not be installed in Groups H, I-2 and I-3. In all other groups, light-transmitting plastic roof panels shall comply with any one of the following conditions:

1. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. The roof construction is not required to have a fire-resistance rating by Table 601.
3. The roof panels meet the requirements for roof coverings in accordance with Chapter 15.

2609.2 Separation. Individual roof panels shall be separated from each other by a distance of not less than 4 feet (1219 mm) measured in a horizontal plane.

Exceptions:

1. The separation between roof panels is not required in a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. The separation between roof panels is not required in low-hazard occupancy buildings complying with the conditions of Section 2609.4, Exception 2 or 3.

2609.3 Location. Where exterior wall openings are required to be protected by Section 704.8, a roof panel shall not be installed within 6 feet (1829 mm) of such exterior wall.

2609.4 Area limitations. Roof panels shall be limited in area and the aggregate area of panels shall be limited by a percentage of the floor area of the room or space sheltered in accordance with Table 2609.4.

Exceptions:

1. The area limitations of Table 2609.4 shall be permitted to be increased by 100 percent in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

2. Low-hazard occupancy buildings, such as swimming pool shelters, shall be exempt from the area limitations of Table 2609.4, provided that the buildings do not exceed 5,000 square feet (465 m²) in area and have a minimum fire separation distance of 10 feet (3048 mm).

3. Greenhouses that are occupied for growing plants on a production or research basis, without public access, shall be exempt from the area limitations of Table 2609.4 provided they have a minimum fire separation distance of 4 feet (1219 mm).

4. Roof coverings over terraces and patios in Group R-3 occupancies shall be exempt from the area limitations of Table 2609.4.

Table 2609.4 Area Limitations for Light-Transmitting Plastic Roof Panels	Class of Plastic	Maximum Area of Individual Roof Panels (square feet)	Maximum Aggregate Area of Roof Panels (percent of floor area)
CC1	300		
30	CC2	100	25

For SI: 1 square foot = 0.0929 m².



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SECTION BC 2610: LIGHT-TRANSMITTING PLASTIC SKYLIGHT GLAZING

NYC Administrative Code § 28-BC 2610

2610.1 Light-transmitting plastic glazing of skylight assemblies.

Skylight assemblies glazed with light-transmitting plastic shall conform to the provisions of this section and Section 2606. Unit skylights glazed with light-transmitting plastic shall also comply with Section 2405.5.

Exception: Skylights in which the light-transmitting plastic conforms to the required roof-covering class in accordance with Section 1505.

2610.2 Mounting. The light-transmitting plastic shall be mounted above the plane of the roof on a curb constructed in accordance with the requirements for the type of construction classification, but at least 4 inches (102 mm) above the plane of the roof. Edges of light-transmitting plastic skylights or domes shall be protected by metal or other approved noncombustible material, or the light-transmitting plastic dome or skylight shall be shown to be able to resist ignition where exposed at the edge to a flame from a Class B brand as described in ASTM E 108 or UL 790.

Exceptions:

1. Curbs shall not be required for skylights used on roofs having a minimum slope of three units vertical in 12 units horizontal (25-percent slope) in occupancies in Group R-3 and on buildings with a nonclassified roof covering.

2. The metal or noncombustible edge material is not required where nonclassified roof coverings are permitted.

2610.3 Slope. Flat or corrugated light-transmitting plastic skylights shall slope at least four units vertical in 12 units horizontal (4:12). Dome-shaped skylights shall rise above the mounting flange a minimum distance equal to 10 percent of the maximum span of the dome but not less than 3 inches (76 mm).

Exception: Skylights that pass the Class B Burning Brand Test specified in ASTM E 108 or UL 790 shall have no minimum slope requirement.

2610.4Maximum area of skylights.Each skylight shall have a maximum area within the curb of 100 square feet (9.3 m²).

Exception: The area limitation shall not apply where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or the building is equipped with smoke and heat vents in accordance with Section 910.

2610.5Aggregate area of skylights.The aggregate area of skylights shall not exceed 331/3 percent of the floor area of the room or space sheltered by the roof in which such skylights are installed where Class CC1 materials are utilized, and 25 percent where Class CC2 materials are utilized.

Exception: The aggregate area limitations of light-transmitting plastic skylights shall be increased 100 percent beyond the limitations set forth in this section where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or the building is equipped with smoke and heat vents in accordance with Section 910.

2610.6Separation.Skylights shall be separated from each other by a distance of not less than 4 feet (1219 mm) measured in a horizontal plane.

Exceptions:

1. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. In Group R-3, multiple skylights located above the same room or space with a combined area not exceeding the limits set forth in Section 2610.4.

2610.7Location.Where exterior wall openings are required to be protected in accordance with Section 704, a skylight shall not be installed within 6 feet (1829 mm) of such exterior wall.

2610.8Combinations of roof panels and skylights.Combinations of light-transmitting plastic roof panels and skylights shall be subject to the area and percentage limitations and separation requirements of Section 2609 applicable to roof panel installations.



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SECTION BC 2611: LIGHT-TRANSMITTING PLASTIC INTERIOR SIGNS

NYC Administrative Code § 28-BC 2611

2611.1 General.

Light-transmitting plastic interior wall signs shall be limited as specified in Sections 2611.2 through 2611.4.
Light-transmitting plastic interior wall signs in covered mall buildings shall comply with Section 402.14.
Light-transmitting plastic interior signs shall also comply with Section 2606.

2611.2Aggregate area.The sign shall not exceed 20 percent of the wall area.

2611.3Maximum area.The sign shall not exceed 24 square feet (2.2 m2).

2611.4Encasement.Edges and backs of the sign shall be fully encased in metal.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE

Chapter 27: ELECTRICAL

SECTION BC 2701: GENERAL

NYC Administrative Code § 28-BC 2701

2701.1 Scope.

This chapter governs the electrical components, equipment and systems used in buildings and structures covered by this code. Electrical components, equipment and systems shall be designed and constructed in accordance with the provisions of the New York City Electrical Code.



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Chapter 27: ELECTRICAL
SECTION BC 2702: EMERGENCY POWER SYSTEMS

NYC Administrative Code § 28-BC 2702

2702.1 Installation.

Emergency systems shall be installed in accordance with the New York City Electrical Code, NFPA 110 and NFPA 111, and shall have an on-premises fuel supply sufficient for not less than 6-hour full-demand operation of the system. However, for R-2 occupancies required to provide emergency power systems pursuant to the provisions of Section 403.11.2, and for voluntarily installed emergency power systems, natural gas from the public utility street main shall be permitted as fuel supply.

2702.1.1 Stationary generators. Emergency power generators shall be listed in accordance with UL 2200.

2702.1.2 Capacity. The emergency power system shall have a capacity and rating that supplies all equipment required to be operational at the same time.

2702.2 Where required. Emergency power systems shall be provided where required by this section.

2702.2.1 Group A occupancies. Emergency power shall be provided for voice/alarm communication systems in Group A occupancies in accordance with Section 907.2.1.2.

2702.2.2 Smoke control systems. Emergency power shall be provided for smoke control systems in accordance with Section 909.11.

2702.2.3 Exit signs. Emergency power shall be provided for exit signs in accordance with Section 1011.5.3.

2702.2.4 Means of egress illumination. Emergency power shall be provided for means of egress illumination in accordance with Section 1006.3.

2702.2.5 Accessible means of egress elevators. Emergency power shall be provided for elevators that are part of an accessible means of egress in accordance with Section 1007.4

2702.2.6Horizontal sliding doors.Emergency power shall be provided for horizontal sliding doors in accordance with Section 1008.1.3.3

2702.2.7Semiconductor fabrication facilities.Emergency power shall be provided for semiconductor fabrication facilities in accordance with Section 415.9.10.

2702.2.8Membrane structures.Emergency power shall be provided for auxiliary inflation systems in accordance with Section 3102.8.2. Emergency power shall be provided for exit signs in tents and membrane structures.

2702.2.9Hazardous materials.Emergency power shall be provided in occupancies with hazardous materials in accordance with Section 414.5.4 and the New York City Fire Code.

2702.2.10Highly toxic and toxic materials.Emergency power shall be provided for occupancies with highly toxic or toxic materials in accordance with the New York City Fire Code.

2702.2.11Organic peroxides.Emergency power shall be provided for occupancies with organic peroxides in accordance with the New York City Fire Code.

2702.2.12Pyrophoric materials.Emergency power shall be provided for occupancies with silane gas in accordance with the New York City Fire Code.

2702.2.13Covered mall buildings.Emergency power shall be provided for voice/alarm communication systems in covered mall buildings in accordance with Section 402.12

2702.2.14High-rise buildings.Emergency power shall be provided in high-rise buildings in accordance with Section 403.11.

2702.2.15Underground buildings.Emergency power shall be provided in underground buildings in accordance with Section 405.10.

2702.2.16Group I-3 occupancies.Emergency power shall be provided for doors in Group I-3 occupancies in accordance with Section 408.4.2.

2702.2.17Reserved.

2702.2.18Elevators.Emergency power for elevators, including elevators provided to accommodate ambulance stretchers pursuant to Section 3002.4, shall be provided as set forth in Section 3003.1

2702.2.19Smokeproof enclosures and pressurized elevator shaft.Emergency power shall be provided for smoke-proof enclosures as required by Section 909.20 and for pressurized elevator shafts provided in accordance with Item 5 of Section 403.9.1.1.

2702.2.20Occupancy Groups B, E and R-1.An emergency power system shall be required in those Group B, E and R-1 occupancies specified in this section:

1. Group B occupancies with occupied floor less than 75 feet (22 860 mm) above the lowest fire department vehicle access having a gross floor area over 15,000 square feet (1,393.6 m²) per floor or a total gross floor area of 100,000 square feet (9,290.3 m²) or more.

2. Group E occupancies with occupied floor less than 75 feet (22 860 mm) above the lowest level of fire department vehicle access having a gross floor area over 15, 000 square feet (1,393.6 m²) per floor or a total gross floor area of 100,000 square feet (9,290.3 m²) or more.

3. All Group R-1 occupancies.

2702.2.20.1 Equipment requiring emergency power system. With respect to such occupancy Groups B, E and R-1, the following equipment, where such equipment is required by this code, shall be provided with an emergency power system:

1. Exit signs and means of egress illumination required by Chapter 10;
2. Elevator car lighting;
3. Emergency voice/alarm communications systems;
4. Automatic fire detection systems;
5. Fire alarm systems;
6. Electrically powered fire pumps;
7. Ventilating systems used for smoke venting or control;
8. Stair pressurization;
9. At least three elevators in a building at one time with manual transfer to other elevators as required by Section 3003.

2702.3 Maintenance. Emergency power systems shall be maintained and tested in accordance with the New York City Fire Code and New York City Electrical Code.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**

CHAPTER 7: THE NEW YORK CITY BUILDING CODE

Chapter 28: MECHANICAL SYSTEMS

SECTION BC 2801: GENERAL

NYC Administrative Code § 28-BC 2801

2801.1 Scope.

Mechanical appliances, equipment and systems shall be constructed, installed and maintained in accordance with the New York City Mechanical Code and the New York City Fuel Gas Code. Masonry chimneys, fireplaces and barbecues shall comply with the New York City Mechanical Code and Chapter 21 of this code.



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Chapter 29: PLUMBING SYSTEMS

SECTION BC 2901: GENERAL

NYC Administrative Code § 28-BC 2901

2901.1 Scope.

The provisions of this chapter and the New York City Plumbing Code shall govern the erection, installation, alteration, repairs, relocation, replacement, addition to, use or maintenance of plumbing equipment and systems. Plumbing systems and equipment shall be constructed, installed and maintained in accordance with the New York City Plumbing Code.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 30: ELEVATORS AND CONVEYING SYSTEMS
SECTION BC 3001: GENERAL

NYC Administrative Code § 28-BC 3001

3001.1 Scope.

This chapter establishes the minimum safety requirements for, and governs the design, construction, installation, alteration, maintenance, inspection, test and operation of, elevators, dumbwaiters, escalators, moving walks, industrial lifts and loading ramps, mechanical parking equipment, console or stage lifts, power operated scaffolds, amusement devices, and special hoisting and conveying equipment. This chapter and all the provisions of this code for new installations shall also apply to elevators in existing buildings moved to new hoistways.

High-rise buildings elevators shall also conform to the provisions of Section 403 of this code.

Exception: Personnel and material hoists used for construction operations subject to the requirements of Chapter 33.

3001.2 Referenced standards. Except as otherwise provided for in this code, the design, construction, installation, alteration, repair and maintenance of elevators and other conveying systems and their components shall conform to ASME A17.1 as modified by Appendix K, ASME A17.2, ASME A18.1, ASME A17.5, ANSI A10.5, ASME QE1-1, ASME A90.1, ASME B20.1 as modified by Appendix K, ALI ALCTV, and for construction in areas of special flood hazard, Appendix G.

3001.3 Accessibility. Passenger elevators required to be accessible by Chapter 11 shall conform to ICC A117.1.

3001.4 Change in use. A change in use of an elevator from freight to passenger, passenger to freight, or from one freight class to another freight class shall comply with Section 8.7 of ASME A17.1.

3001.5 Piping or ductwork. No piping or ductwork of any kind shall be permitted within hoistway or elevator enclosures except:

1. As required for the elevator installation; and

2. Low voltage wiring less than 50 volts required for fire alarm systems required by this code.

3001.6Elevator mirrors.A mirror shall be installed in each self-service passenger elevator in in multiple dwellings. Such mirror shall be affixed and maintained in a manner sufficient to enable persons entering such elevator to view the inside thereof prior to entry to determine whether any person is in the elevator.

3001.7Car switch operation.Elevators with car switch operation (manual operation) shall be provided with a signal system by means of which signals can be given from any landing whenever the elevator is desired at that landing.

3001.8Prohibited devices.The following devices shall be prohibited:

3001.8.1Manlifts.The installation of manlifts is prohibited.

3001.8.2Sidewalk elevators.The installation of sidewalk elevators located outside the street line is prohibited

3001.9Approved equipment Buffers, interlocks, elevator entrances, wedge shackles, and elevator governors shall be approved by the commissioner.

3001.10Construction documents.Applications for elevator, escalator, moving walkway and stairway, dumbwaiter, and similar equipment shall contain construction documents that include the following:

1. The location of all machinery, switchboards, junction boxes, and reaction points, with loads indicated;
2. The details of all hoistway conditions including bracket spacing;
3. The estimated maximum vertical forces on the guide rails on application of the safety device;
4. In the case of freight elevators for class B or C loading, the horizontal forces on the guide-rail faces during loading and unloading; and the estimated maximum horizontal forces in a postwise direction on the guide-rail faces on application of the safety device;
5. The size and weight per foot of any rail reinforcements where provided;
6. Compliance with the accessibility features of this code;
7. The details of capability of the withstanding forces (impact) on door entrance assembly and retaining devices;
8. The withstanding hourly fire rating of the hoistway and the hoistway door assembly;
9. The impact loads imposed on machinery and sheave beams, supports and floors or foundations;
10. The impact load on buffer supports due to buffer engagement at the maximum permissible speed and load;
11. Where compensation tie down is applied, the load on the compensation tie down supports; and
12. The total static and dynamic loads from the governor, buffer and tension system.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

3001.9 amended L.L. 8/2008 § 163, eff. July 1, 2008.

3001.10 item 12 amended L.L. 8/2008 § 164, eff. July 1, 2008.



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Chapter 30: ELEVATORS AND CONVEYING SYSTEMS
SECTION BC 3002: HOISTWAY ENCLOSURES

NYC Administrative Code § 28-BC 3002

3002.1 Hoistway enclosure protection.

Elevator, dumbwaiter and other hoistway enclosures shall have a fire-resistance rating not less than that specified in Chapter 6 and shall be constructed in accordance with Chapter 7.

3002.1.1 Opening protectives. Openings in hoistway enclosures shall be protected as required in Chapter 7.

3002.1.2 Hardware. Hardware on opening protectives shall be of an approved type installed as tested, except that approved interlocks, mechanical locks and electric contacts, door and gate electric contacts and door-operating mechanisms shall be exempt from the fire test requirements.

3002.2 Number of elevator cars in a hoistway. Where four or more elevator cars serve all or the same portion of a building, the elevators shall be located in at least two separate hoistways. Not more than four elevator cars shall be located in any single hoistway enclosure. Elevators that service different risers shall be located in separate hoistways.

3002.3 Emergency signs. An approved pictorial sign of a standardized design shall be posted adjacent to each elevator call station on all floors instructing occupants to use the exit stairways and not to use the elevators in case of fire. The sign shall read: IN FIRE EMERGENCY, DO NOT USE ELEVATOR. USE EXIT STAIRS. The emergency sign shall not be required for elevators that are part of an accessible means of egress complying with 1007.4.

3002.4 Elevator car to accommodate ambulance stretcher. In buildings five stories in height or more, at least one elevator shall be provided for Fire Department emergency access to all floors. Emergency power shall be provided in accordance with Sections 2702 and 3003. Such elevator car shall be of such a size and arrangement to accommodate a 24-inch by 76-inch (610 mm by 1930 mm) ambulance stretcher in the horizontal, open position and shall be identified by the international symbol for emergency medical services (star of life). The symbol shall not be less than 3 inches (76 mm) high and shall be placed on both jambs of the hoistway entrances on each floor.

NYC Administrative Code § 28-BC 3002

3002.5Emergency doors.Where an elevator is installed in a single blind hoistway or on the outside of a building, there shall be installed in the blind portion of the hoistway or blank face of the building, an emergency door in accordance with ASME A17.1.

3002.6Reserved.

3002.7Common enclosure with stairway.Elevators shall not be in a common shaft enclosure with a stairway.



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SECTION BC 3003: ELEVATOR EMERGENCY OPERATIONS

NYC Administrative Code § 28-BC 3003

3003.1 Emergency power.

In buildings and structures where emergency power is required or furnished to operate an elevator, the operation shall be in accordance with Sections 3003.1.1 through 3003.1.4.

3003.1.1 Manual transfer. Emergency power shall be manually transferable to all elevators in each bank.

3003.1.2 One elevator. Where only one elevator is installed, the elevator shall automatically transfer to emergency power within 60 seconds after failure of normal power.

3003.1.3 Two or more elevators. Where two or more elevators are controlled by a common operating system, all elevators shall automatically transfer to emergency power within 60 seconds after failure of normal power where the emergency power source is of sufficient capacity to operate all elevators at the same time. Where the emergency power source is not of sufficient capacity to operate all elevators at the same time, all elevators shall transfer to emergency power in sequence, return to the designated landing and disconnect from the emergency power source. After all elevators have been returned to the designated level, at least three elevators shall remain operable from the emergency power source.

3003.1.4 Venting. Where emergency power is connected to elevators, the machine room ventilation or air conditioning shall be connected to the emergency power source.

3003.2 Fire fighters' emergency operation. Elevators shall be provided with Phase I emergency recall operation and Phase II emergency in-car operation in accordance with ASME A17.1 as modified by Appendix K.

3003.3 Elevator in readiness. Requirements for elevator in readiness shall be as defined in Sections 3003.3.1 through 3003.3.2 .

3003.3.1 High-rise buildings. Except as provided in Section 3003.3.2, in high-rise buildings as defined in Section

403, all floors shall be served by at least one elevator that shall be kept available for immediate use by the Fire Department during all hours of the night and day, including holidays, Saturdays and Sundays. There shall be available at all times a person competent to operate the elevator. However, an attendant shall not be required for buildings with occupied floors of 150 feet (45 720 mm) or less above the lowest level of the fire department vehicle access that have elevators with automatic or continuous pressure operation with keyed switches meeting the requirements of ASME A17.1 as modified by Appendix K so as to permit sole use of the elevators by the Fire Department.

3003.3.2Number of Elevators.A number of elevators shall be kept available at every floor for the sole use of the Fire Department as required by Section 3003.3.2.1 and Section 3003.3.2.2. This requirement shall apply to the following types of buildings:

1. High-rise buildings with occupancies classified in Groups A, B, E, I, F, H, M and S;
2. Buildings with Group B occupancies with a gross area of 200, 000 square feet (18 581 m2);
3. Buildings with a main use or dominant occupancy in Group R-1 or R-2.

3003.3.2.1Three or fewer elevators.Where a floor is serviced by three or fewer elevator cars, every car shall be kept available for sole use by the Fire Department.

3003.3.2.2More than three elevators.Where a floor is serviced by more than three elevator cars, at least three elevator cars with a total rated load capacity of not less than 6,000 pounds (2722 kg) shall be kept available for sole use by the Fire Department. Such cars shall include not more than two cars that service all floors and at least one other car in another bank servicing that floor. If the total load capacity of all cars servicing the floor is less than 6,000 pounds (2722 kg), all such cars shall be kept available for sole use by the Fire Department.

3003.3.3Operation and control.Elevators that are kept for the sole use of the Fire Department and that have automatic or continuous pressure operation shall be controlled by keyed switches meeting the requirements of ASME 17.1.

3003.3.4Other elevator cars.In high rise buildings classified in occupancy groups A, B, E, F, H, I, M and S, in low-rise buildings classified in occupancy group B with a gross area of 200,000 square feet (18 581 m2) or more and in buildings classified in occupancy group R-1 or R-2, all other automatically operated cars shall have manual operation capability.



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SECTION BC 3004: HOISTWAY VENTING

NYC Administrative Code § 28-BC 3004

3004.1 Reserved.

3004.2 Reserved.

3004.3 Reserved.

3004.4 Reserved.

3004.5 Plumbing and mechanical systems. Plumbing and mechanical systems shall not be located in an elevator shaft.

Exception: Floor drains sumps and sump pumps shall be permitted at the base of the shaft provided they are indirectly connected to the plumbing system.

3004.6 Control of smoke and hot gases. Hoistways of elevators shall be provided with any one of the following means to prevent the accumulation of smoke and hot gases in case of fire in accordance with Sections 3004.6.1 through 3004.6.4.

3004.6.1 Vents in the hoistway enclosures. Hoistway enclosures may be vented in accordance with the following:

1. Location of vents:

1.1. The vents in the side of the hoistway enclosure below the elevator machine room floor or in the roof of the hoistway shall open either directly to the outer air or through non-combustible ducts to the outer air.

1.2. The vents in the wall or roof of an overhead elevator machine room through the smoke hole in the top of the elevator hoistway shall be vented to the outer air through non-combustible ducts.

2. Area of vents. The area of vents in the hoistway or the elevator machine room and the smoke hole shall be not less than 3 1/2 percent of the area of the hoistway nor less than 3 square feet (0.28 m²) for each elevator car, whichever is greater. Such vents shall comply with the following requirements:

2.1. Open Vents. Of the total required vent area, not less than one-third shall be permanently open or equipped with an openable hinged damper. The smoke hole shall be permanently open.

2.2. Closed Vents. The two-thirds closed portion of the required vent area either in the hoistway enclosure or in the elevator machine room may consist of windows or skylights glazed with annealed glass not more than 1/8-inch (3.2 mm) thick. A closed damper that opens upon the activation of a smoke detector placed at the top of the hoistway shall be considered closed.

3004.6.2 Mechanical ventilation of the hoistway enclosure. Hoistway enclosures may be mechanically vented. The system of mechanical ventilation shall be of sufficient capacity to exhaust at least 12 air changes per hour of the volume of such hoistways through a roof or an approved location on an exterior wall other than the lot line wall. Such system shall comply with the following requirements:

1. The smoke detector shall be placed at the top of the hoistway and shall activate the mechanical ventilation system.

2. Such mechanical ventilation system shall not pass through the overnight sleeping areas of a hotel, multiple dwelling, hospital, or similar buildings.

3. Such mechanical ventilation system shall be equipped with a manual shut-off in or near the elevator control panel at the designated level.

3004.6.3 Air pressurization of hoistway enclosure. Hoistways may be air pressurized. Where such system is utilized, the air shall not cause erratic operation of the landing or car door equipment, traveling cables, selector tapes, governor ropes, compensating ropes, or any other components sensitive to excess movement or deflection.

3004.6.4 Alternate means. The commissioner may accept alternate means to prevent the accumulation of smoke and hot gases in the hoistways and machine rooms in case of fire.



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SECTION BC 3005: CONVEYING SYSTEMS

NYC Administrative Code § 28-BC 3005

3005.1 General.

Conveying systems shall comply with the provisions of this section.

3005.2 Escalators and moving walks. Escalators and moving walks shall be constructed of approved noncombustible and fire-retardant materials. This requirement shall not apply to electrical equipment, wiring, wheels, handrails and the use of 1/28-inch (0.9 mm) wood veneers on balustrades backed up with noncombustible materials.

3005.2.1 Enclosure. Escalator floor openings shall be enclosed except where Exception 2 of Section 707.2 is satisfied.

3005.2.2 Escalators. Where provided in below-grade transportation stations, escalators shall have a clear width of 32 inches (813 mm) minimum.

Exception: The clear width is not required in existing facilities undergoing alterations.

3005.3 Conveyors. Conveyors and related equipment shall comply with ASME B20.1.

3005.3.1 Enclosure. Conveyors and related equipment connecting successive floors or levels shall be enclosed with fire barrier walls and approved opening protectives complying with the requirements of Section 3002 and Chapter 7.

3005.3.2 Conveyor safeties. Power-operated conveyors, belts, and other material-moving devices shall be equipped with automatic limit switches, which will shut off the power in an emergency and automatically stop all operation of the device.

3005.4 Reserved.

3005.5 Amusement devices. Amusement devices shall also comply with rules of the department.



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SECTION BC 3006: MACHINE ROOMS

NYC Administrative Code § 28-BC 3006

3006.1 Access.

An approved means of access shall be provided to elevator machine rooms and overhead machinery spaces.

3006.2 Venting. Elevator machine rooms that contain solid-state equipment for elevator operation shall be provided with an independent ventilation or air-conditioning system to protect against the overheating of the electrical equipment. The system shall be capable of maintaining temperatures within the range established for the elevator equipment.

3006.3 Pressurization. The elevator machine room serving a pressurized elevator hoistway shall be pressurized upon activation of a heat or smoke detector located in the elevator machine room.

3006.4 Machine rooms and machinery spaces. Elevator machine rooms and machinery spaces shall be enclosed with construction having a fire-resistance rating not less than the required rating of the hoistway enclosure served by the machinery. Openings shall be protected with assemblies having a fire-resistance rating not less than that required for the hoistway enclosure doors.

3006.5 Sprinklers prohibited. Sprinklers are not permitted in elevator machine rooms.

3005.6 Plumbing systems. Plumbing systems not related to elevator machinery shall not be located in elevator equipment rooms.

3006.7 Elevator machinery noise control in multiple dwellings. Gear-driven machinery, gearless machinery, and motor generators located in an elevator machinery room or shaft on a roof, or on a floor other than a floor on grade, shall be supported on vibration isolator pads having a minimum thickness of 1/2 inch (12.7 mm).



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SECTION BC 3007: SERVICE EQUIPMENT CERTIFICATES

NYC Administrative Code § 28-BC 3007

3007.1 Required.

No service equipment shall be placed in operation until a service equipment certificate of compliance has been obtained in accordance with the provisions of this code.

3007.2 Posting of inspection certificate. At the time a service equipment certificate of compliance is issued, an inspection certificate issued by the commissioner shall be posted. No such inspection certificate shall be issued for elevators that are not subject to periodic inspections pursuant to this code. The inspection certificate shall be in such form as the commissioner shall determine by rule and shall be posted in a frame with a transparent cover in the car of every passenger and freight elevator and on or near every escalator and moving walk and power operated scaffold.

3007.2.1 Alternate posting locations. In lieu of posting the inspection certificate in those locations specified in this section, the inspection certificate may be kept in the on-site building manager's office. In such case, the building manager's office must be open during normal business hours. In addition, notice must be posted in each location and kept in a frame with a transparent cover, or a plaque with an indelible inscription, stating that the inspection certificate is located in the building manager's office and identifying the location of such office.

3007.3 Temporary use certificates. The commissioner may issue temporary use certificates for any equipment or device regulated by this code, except power-operated scaffolds, provided that such partial use and operation may be made safely and without endangering public health, safety, and welfare and provided further that such temporary use certificate shall not be issued for a period of more than thirty calendar days, subject to renewal for additional thirty-day periods at the discretion of the commissioner. Temporary use certificates for elevators shall also be conditioned upon compliance with the following:

1. The class of service to be permitted shall be designated on the temporary use certificate.
2. The hoistway shall be enclosed throughout in an enclosure complying with ASME 17.1 or with a temporary

enclosure in accordance with the requirements for workers' elevators (temporary elevators) of the Industrial Code of the State of New York, No. 23.

3007.3.1 Posting of temporary use certificate. The temporary use certificate shall be posted in a conspicuous location on, or adjacent to, the device covered by the certificate and shall state that the device has not been finally approved by the commissioner.



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SECTION BC 3008: ELEVATOR, AMUSEMENT, AND OTHER DEVICE OPERATORS

NYC Administrative Code § 28-BC 3008

3008.1 Elevator operators.

With the exception of automatic operation, continuous pressure elevators and sidewalk elevators, every passenger and freight elevator with a rise of more than one story shall be in the charge of a designated competent operator, who shall be at least 18 years old, free from serious physical or mental defects, and selected with consideration of his or her abilities to perform his or her duties in a careful and competent manner. Such designated competent operator shall be instructed in accordance with requirements of department rules.

3008.2Amusement device operators.Operators of amusement devices shall meet the requirements of rules of the department.

3008.3Other device operators.Other devices regulated by this code shall, when deemed necessary by the commissioner to protect public safety, be in the charge of a designated competent operator conforming to such qualifications as the commissioner may prescribe, except that operators for workers' hoists shall be assigned as required by the applicable provisions of ASME 10.4

3008.4Sanction for unlawful operation.If the commissioner finds that any person engaged in operating an elevator, amusement, or other device is not competent to operate the elevator, amusement or other device, the owner, agent or lessee of such elevator, amusement, or other device shall, upon notice from the commissioner, discontinue the operation of such device by such operator.



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SECTION BC 3009: ELEVATOR BEING SERVICED

NYC Administrative Code § 28-BC 3009

3009.1 Signage.

When an existing or new automatic passenger elevator in any building or structure is being serviced by an elevator maintenance company, elevator maintenance personnel, or other person and there are no maintenance personnel available to remain in the elevator car, "CAUTION" sign tapes shall be placed across the car door jamb. One strip of "CAUTION" sign tape shall be placed at a height of 18 inches (457 mm) above the car floor and another strip of "CAUTION" sign tape shall be placed at a height of 54 inches (1372 mm) above the car floor.

3009.1.1 Sign tape. The "CAUTION" sign tape shall be 3 inches (76 mm) in width with the words "CAUTION - DO NOT ENTER" repeated every 6 inches (152 mm). The lettering shall be black on yellow background. The letters shall be at least 2 inches (51 mm) high.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 3: USE AND OCCUPANCY CLASSIFICATION
SECTION BC 301: GENERAL

NYC Administrative Code § 28-BC 301

301.1 Scope.

The provisions of this chapter shall control the classification of all buildings and structures, and spaces therein, as to use and occupancy.



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SECTION BC 3010: ACCIDENTS

NYC Administrative Code § 28-BC 3010

3010.1 Accidents.

The owner of any device regulated by this chapter shall promptly notify the commissioner of every accident involving injury to any person requiring the services of a physician or damage to property or to apparatus exceeding one thousand dollars on, about, or in connection with such equipment, before commencing any repairs and shall afford the commissioner every facility for investigating such accident or damage. The commissioner shall make an investigation immediately thereafter, and shall prepare a full and complete report of such investigation. Such report shall give in detail all material facts and information available and the cause or causes as far as they can be determined. Such report shall be a public record. When an accident involves the failure or destruction of any part of the construction or operating mechanism of such equipment, no such equipment shall be used until it has been made safe, and re-inspected by the commissioner; and the commissioner may order the discontinuance of such equipment until a new service equipment certificate has been issued by him or her for its use. No part shall be removed from the premises of the damaged construction or operating mechanism until permission to do so has been granted by the commissioner.



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SECTION BC 3011: EXISTING INSTALLATIONS

NYC Administrative Code § 28-BC 3011

3011.1 General.

Existing installations shall be modified in accordance with department rules.



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SECTION BC 3012: INSPECTION AND TESTING

NYC Administrative Code § 28-BC 3012

3012.1 Elevators and Conveying Systems.

Inspection and testing of elevators and conveying systems shall be in accordance with Appendix K. Refer to Chapter 3 of Title 28 of the Administrative Code for additional requirements.

3012.2 Amusement devices. Inspection and testing of amusement devices shall comply with rules of the department. Refer to Chapter 3 of Title 28 of the Administrative Code for additional requirements.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 3: USE AND OCCUPANCY CLASSIFICATION
SECTION BC 302: CLASSIFICATION

NYC Administrative Code § 28-BC 302

302.1 General.

Structures or portions of structures shall be classified with respect to occupancy in one or more of the groups listed below. Structures with multiple uses shall be classified according to Section 302.3. Where a structure, or portion thereof, is proposed for a purpose which is not specifically provided for in this code, such structure, or portion thereof shall be classified in the group which the occupancy most nearly resembles, according to the fire safety and relative hazard involved, and as approved by the commissioner.

1. Assembly (see Section 303): Groups A-1, A-2, A-3, A-4 and A-5
2. Business (see Section 304): Group B
3. Educational (see Section 305): Group E
4. Factory and Industrial (see Section 306): Groups F-1 and F-2
5. High Hazard (see Section 307): Groups H-1, H-2, H-3, H-4 and H-5
6. Institutional (see Section 308): Groups I-1, I-2, I-3 and I-4
7. Mercantile (see Section 309): Group M
8. Residential (see Section 310): Groups R-1, R-2 and R-3
9. Storage (see Section 311): Groups S-1 and S-2
10. Utility and Miscellaneous (see Section 312): Group U

For a listing of Occupancy Group Classifications that corresponds with uses listed in the Zoning Resolution, refer to department rules.

302.1.1 Incidental use areas and mixed occupancies including accessory occupancies. Structures with multiple occupancies or uses shall comply with Section 508.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

302.1.1 repealed and added L.L. 8/2008 § 72, eff. July 1, 2008.

302.1.1 Table repealed L.L. 8/2008 § 72, eff. July 1, 2008.

302.1.1.1 repealed L.L. 8/2008 § 72, eff. July 1, 2008.

302.2 repealed L.L. 8/2008 § 73, eff. July 1, 2008.

302.2.1 repealed L.L. 8/2008 § 73, eff. July 1, 2008.

302.3 repealed L.L. 8/2008 § 73, eff. July 1, 2008.

302.3.1 repealed L.L. 8/2008 § 73, eff. July 1, 2008.

302.3.2 repealed L.L. 8/2008 § 73, eff. July 1, 2008.

302.4 repealed L.L. 8/2008 § 73, eff. July 1, 2008.

302.5 repealed L.L. 8/2008 § 73, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 3: USE AND OCCUPANCY CLASSIFICATION
SECTION BC 303: ASSEMBLY GROUP A

NYC Administrative Code § 28-BC 303

303.1 Assembly Group A.

Assembly Group A occupancy includes, among others, the use of a building or structure or a portion thereof, excluding a dwelling unit, for the gathering together of any number of persons for purposes such as civic, social or religious functions, recreation, food or drink consumption, awaiting transportation, or similar group activities; or when occupied by 75 persons or more for educational or instructional purposes.

Exceptions:

1. A room or space used for assembly purposes by fewer than 75 persons and accessory to another occupancy shall be included as a part of that occupancy
2. A building or non-accessory tenant space used for assembly purposes by fewer than 75 persons shall be considered a Group B occupancy.

Assembly occupancies shall include the following:

A-1 Assembly uses, usually with fixed seating, intended for the production and viewing of the performing arts or motion pictures including, but not limited to:

Motion picture theaters

Symphony and concert halls

Television and radio studios admitting an audience

Theaters

A-2 Assembly uses intended for food and/or drink consumption including, but not limited to:

Banquet halls

Cabarets

Cafeterias, except as provided for in A-3

Dance halls

Night clubs

Restaurants

Taverns and bars

A-3 Assembly uses intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A including, but not limited to:

Amusement arcades

Art galleries

Bowling alleys

Cafeterias for children up to and including the 12th grade

Classrooms and instructional rooms with 75 persons or more; such rooms with fewer than 75 persons shall be classified as Group B or E

Community halls

Courtrooms

Custodial care facilities with 75 or more persons, providing care to persons over the age of 2, where no more than four occupants are incapable of responding to an emergency situation without physical assistance from staff

Dance studio or instruction (not including food or drink consumption)

Exhibition halls

Funeral parlors

Gymnasiums (without spectator seating)

Houses of worship

Indoor swimming pools (without spectator seating)

Indoor tennis courts (without spectator seating)

Lecture halls

Museums

Waiting areas in transportation terminals

Pool and billiard parlors

School auditoriums

A-4 Assembly uses intended for viewing of indoor sporting events and activities with spectator seating including, but not limited to:

Arenas

Skating rinks

Swimming pools

Tennis courts

A-5 Assembly uses intended for participation in or viewing outdoor activities including, but not limited to:

Amusement park structures

Bleachers

Grandstands

Stadiums

303.2 Certificate of Operation. A Certificate of Operation shall be required, as per Section 28-117.1, for the following places of assembly:

1. Indoor places of assembly used or intended for use by 75 persons or more, including open spaces at 20 feet (6096 mm) or more above or below grade, such as roofs or roof terraces.

2. Outdoor places of assembly used and intended for use by 200 persons or more.



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SECTION BC 304: BUSINESS GROUP B

NYC Administrative Code § 28-BC 304

304.1 Business Group B.

Business Group B occupancy includes, among others, the use of a building or structure, or a portion thereof, for office, professional, service-type transactions, or for conducting public or civic services, including the incidental storage of records and accounts and the incidental storage of limited quantities of stocks of goods for office use or purposes. Business Group B occupancies shall include, but not be limited to, the following:

Airport traffic control towers

Animal hospitals, kennels and pounds

Banks

Barber and beauty shops

Civic administration offices

Clinic-outpatient, including group medical centers, and neighborhood family care centers

Custodial care facilities with fewer than 75 persons, providing care to persons over the age of 2, where no more than four occupants are incapable of responding to an emergency situation without physical assistance from staff

Dry cleaning and laundries; pick-up and delivery stations and self-service

Educational occupancies above the 12th grade, where not classified in Group A. Such occupancy may be used occasionally for educational purposes offered to children through the 12th grade

Electronic data processing

Laboratories; non-production testing and research, as per Section 419

Libraries when not classified in Group E

Motor vehicle showrooms

Offices

Post offices

Photocopying and printing shops using electronic printing equipment

Professional services (architects, attorneys, dentists, physicians, engineers, etc.)

Radio and television stations not admitting an audience

Telephone exchanges



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SECTION BC 305: EDUCATIONAL GROUP E

NYC Administrative Code § 28-BC 305

305.1 Educational Group E.

Educational Group E occupancy includes, among others, the use of a building or structure, or a portion thereof, by five or more persons at any one time for educational purposes offered to children through the 12th grade and where no more than two children are under the age of 2, including but not limited to, the following:

Academies

Day care facilities where no more than two children are under the age of 2

Libraries accessory to Group E occupancies

Schools

Exceptions:

1. Classrooms and instructional rooms with 75 or more persons shall be classified as Group A-3.

2. Day care services provided within a dwelling unit as described in Section 310.

3. Custodial care facilities with up to 30 children under the age of 2 are permitted to be classified as Group E when the rooms where such children are cared for are located on the level of exit discharge and each of these child care rooms has an exit door directly to the exterior.

305.2Reserved.



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SECTION BC 306: FACTORY GROUP F

NYC Administrative Code § 28-BC 306

306.1 Factory Industrial Group F.

Factory Industrial Group F occupancy includes, among others, the use of a building or structure, or a portion thereof, for assembling, disassembling, fabricating, finishing, manufacturing, packaging, repair, cleaning, laundering or processing operations that are not classified as a Group H hazardous occupancy.

306.2 Factory Industrial F-1 Moderate-Hazard Occupancy. Factory industrial uses which are not classified as Factory Industrial F-2 Low Hazard shall be classified as F-1 Moderate Hazard and shall include, but not be limited to, the following:

Aircraft

Aircraft repairs

Automobiles and other motor vehicles, manufacturing

Automobiles and other motor vehicles, repairs

Bakeries

Beverages; alcoholic

Boats

Boat repairs

Brooms or brushes

Canvas or similar fabric

Carpets and rugs

Carpets and rugs, cleaning, using or storing solvents having a flash point between 100(degrees)F (38(degrees)C) and 138.2(degrees)F (59(degrees)C) (Tag. Closed-cup)

Clothing

Disinfectants

Dry cleaning and dyeing using or storing solvents having a flash point between 100(degrees)F (38(degrees)C) and 138.2(degrees)F (59(degrees)C) (Tag. Closed-cup)

Electric generation plants

Engines (including rebuilding)

Food processing, except meat slaughtering or preparation of fish for packing

Furniture

Hemp products

Jute products

Laboratories; for production (moderate-hazard), that may involve the synthesis or storage of materials that constitute a physical or health hazard in quantities below those found in Tables 307.7(1) and 307.7(2)

Leather products

Metals; finishing, plating, grinding, sharpening, polishing, cleaning, rustproofing, heat treatment, or similar processes

Millwork (sash & door)

Motion pictures filming (without spectators)

Musical instruments

Optical goods

Paper mills or products

Photographic film

Plastic products

Printing or publishing

Recreational vehicles

Refuse incineration

Shoes

Soaps and detergents

Textiles

Tobacco

Trailers

Upholstering

Wood; distillation

Woodworking (cabinet) using no more than 2 quarts (1.9 L) per day or storing no more than 20 gallons (75.7 L) of paint, varnish, lacquer or shellac

306.3Factory Industrial F-2 Low-Hazard Occupancy.Factory industrial uses that involve the cleaning, laundering, fabrication or manufacturing of noncombustible materials which during finishing, packing or processing do not involve a significant fire hazard shall be classified as F-2 occupancies and shall include, but not be limited to, the following:

Appliances

Athletic equipment

Automobile laundries

Automobile wrecking establishments

Beverages; bottling works

Beverages; non-alcoholic

BicyclesBrick and masonry

Business machines

Cameras and photo equipment

Carpets and rugs, cleaning, using or storing solvents having a flash point above 138.2(degrees)F (59(degrees)C) (Tag. closed-cup)

Ceramic products

Construction and agricultural machinery

Dry cleaning and dyeing using or storing solvents having a flash point above 138.2(degrees)F (59(degrees)C) (Tag. closed-cup)

Electronics

Food processing; meat slaughtering or preparation of fish for packing

Foundries

Glass products

Gypsum

Ice

Laboratories; for production (low-hazard), that may involve the synthesis or storage of materials that constitute a physical or health hazard in quantities below those found in Tables 307.7(1) and 307.7(2)

Laundries

MachineryMetal products (fabrication and assembly), not including flammable metals and alloys listed in Section 307

Plastic products; non-flammable

Printing; incidental to primary use, area not exceeding 2,000 square feet (185.8 m²)

Television filming (without spectators)

306.4Location restrictions.Locations of spaces classified in Factory Group F may be restricted within a building containing a Group R occupancy pursuant to Section 509.8.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

306.4 amended L.L. 8/2008 § 74, eff. July 1, 2008.



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SECTION BC 307: HIGH-HAZARD GROUP H

NYC Administrative Code § 28-BC 307

307.1 High-Hazard Group H.

High-Hazard Group H occupancy includes, among others, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation or storage of materials that constitute a physical or health hazard in quantities in excess of those found in Tables 307.7(1) and 307.7(2) (see also definition of "Control area").

Exception: Laboratories for non-production testing, research, experimental, instructional or educational purposes, in compliance with Section 419.

307.2Definitions. The following words and terms shall, for the purposes of this section and as used elsewhere in this code, have the meanings shown herein.

AEROSOL. A product that is dispensed from an aerosol container by a propellant.

Aerosol products shall be classified by means of the calculation of their chemical heats of combustion and shall be designated Level 1, 2 or 3.

Level 1 aerosol products. Those with a total chemical heat of combustion that is greater than 0 and less than or equal to 8,600 British thermal units per pound (Btu/lb) (20 kJ/g).

Level 2 aerosol products. Those with a total chemical heat of combustion that is greater than 8,600 Btu/lb (20 kJ/g), but less than or equal to 13,000 Btu/lb (30 kJ/g).

Level 3 aerosol products. Those with a total chemical heat combustion that is greater than 13,000 Btu/lb (30 kJ/g).

BARRICADE. A structure or other artificial or natural barrier constructed in connection with the storage, handling and use of explosives that provides a shield from the impact of such explosion. A straight line from the top of any sidewall of a building containing explosives to the eave line of any magazine or other building or to a point 12 feet

(3658 mm) above the center of a railway or highway shall pass through such barrier.

Artificial barricade. An artificial mound or revetment, including a barrier constructed of sandbags, with a minimum thickness of 3 feet (914 mm).

Natural barricade. Terrain or other natural features of the ground.

BOILING POINT. The temperature at which the vapor pressure of a liquid equals the atmospheric pressure of 14.7 pounds per square inch (psi) (101 kPa) gage or 760 mm of mercury. Where an accurate boiling point is unavailable for the material in question, or for mixtures which do not have a constant boiling point, for the purposes of this classification, the 20-percent evaporated point of a distillation performed in accordance with ASTM D 86 shall be used as the boiling point of the liquid.

CLOSED SYSTEM. The use of a solid or liquid hazardous material involving a closed vessel or system that remains closed during normal operations where vapors emitted by the product are not liberated outside of the vessel or system and the product is not exposed to the atmosphere during normal operations; and all uses of compressed gases. Examples of closed systems for solids and liquids include product conveyed through a piping system into a closed vessel, system or piece of equipment.

COMBUSTIBLE DUST. Finely divided solid material that is 420 microns or less in diameter, will pass through a U.S. standard No. 40 sieve and, when dispersed in air in insufficient concentrations, can be ignited by a flame, spark or other source of ignition.

COMBUSTIBLE FIBERS. Readily ignitable and free-burning fibers, such as cocoa fiber, cotton, excelsior, hay, hemp, henequen, istle, jute, kapok, oakum, sisal, Spanish moss, straw, tow, wastepaper or other natural or synthetic fibers that possess such qualities.

Exception: Moss used for medicinal purposes.

COMBUSTIBLE LIQUID. For the purposes of transportation, a combustible liquid as defined by the United States Department of Transportation. For all other purposes, a liquid, other than a compressed gas or cryogenic fluid, having a closed cup flash point at or above 100(degrees)F (38(degrees)C) classified as follows:

Class II. Liquids having a closed cup flash point at or above 100(degrees)F (38(degrees)C) and below 140(degrees)F (60(degrees)C).

Class IIIA. Liquids having a closed cup flash point at or above 140(degrees)F (60(degrees)C) and below 200(degrees)F (93(degrees)C).

Class IIIB. Liquids having a closed cup flash point at or above 200(degrees)F (93(degrees)C).

COMPRESSED GAS. A material, or mixture of materials which is a gas at 68F (20C) or less at 14.7 psia (101 kPa) of pressure; and has a boiling point of 68F (20C) or less at 14.7 psia (101 kPa) that is either liquefied, nonliquefied or in solution at that temperature and pressure, except those gases which have no other health- or physical-hazard properties are not considered to be compressed until the pressure in the packaging exceeds 41 psia (28 kPa) at 68F (20C). Compressed gases shall be classified as follows:

Nonliquefied compressed gases. Gases, other than those in solution, which are in a packaging under the charged pressure and are entirely gaseous at a temperature of 68F (20C).

Liquefied compressed gases. Gases that, in a packaging under the charged pressure, are partially liquid at a temperature of 68F (20C).

Compressed gases in solution. Nonliquefied gases that are dissolved in a solvent.

Compressed gas mixtures. A mixture of two or more compressed gases contained in a single packaging, the hazard properties of which are represented by the properties of the mixture as a whole.

CONTROL AREA. Spaces within a building that are enclosed and bounded by exterior walls, fire walls, fire barriers and roofs, or a combination thereof, where quantities of hazardous materials not exceeding the maximum allowable quantities per control area are stored, handled, or used, including any dispensing.

CORROSIVE MATERIAL. A material that causes full thickness destruction of human skin at the site of contact within specified periods of time when tested by methods described in DOTn 49 CFR § 173.136 and 173.137. Liquid that has a severe corrosion rate on steel or aluminum based on the criteria in DOTn 49 CFR § 173.173(c)(2) is also a corrosive material.

CRYOGENIC FLUID. A liquid having a boiling point lower than ;ms150(degrees)F(;ms101(degrees)C) at 14.7 pounds per square inch absolute (psia) (an absolute pressure of 101 kPa).

DEFLAGRATION. An exothermic reaction, such as the extremely rapid oxidation of a flammable dust or vapor in air, in which the reaction progresses through the unburned material at a rate less than the velocity of sound. A deflagration can have an explosive effect.

DETACHED BUILDING. A separate single-story building, without a basement or crawl space, used for the storage or use of hazardous materials and located at an approved distance from other buildings and structures.

DETONATION. An exothermic reaction characterized by the presence of a shock wave in the material which establishes and maintains the reaction. The reaction zone progresses through the material at a rate greater than the velocity of sound. The principal heating mechanism is one of shock compression. Detonations have an explosive effect.

DISPENSING. The pouring or transferring of any material from a container, tank or similar vessel, whereby dusts, fumes, mists, vapors, or gases are liberated to the atmosphere.

EXPLOSIVE. Any chemical compound, mixture or device, the primary or common purpose of which is to function by explosion. The term includes, but is not limited to, dynamite, black powder, pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord, igniters and display fireworks, 1.3G (Class B, Special).

The term "explosive" includes any material determined to be within the scope of 18 USC Chapter 40, as amended, and also includes any material classified as an explosive other than consumer fireworks, 1.4G (Class C, Common) by the hazardous materials regulations of DOTn 49 CFR.

High explosive. Explosive material, such as dynamite, which can be caused to detonate by means of a No. 8 test blasting cap when unconfined.

Low explosive. Explosive material that will burn or deflagrate when ignited. It is characterized by a rate of reaction that is less than the speed of sound. Examples of low explosives include, but are not limited to, black powder; safety fuse; igniters; igniter cord; fuse lighters; fireworks, 1.3G (Class B, Special) and propellants, 1.3C.

UN/DOTn Class 1 explosives. The former classification system used by DOTn included the terms "high" and "low" explosives as defined herein. The following terms further define explosives under the current system applied by DOTn for all explosive materials defined as hazard Class 1 materials. Compatibility group letters are used in concert with the division to specify further limitations on each division noted (i.e., the letter G identifies the material as a pyrotechnic substance or article containing a pyrotechnic substance and similar materials).

Division 1.1. Explosives that have a mass explosion hazard. A mass explosion is one which affects almost the

entire load instantaneously.

Division 1.2. Explosives that have a projection hazard but not a mass explosion hazard.

Division 1.3. Explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.

Division 1.4. Explosives that pose a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package.

Division 1.5. Very insensitive explosives. This division is comprised of substances that have a mass explosion hazard, but that are so insensitive there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport.

Division 1.6. Extremely insensitive articles which do not have a mass explosion hazard. This division is comprised of articles that contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation.

FIREWORKS. Any composition or device for the purpose of producing a visible or audible effect for entertainment purposes by combustion, deflagration or detonation that meets the definition of 1.4G fireworks or 1.3G fireworks as set forth herein.

FIREWORKS, 1.3G. (Formerly Class B, Special Fireworks.) Large fireworks devices, which are explosive materials, intended for use in fireworks displays and designed to produce audible or visible effects by combustion, deflagration or detonation. Such 1.3G fireworks include, but are not limited to, firecrackers containing more than 130 milligrams (2 grains) of explosive composition, aerial shells containing more than 40 grams of pyrotechnic composition, and other display pieces which exceed the limits for classification as 1.4G fireworks. Such 1.3G fireworks are also described as fireworks, 49 CFR pt. 172 by the DOTn.

FIREWORKS, 1.4G. (Formerly Class C, Common Fireworks.) Small fireworks devices containing restricted amounts of pyrotechnic composition designed primarily to produce visible or audible effects by combustion. Such 1.4G fireworks which comply with the construction, chemical composition and labeling regulations of the DOTn for fireworks, 49 CFR pt. 172, and the U.S. Consumer Product Safety Commission (CPSC) as set forth in 16 CFR pts. 1500 and 1507, are not explosive materials for the purpose of this code.

FLAMMABLE GAS. A material which is a gas at 68(degrees)F (20(degrees)C) or less at 14.7 pounds per square inch absolute (psia) (101 kPa) of pressure (a material that has a boiling point of 68(degrees)F (20(degrees)C) or less at 14.7 psia (101 kPa)) which:

1. Is ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with air; or
2. Has a flammable range at 14.7 psia (101 kPa) with air of at least 12 percent, regardless of the lower limit.

The limits specified shall be determined at 14.7 psia (101 kPa) of pressure and a temperature of 68(degrees)F (20(degrees)C) in accordance with ASTM E 681.

FLAMMABLE LIQUEFIED GAS. A liquefied compressed gas which, under a charged pressure, is partially liquid at a temperature of 68(degrees)F (20(degrees)C) and which is flammable.

FLAMMABLE LIQUID. For the purposes of transportation, a combustible liquid as defined by the United States Department of Transportation. For all other purposes, a liquid, other than a compressed gas or cryogenic fluid, having a closed cup flash point below 100(degrees)F (38(degrees)C) classified as follows:

Class IA. Liquids having a flash point below 73(degrees)F (23(degrees)C) and a boiling point below 100(degrees)F (38(degrees)C).

Class IB. Liquids having a flash point below 73(degrees)F (23(degrees)C) and a boiling point at or above 100(degrees)F (38(degrees)C).

Class IC. Liquids having a flash point at or above 73(degrees)F (23(degrees)C) and below 100(degrees)F (38(degrees)C)

FLAMMABLE MATERIAL. A material capable of being readily ignited from common sources of heat or at a temperature of 600(degrees)F (316(degrees)C) or less.

FLAMMABLE SOLID. A solid, other than a blasting agent or explosive, that is capable of causing fire through friction, absorption or moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which has an ignition temperature below 212(degrees)F (100(degrees)C) or which burns so vigorously and persistently when ignited as to create a serious hazard. A chemical shall be considered a flammable solid as determined in accordance with the test method of 16 CFR pt. 1500.44, if it ignites and burns with a self-sustained flame at a rate greater than 0.1 inch (2.5 mm) per second along its major axis. This shall include flammable metals, which are flammable pure metals or their flammable alloys.

FLASH POINT. The minimum temperature in degrees Fahrenheit at which a liquid will give off sufficient vapors to form an ignitable mixture with air near the surface or in the container, but will not sustain combustion. The flash point of a liquid shall be determined by appropriate test procedure and apparatus as specified in ASTM D 56, ASTM D 93 or ASTM D 3278.

HANDLING. The movement of a material in its container, the removal of the material from its container, or any other action or process that may affect the material, other than its storage or use.

HAZARDOUS MATERIALS. Those chemicals or substances that are physical hazards or health hazards as defined and classified in this section and the New York City Fire Code, whether the materials are in usable or waste condition.

HEALTH HAZARD. A classification of a chemical for which there is statistically significant evidence that acute or chronic health effects are capable of occurring in exposed persons. The term "health hazard" includes chemicals that are toxic or highly toxic, and corrosive.

HIGHLY TOXIC MATERIAL. A material that is lethal at the following doses or concentrations:

1. A chemical that has a median lethal dose (LD50) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each; or
2. A chemical that has a median lethal dose (LD50) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each; or
3. A chemical that has a median lethal concentration (LC50) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume or dust, when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

INCOMPATIBLE MATERIALS. Materials that, if mixed or combined, could explode, generate heat, gases or other byproducts, or react in such a way hazardous to life or property.

OPEN SYSTEM. The use of a solid or liquid hazardous material involving a vessel or system that is continuously

open to the atmosphere during normal operations and where vapors are liberated, or the product is exposed to the atmosphere during normal operations. Examples of open systems for solids and liquids include dispensing from or into open beakers or containers, dip tank and plating tank operations.

ORGANIC PEROXIDE. An organic compound having a double oxygen or peroxy (-O-O-) in its chemical structure. Organic peroxides can pose an explosion hazard (detonation or deflagration), can be shock sensitive, or can be susceptible to decomposition into various unstable compounds over an extended period of time and are classified as follows based upon their hazardous properties:

Class I. Organic peroxides that are capable of deflagration but not detonation.

Class II. Organic peroxides that burn very rapidly and that pose a moderate reactivity hazard.

Class III. Organic peroxides that burn rapidly and that pose a moderate reactivity hazard.

Class IV. Organic peroxides that burn in the same manner as ordinary combustibles and that pose a minimal reactivity hazard.

Class V. Organic peroxides that burn with less intensity than ordinary combustibles or do not sustain combustion and that pose no reactivity hazard.

Unclassified detonable. Organic peroxides that are capable of detonation and pose an extremely high explosion hazard through rapid explosive decomposition.

OXIDIZER. A material that readily yields oxygen or other oxidizing gas, such as bromine, chlorine and fluorine, or that readily reacts to promote or initiate combustion of combustible materials classified as follows:

Class 1. An oxidizer whose primary hazard is that it slightly increases the burning rate but which does not cause spontaneous ignition when it comes in contact with combustible materials.

Class 2. An oxidizer that will cause a moderate increase in the burning rate or that causes spontaneous ignition of combustible materials with which it comes in contact.

Class 3. An oxidizer that will cause a severe increase in the burning rate of combustible materials with which it comes in contact or that will undergo vigorous self-sustained decomposition due to contamination or exposure to heat.

Class 4. An oxidizer that can undergo an explosive reaction due to contamination or exposure to thermal or physical shock. Additionally, the oxidizer will enhance the burning rate and can cause spontaneous ignition of combustibles.

OXIDIZING GAS. A gas that can support and accelerate combustion of other materials.

PHYSICAL HAZARD. A chemical for which there is evidence that it is a combustible liquid, compressed gas, cryogenic, explosive, flammable gas, flammable liquid, flammable solid, organic peroxide, oxidizer, pyrophoric or unstable (reactive) or water-reactive material.

PYROPHORIC MATERIAL. A material with an autoignition temperature in air, at or below a temperature of 130(degrees)F (54(degrees)C).

PYROTECHNIC COMPOSITION. A chemical mixture that produces visible light displays or sounds through a self-propagating, heat-releasing chemical reaction which is initiated by ignition.

STANDARD CUBIC FEET (SCF). Cubic feet of gas at normal temperature and pressure (NTP).

TOXIC MATERIAL. A chemical that is lethal at the following doses or concentrations:

1. A chemical that has a median lethal dose (LD50) of more than 50 milligrams per kilogram, but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each; or
2. A chemical that has a median lethal dose (LD50) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each; or
3. A chemical that has a median lethal concentration (LC50) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than 2 milligrams per liter but not more than 20 milligrams per liter of mist, fume or dust, when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

Exception: For purposes of this code, chlorine shall be classified as a highly toxic material.

UNSTABLE (REACTIVE) MATERIAL. A material, other than an explosive, which in the pure state or as commercially produced, will vigorously polymerize, decompose, condense or become self-reactive and undergo other violent chemical changes, including explosion, when exposed to heat, friction or shock, or in the absence of an inhibitor, or in the presence of contaminants, or in contact with incompatible materials. Unstable (reactive) materials are shall be classified as follows:

Class 1. Materials that in themselves are normally stable but which can become unstable at elevated temperatures and pressure.

Class 2. Materials that in themselves are normally unstable and readily undergo violent chemical change but do not detonate. This class includes materials that can undergo chemical change with rapid release of energy at normal temperatures and pressures, and that can undergo violent chemical change at elevated temperatures and pressures.

Class 3. Materials that in themselves are capable of detonation or of explosive decomposition or explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation. This class includes materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures.

Class 4. Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures. This class includes materials that are sensitive to mechanical or localized thermal shock at normal temperatures and pressures.

WATER-REACTIVE MATERIAL. A material that explodes; violently reacts; produces flammable, toxic or other hazardous gases; or evolves enough heat to cause self-ignition or ignition of nearby combustibles upon exposure to water or moisture. Water-reactive materials shall be classified as follows:

Class 1. Materials that may react with water with some release of energy, but not violently.

Class 2. Materials that may form potentially explosive mixtures with water.

Class 3. Materials that react explosively with water without requiring heat or confinement.

307.3High-Hazard Group H-1. Buildings and structures which contain materials that present a detonation hazard shall be classified as Group H-1. Such materials shall include, but not be limited to, the following:

Explosives:

Division 1.1

Division 1.2

Division 1.3

Exception: Materials that are used and maintained in a form where either confinement or configuration will not elevate the hazard from a mass fire to mass explosion hazard shall be allowed in H-2 occupancies.

Division 1.4

Exception: Articles, including articles packaged for shipment, that are not regulated as an explosive under Bureau of Alcohol, Tobacco and Firearms regulations, or unpackaged articles used in process operations that do not propagate a detonation or deflagration between articles shall be allowed in H-3 occupancies.

Division 1.5

Division 1.6

Organic peroxides, unclassified detonable

Oxidizers, Class 4

Unstable (reactive) materials, Class 3 detonable and Class 4

Pyrophoric materials, detonable

Water-reactive materials, Class 2 and 3, detonable

No part of this section shall be construed to authorize the manufacture, storage, sale or use of explosives, including fireworks, if otherwise prohibited by the New York City Fire Code and unless in compliance with the requirements of the New York City Fire Code.

307.4 High-Hazard Group H-2. Buildings and structures which contain materials that present a deflagration hazard or a hazard from accelerated burning shall be classified as Group H-2. Such materials shall include, but not be limited to, the following:

Class I, II or IIIA flammable or combustible liquids which are used or stored in normally open containers or systems, or in closed containers or systems pressurized at more than 15 psi (103.4 kPa) gage.

Combustible dusts

Cryogenic fluids, flammable

Flammable gases

Organic peroxides, Class I

Oxidizers, Class 3, that are used or stored in normally open containers or systems, or in closed containers or systems pressurized at more than 15 psi (103.3 kPa) gage

Pyrophoric liquids, solids and gases, nondetonable

Unstable (reactive) materials, Class 3, nondetonable

Water-reactive materials, Class 3, nondetonable

No part of this section shall be construed to authorize an LPG-distribution facility if otherwise prohibited by the New York City Fire Code.

307.5 High-Hazard Group H-3. Buildings and structures that contain materials that readily support combustion or present a physical hazard shall be classified as Group H-3. Such materials shall include, but not be limited to, the following:

Class I, II or IIIA flammable or combustible liquids which are used or stored in normally closed containers or systems pressurized at less than 15 psi (103 kPa) gage.

Combustible fibers

Cryogenic fluids, oxidizing

Flammable solids

Organic peroxides, Classes II and III

Oxidizers, Classes 1 and 2

Oxidizing gases

Unstable (reactive) materials, Class 2

Water-reactive materials, Class 2, nondetonable

307.6 High-Hazard Group H-4. Buildings and structures which contain materials that are health hazards shall be classified as Group H-4. Such materials shall include, but not be limited to, the following:

Corrosives

Highly toxic materials

Toxic materials

307.7 Group H-5 structures. Semiconductor fabrication facilities and comparable research and development areas in which hazardous production materials (HPM) are used and the aggregate quantity of materials is in excess of those listed in Tables 307.7(1) and 307.7(2). Such facilities and areas shall be designed and constructed in accordance with Section 415.9.

307.8 Multiple hazards. Buildings and structures containing a material or materials representing hazards that are classified in one or more of Groups H-1, H-2, H-3 and H-4 shall conform to the code requirements for each of the occupancies so classified.

307.9 Exceptions. The following shall not be classified in Group H, but shall be classified in the occupancy which they most nearly resemble. Hazardous materials in any quantity shall conform to the requirements of this code, including Section 414, and the New York City Fire Code.

1. Buildings and structures that contain not more than the maximum allowable quantities per control area of hazardous materials as shown in Tables 307.7(1) and 307.7(2) provided that such buildings are maintained in accordance with the New York City Fire Code.

2. Buildings utilizing control areas in accordance with Section 414.2 that contain not more than the maximum allowable quantities per control area of hazardous materials as shown in Tables 307.7(1) and 307.7(2).

3. Buildings and structures occupied for the application of flammable finishes, provided that such buildings or areas conform to the requirements of Section 416 and the New York City Fire Code.

4. Wholesale and retail sales and storage of flammable and combustible liquids in mercantile occupancies conforming to the New York City Fire Code.

5. Closed systems housing flammable or combustible liquids or gases utilized for the operation of machinery or equipment.

6. Cleaning establishments that utilize combustible liquid solvents having a flash point of 140(degrees)F (60(degrees)C) or higher in closed systems employing equipment listed by an approved testing agency, provided that this occupancy is separated from all other areas of the building by 1-hour fire-resistance-rated fire barrier walls or horizontal assemblies or both.

7. Cleaning establishments that utilize a liquid solvent having a flash point at or above 200(degrees)F (93(degrees)C).

8. Liquor stores and distributors without bulk storage.

9. Refrigeration systems.

10. The storage or utilization of materials for agricultural purposes on the premises.

11. Stationary batteries utilized for facility emergency power, uninterrupted power supply or telecommunication facilities provided that the batteries are provided with safety venting caps and ventilation is provided in accordance with the New York City Mechanical Code.

12. Corrosives shall not include personal or household products in their original packaging used in retail display or commonly used building materials.

13. Buildings and structures occupied for aerosol storage shall be classified as Group S-1, provided that such buildings conform to the requirements of the New York City Fire Code.

14. Display and storage of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in quantities not exceeding the maximum allowable quantity per control area in Group M or S occupancies complying with Section 414.2.4.

15. The storage of black powder, smokeless propellant and small arms primers in Groups M and R-3 and special industrial explosive devices in Groups B, F, M and S, provided such storage conforms to the quantity limits and requirements prescribed in the New York City Fire Code.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 3: USE AND OCCUPANCY CLASSIFICATION
SECTION 308: INSTITUTIONAL GROUP I

NYC Administrative Code § 28-BC 308

308.1 Institutional Group I.

Institutional Group I occupancy includes, among others, the use of a building or structure, or a portion thereof, in which people are cared for or live in a supervised environment, having physical limitations because of health or age are harbored for medical treatment or other care or treatment, or in which people are detained for penal or correctional purposes or in which the liberty of the occupants is restricted. Institutional occupancies shall be classified as Group I-1, I-2, I-3 or I-4.

308.1.1 Definitions. For definitions of terms related to Group I occupancy classification, see Section 310.2.

308.2 Group I-1. This occupancy shall include buildings, structures or parts thereof housing persons, on a 24-hour basis, who because of age, mental disability or other reasons, live in a supervised residential environment that provides personal care services. The occupants are capable of self-preservation and capable of responding to an emergency situation without physical assistance from staff. Such occupancy shall be subject to the New York State Multiple Dwelling Law. This group shall include, but not be limited to, the following:

Adult homes, where occupants are capable of self-preservation (see Section 308.2.1)

Alcohol and drug abuse rehabilitation centers

Assisted living facilities

Community Residences or Intermediate Care Facilities (see Section 308.2.2)

Congregate care facilities

Convalescent facilities

Enriched housing, where occupants are capable of self-preservation (see Section 308.2.1)

Halfway houses

Overnight child care facilities where all supervised occupants are under the age of 18, with no more than two children under the age of 2

Residential care facilities

Social rehabilitation facilities

308.2.1 Adult homes and enriched housing. Adult homes and enriched housing facilities operated pursuant to and meeting the additional construction requirements of Section 460 of the New York State Social Services Law and regulations of the New York State Department of Health offering care on a 24-hour basis to persons capable of self-preservation, in the same building, shall be classified as Group I-1.

Exception: Such a facility offering supervised care on a 24-hour basis for no more than 16 occupants capable of self preservation, in the same building, may be classified in Group R in accordance with Section 310.

308.2.2 Community Residences or Intermediate Care Facilities. Community Residences or Intermediate Care Facilities, operated pursuant to and meeting the additional construction requirements of the New York State Mental Hygiene Law and applicable regulations of the New York State Office of Mental Health and Office of Mental Retardation and Developmental Disabilities shall be classified as Group I-1.

Exceptions: Such facilities limited to 14 residents capable of self-preservation and three staff members per dwelling unit shall be classified as:

1. Group R-1, where such facility does not occupy more than two dwelling units in a residential building classified as R-1 of Type I or II construction, or one dwelling unit in any other type of construction, and occupied on a transient basis; or

2. Group R-2 where such facility does not occupy more than two dwelling units in a residential building classified R-2 of Type I or II construction, or one dwelling unit in any other type of construction, and occupied on a long-term basis; or

3. Group R-3 where the number of dwelling units in the building does not exceed two.

308.3 Group I-2. This occupancy shall include buildings and structures used for medical, surgical, psychiatric, nursing or personal care on a 24-hour basis or overnight of more than two children under the age of 2, or more than three persons who are not capable of self-preservation and not capable of responding to an emergency situation without physical assistance from staff. This group shall include, but not be limited to, the following:

Adult homes, where occupants are not capable of self-preservation, operated pursuant to and meeting the additional construction requirements of Section 460 of the New York State Social Services Law and regulations of the New York State Department of Health

Community Residences or Intermediate Care Facilities, where occupants are not capable of self preservation, operated pursuant to and meeting the additional construction requirements of the New York State Mental Hygiene Law and applicable regulations of the New York State Office of Mental Health and Office of Mental Retardation and Developmental Disabilities

Enriched Housing, where occupants are not capable of self-preservation, operated pursuant to and meeting the additional construction requirements of Section 460 of the New York State Social Services Law and regulations of the

New York State Department of Health

Hospitals

Nursing homes (both intermediate-care facilities and skilled nursing facilities)

Mental hospitals where patients are not under restraint

Detoxification facilities

Exception: Such a facility offering care on a 24-hour basis for 3 or fewer persons who are not capable of self preservation may occupy not more than one dwelling unit in a Group R occupancy.

308.4Group I-3.This occupancy shall include buildings and structures that are inhabited by more than five persons who are under restraint or security. An I-3 facility is occupied by persons who are generally incapable of self-preservation due to security measures not under the occupants' control. This group shall include, but not be limited to, the following:

Mental hospitals where patients are under restraint

Prisons

Jails

Reformatories

Detention centers

Correctional centers

Prerelease centers

Buildings of Group I-3 shall be classified as one of the occupancy conditions indicated in Section 408.1.

308.5Group I-4.This group shall include custodial care facilities providing care to more than two children under the age of 2, or to more than four persons over the age of 2 who are not capable of responding to an emergency situation without physical assistance from the staff. Such occupancy shall include, but not be limited to, adult custodial care facilities and day nurseries.

Exceptions:

1. Custodial care facility as described in Section 303.
2. Custodial care facility as described in Section 304.
3. Custodial care facility as described in Exception 3 of Section 305.1.
4. Such facility providing care within a dwelling unit as described in Section 310.
5. Such facility providing care to children under the age of 2 in houses of worship during religious functions.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 3: USE AND OCCUPANCY CLASSIFICATION
SECTION BC 309: MERCANTILE GROUP M

NYC Administrative Code § 28-BC 309

309.1 Mercantile Group M.

Mercantile Group M occupancy includes, among others, buildings and structures or a portion thereof, for the display and sale of merchandise, and involves stocks of goods, wares or merchandise incidental to such purposes and accessible to the public. Mercantile occupancies shall include, but not be limited to, the following:

Department stores

Drug stores

Markets

Motor fuel-dispensing facilities

Retail or wholesale stores

Sales rooms

309.2 Quantity of hazardous materials. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials stored or displayed in a single control area of a Group M occupancy shall not exceed the quantities in Table 414.2.4.



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SECTION BC 310: RESIDENTIAL GROUP R

NYC Administrative Code § 28-BC 310

310.1 Residential Group R.

Residential Group R includes, among others, the use of a building or structure, or a portion thereof, for dwelling or sleeping purposes when not classified as Institutional Group I. Buildings containing 3 or more dwelling units shall be subject to the New York State Multiple Dwelling Law. Residential occupancies shall be classified as Groups R-1, R-2, or R-3.

310.1.1 Group R-1. This occupancy shall include:

1. Residential buildings or spaces occupied, as a rule, transiently, for a period less than one month, as the more or less temporary abode of individuals or families who are lodged with or without meals, including, but not limited to, the following:

Class B multiple dwellings as defined in Section 27-2004 of the New York City Housing Maintenance Code and Section 4 of the New York State Multiple Dwelling Law

Exception: Class B multiple dwellings classified in Group I-1.

Club houses.

Hotels (transient)

Motels (transient)

Rooming houses (boarding houses-transient)

Settlement houses

Vacation timeshares

2. College or school student dormitories, except for student apartments classified as an R-2 occupancy

3. Congregate living units owned and operated by a government agency or not-for-profit organization, where the number of occupants in the dwelling unit exceeds the limitations of a family as defined, including, but not limited to, the following:

Adult homes or enriched housing with 16 or fewer occupants requiring supervised care within the same building on a 24-hour basis

Fraternity and sorority houses

Homeless shelters

310.1.2 Group R-2. This occupancy shall include buildings or portions thereof containing sleeping units or more than two dwelling units that are occupied, as a rule, for shelter and sleeping accommodation on a long-term basis for a month or more at a time. Such occupancy shall be subject to the New York State Multiple Dwelling Law. This group shall include, but not be limited to, the following:

Adult homes or enriched housing with 16 or fewer occupants requiring supervised care on a 24-hour basis in the same building, provided that the number of occupants per dwelling unit does not exceed the definition of a family

Apartment houses

Apartment hotels (nontransient)

Class A multiple dwellings as defined in Section 27-2004 of the New York City Housing Maintenance Code and Section 4 of the New York State Multiple Dwelling Law, including the following:

1. Dwelling units where the resident of the unit provides custodial care to no more than four persons on less than a 24-hour basis and not overnight.

2. Dwelling units where the resident of the unit provides child custodial care as a family day care home registered with the New York City Department of Health and Mental Hygiene in accordance with the New York State Social Services Law with no more than six children between the ages of 2 and 13, or with no more than five children if any are under the age of 2, receiving supervised care on less than a 24-hour basis and not overnight.

Exception: Class A multiple dwellings classified in Group I-1.

Convents and monasteries with more than 20 occupants in the building Student apartments

310.1.3 Group R-3. This occupancy shall include buildings or portions thereof containing no more than 2 dwelling units, occupied, as a rule, for shelter and sleeping accommodation on a long term basis for a month or more at a time, and are not classified in Group R-1, R-2 or I. This group shall include, but not be limited to, the following:

Convents and monasteries with fewer than 20 occupants in the building

Group homes

One- and two-family dwellings, including the following:

1. Dwelling units where the resident of the unit provides custodial care to no more than four persons on less than a 24-hour basis and not overnight.

2. Dwelling units where the resident of the unit provides child custodial care as a family day care home registered with the New York City Department of Health and Mental Hygiene in accordance with the New York State Social Services Law with no more than six children between the ages of 2 and 13, or with no more than five children if any are under the age of 2, receiving supervised care on less than a 24 hour basis and not overnight.

310.2 Definitions. The following words and terms shall, for the purposes of this section and as used elsewhere in this code, have the meanings shown herein.

APARTMENT. A dwelling unit providing permanent provisions for both sanitation and kitchen facilities, occupied or arranged to be occupied by not more than one family maintaining a common household.

APARTMENT, STUDENT. An apartment occupied or arranged to be occupied by students enrolled at a single accredited college or university and maintaining a common household pursuant to a lease, sublease, or occupancy agreement directly with such college or university.

BOARDER (ROOMER, LODGER). A person who pays a consideration for living within the household and does not occupy such space as an incident of employment.

CONGREGATE LIVING UNIT. A dwelling unit, comprised of one or more habitable rooms separated by non-rated partitions, occupied or arranged to be occupied by more than one family or by persons who are not maintaining a common household. Creation of or conversion to such unit shall be subject to Section 27-2077 of the New York City Housing Maintenance Code.

CUSTODIAL CARE FACILITY. A building or part thereof occupied by persons, on less than a 24-hour basis and not overnight, who because of age, disability or other reasons, receive personal care services by individuals other than parents or guardians, relatives by blood, marriage, domestic partnership, or adoption, in a place other than the home of the person cared for.

DWELLING. A building or structure which is occupied in whole or in part as the home, residence or sleeping place of one or more families.

DWELLING, MULTIPLE. A dwelling which is either rented, leased, let or hired out, to be occupied, or is occupied, as the residence or home of three or more families living independently of each other. A multiple dwelling does not include a building used for occupancies in Groups I-2, I-3 or I-4.

DWELLING, ONE-FAMILY. Any building or structure designed and occupied exclusively for residence purposes on a long-term basis for more than a month at a time by not more than one family. One-family dwellings shall also be deemed to include a dwelling located in a series of one-family dwellings each of which faces or is accessible to a legal street or public thoroughfare, provided that each such dwelling unit is equipped as a separate dwelling unit with all essential services, and also provided that each such unit is arranged so that it may be approved as a legal one-family dwelling.

DWELLING, TWO-FAMILY. Any building or structure designed and occupied exclusively for residence purposes on a long-term basis for more than a month at a time by not more than two families. Two-family dwellings shall also be deemed to include a dwelling located in a series of two-family dwellings each of which faces or is accessible to a legal street or public thoroughfare, provided that each such dwelling is equipped as a separate dwelling with all essential services, and also provided that each such dwelling is arranged so that it may be approved as a legal two-family dwelling.

DWELLING UNIT. A single unit consisting of one or more habitable rooms and occupied or arranged to be occupied as a unit separate from all other units within a dwelling.

FAMILY.

1. A single person occupying a dwelling unit and maintaining a common household with not more than two boarders, roomers or lodgers; or
2. Two or more persons related by blood, adoption, legal guardianship, marriage or domestic partnership; occupying a dwelling unit and maintaining a common household with not more than two boarders, roomers or lodgers; or
3. Not more than three unrelated persons occupying a dwelling unit and maintaining a common household; or
4. Not more than three unrelated persons occupying a dwelling unit in a congregate housing or shared living arrangement and maintaining a common household; or
5. Members of a group home; or
6. Foster children placed in accordance with provisions of the New York State Social Services Law, their foster parent(s), and other persons related to the foster parents by blood, marriage or domestic partnership; where all residents occupy and maintain a common household with not more than two boarders, roomers or lodgers; or
7. Up to seven unrelated students enrolled at a single accredited college or university occupying a student apartment and maintaining a common household pursuant to a lease, sublease, or occupancy agreement directly with such college or university, provided that:
 - 7.1. The entire structure in which the dwelling unit is located is fully sprinklered in accordance with Chapter 9; and
 - 7.2. Such occupancy does not exceed the maximums contained in Section 27-2075(a) of the New York City Housing Maintenance Code; and
 - 7.3. Prior to commencement of such occupancy, and on an annual basis thereafter such college or university has submitted a fire safety plan containing fire safety and evacuation procedures for such dwelling unit that is acceptable to the Fire Commissioner and in compliance with any rules promulgated by the Fire Commissioner; and
 - 7.4. The dwelling unit complies with additional occupancy and construction requirements as may be established by rule by the Housing Preservation and Development Commissioner.

A common household is deemed to exist if all household members have access to all parts of the dwelling unit. Lack of access to all parts of the dwelling unit establishes a rebuttable presumption that no common household exists.

GROUP HOME. A facility for the care and maintenance of not fewer than seven nor more than twelve children, supervised by the New York State Board of Social Welfare, and operated pursuant to and meeting any additional construction requirements of Section 374-c of the New York State Social Services Law and applicable regulations of the New York State Department of Social Services. Such a facility occupied by more than twelve children shall be classified as Group I-1.

PERSONAL CARE SERVICE. The care of residents who do not require chronic or convalescent medical or nursing care. Personal care involves responsibility for the safety of the resident while inside the building.

RESIDENTIAL CARE/ASSISTED LIVING FACILITIES. A building or part thereof housing persons, on a 24-hour basis, who because of age, mental disability or other reasons, live in a supervised residential environment which provides personal care services. The occupants are capable of self-preservation and are capable of responding to an emergency situation without physical assistance from staff. This classification shall include, but not be limited to, the following: residential board and care facilities, assisted living facilities, halfway houses, congregate care facilities,

social rehabilitation facilities, alcohol and drug abuse rehabilitation centers and convalescent facilities.

ROOMING HOUSE. A dwelling (i) which was originally erected as a single- or two-family private dwelling pursuant to the New York City Building Code in effect prior to December 6, 1968, (ii) which is a "Class B converted dwelling" as such term is defined in the New York City Housing Maintenance Code, and (iii) which has more than half of its habitable rooms as sleeping units. The creation of or conversion to a rooming house shall be limited by Section 27-2077 of the New York City Housing Maintenance Code.

SLEEPING UNIT. A dwelling unit, which may contain either toilet or kitchen facilities but not both. Any sleeping unit housing more than one family shall also be classified as a congregate living unit. The creation of or conversion to sleeping units shall be limited by Section 27-2077 of the New York City Housing Maintenance Code.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE

Chapter 31: SPECIAL CONSTRUCTION

SECTION BC 3101: GENERAL

NYC Administrative Code § 28-BC 3101

3101.1 Scope.

The provisions of this chapter shall govern special building construction including membrane structures, temporary structures, pedestrian walkways and tunnels, awnings and canopies, marquees, signs, telecommunications towers and antennas, swimming pools and enclosures, sidewalk cafes, and fences.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 31: SPECIAL CONSTRUCTION
SECTION BC 3102: MEMBRANE STRUCTURES

NYC Administrative Code § 28-BC 3102

3102.1 General.

The provisions of this section shall apply to air-supported structures, air-inflated structures, membrane-covered cable structures, membrane-covered frame structures, and tents, collectively known as membrane structures.

3102.1.1 Certificates of occupancy. The duration of certificates of occupancy for air-inflated structures, air-supported structures, and tents may be limited in accordance with the requirements of Chapter 1.

3102.2 Definitions. The following terms shall, for the purposes of this section and as used elsewhere in this code, have the meanings shown herein:

AIR-INFLATED STRUCTURE. A building where the shape of the structure is maintained by air pressurization of cells or tubes to form a barrel vault over the usable area. Occupants of such a structure do not occupy the pressurized area used to support the structure.

AIR-SUPPORTED STRUCTURE. A building wherein the shape of the structure is attained and maintained by elevated air pressure and occupants of the structure are within the elevated pressure area. Air-supported structures are of two basic types:

Double skin. Similar to a single skin, but with an attached liner that is separated from the outer skin and provides an airspace which serves for insulation, acoustic, aesthetic or similar purposes.

Single skin. Where there is only the single outer skin and the air pressure is directly against that skin.

CABLE-RESTRAINED, AIR-SUPPORTED STRUCTURE. A structure in which the uplift is resisted by cables or webbings which are anchored to either foundations or dead men. Reinforcing cable or webbing is attached by various methods to the membrane or is an integral part of the membrane. This is not a cable-supported structure.

MEMBRANE-COVERED CABLE STRUCTURE. A nonpressurized structure in which a mast and cable system provides support and tension to the membrane weather barrier and the membrane imparts stability to the structure.

MEMBRANE-COVERED FRAME STRUCTURE. A nonpressurized building wherein the structure is composed of a rigid framework to support a tensioned membrane which provides the weather barrier.

NONCOMBUSTIBLE MEMBRANE STRUCTURE. A membrane structure in which the membrane and all component parts of the structure are noncombustible.

TENT. A non-pressurized membrane structure of a fabric weather barrier supported by poles and guys, in which the fabric weather barrier does not impart stability to the structure. Tents need not be fully enclosed on the sides.

3102.3Type of construction.Noncombustible membrane structures shall be classified as Type IIB construction. Noncombustible frame or cable-supported structures covered by an approved membrane in accordance with Section 3102.3.1 shall be classified as Type IIB construction. Heavy timber frame-supported structures covered by an approved membrane in accordance with Section 3102.3.1 shall be classified as Type IV construction. Other membrane structures shall be classified as Type V construction.

3102.3.1Membrane and interior liner material.Membranes and interior liners shall be either noncombustible as set forth in Section 703.4, or flame resistant as determined in accordance with NFPA 701 and the manufacturer's test protocol.

3102.4Allowable floor areas.The area of a membrane structure shall not exceed the limitations set forth in Table 503, except as provided in Section 506.

3102.5Maximum height.Membrane structures shall not exceed one story nor shall such structures exceed the height limitations in feet set forth in Table 503. Membrane structures may be erected above the roof of a building provided that such roof is of noncombustible construction required to have a fire-resistance rating

Exception: Noncombustible membrane structures serving as roofs only.

3102.6Mixed construction.Membrane structures shall be permitted to be utilized as specified in this section as a portion of buildings of other types of construction. Height and area limits shall be as specified for the type of construction and occupancy of the building.

3102.6.1Noncombustible membrane.A noncombustible membrane shall be permitted for use as the roof or as a skylight of any building or atrium of a building of any type of construction, provided it is at least 20 feet (6096 mm) above any floor, balcony or gallery, and meets the fire classification requirements of Section 1505 for roof assemblies.

3102.6.1.1Flame-resistant membrane.A flame-resistant membrane shall be permitted to be used as the roof or as a skylight on buildings of Type IIB, III, IV and V construction, provided it is at least 20 feet (6096 mm) above any floor, balcony or gallery, and meets the fire classification requirements of Section 1505 for roof assemblies.

3102.7Engineering design.Membrane structures shall be designed and constructed to sustain dead loads; loads due to tension or inflation; live loads including wind, snow or flood and seismic loads and in accordance with Chapter 16 and Appendix G.

Exception: Tents, air-inflated structures, and air-supported structures shall be designed by either an alternate engineering design approved by the commissioner or as follows:

1. Tents. Tents shall be guyed, supported, and braced to withstand a wind pressure of 10 psf (478.8 Pa) of projected area of the tent. The poles and their supporting guys, stays, stakes, fastenings, etc. shall be of sufficient strength and attached so as to resist wind pressure of 20 psf (957.6 Pa) of projected area of the tent.

2. Air-inflated structures and air-supported structures.

2.1. Air-inflated structures and air-supported structures shall be anchored to the ground or supporting structure by either ballast or positive anchorage, sufficiently and evenly distributed, and adequate to resist the inflation lift load, the aerodynamic lift load, and the drag (shear) load due to wind impact. The latter factors shall be based on a fastest mile wind speed of 70 mph (112.65 km/hr), and an estimated stagnation of not less than 0.5 q for structures on grade whose height is equal to, or less than, the width of the structure. For greater heights, or for elevated structures, increased anchorage shall be provided, justified by analytical and/or experimental data subject to approval by the commissioner.

2.2. The skin of the structure shall be of such strength, and the joints so constructed, as to provide a minimum dead load strip tensile strength at 70(degrees)F (21(degrees)C) of 4 times the 70 mph (121.65 km/hr) design load (inflation and aerodynamic loading). The joints shall provide a dead load strip tensile strength of 160(degrees)F (71(degrees)C) of twice the 70 mph (121.65 km/hr) design load (i.e., a factor of safety of 4 and 2 respectively). In addition, the material shall provide a trapezoidal tear strength of at least 15 percent of the maximum design tensile load. Material and joint strengths shall be so certified by the manufacturer, justified by analytical and/or experimental data.

3102.8 Inflation systems. Air-supported structures and air-inflated structures shall be provided with primary and auxiliary inflation systems to meet the minimum requirements of Sections 3102.8.1 through 3102.8.3.

3102.8.1 Equipment requirements. The primary inflation system shall consist of one or more blowers and shall include provisions for automatic control to maintain the required inflation pressures. Such system shall be so designed as to prevent over pressurization of the system.

3102.8.1.1 Auxiliary inflation system. In addition to the primary inflation system, in structures exceeding 1,500 square feet (140 m²) in area, an auxiliary inflation system shall be provided with sufficient capacity to maintain the inflation of the structure in case of primary system failure. The auxiliary inflation system shall operate automatically when there is a loss of internal pressure and when the primary blower system becomes inoperative.

3102.8.1.2 Blower equipment. Blower equipment shall meet the following requirements:

1. Blowers shall be powered by continuous-rated motors at the maximum power required for any flow condition as required by the structural design.
2. Blowers shall be provided with inlet screens, belt guards and other protective devices as required by the commissioner to provide protection from injury.
3. Blowers shall be housed within a weather-protecting structure.
4. Blowers shall be equipped with backdraft check dampers to minimize air loss when inoperative.
5. Blower inlets shall be located to provide protection from air contamination. The location of inlets shall be approved.

3102.8.2 Emergency power. Wherever an auxiliary inflation system is required, an approved emergency power-generating system shall be provided. However, notwithstanding Section 2702.1, the emergency power-generating system shall be equipped with a suitable means for automatically starting the generator set upon failure of the normal electrical service and for automatic transfer and operation of all of the required electrical functions at full power within 60 seconds of such service failure. Emergency power shall be capable of operating independently for a minimum of 4 hours.

3102.8.3 Support provisions. A system capable of supporting the membrane in the event of deflation shall be provided for in air-supported structures and air-inflated structures having an occupant load of more than 50 or where

covering a swimming pool regardless of occupant load. Such support system shall be capable of maintaining the membranes at least 7 feet (2134 mm) above the floor, seating area or surface of the water. When air-supported structures or air-inflated structures are used as a roof on Type I or II construction buildings, such support system shall be capable of maintaining the membranes not less than 20 feet (6096 mm) above the floor or seating area.

3102.9 Separation. No air-inflated structure, air-supported structure, or tent shall be erected closer than 20 feet (6096 mm) to any interior lot line nor closer than 30 feet (9144 mm) in any direction to an unprotected opening, required exterior stairway or corridor, or required exit door, on the same level or above the level of such structure. Such structure may abut another building on the same tax lot if the following conditions exist:

1. No unprotected openings or exits are located above or within 30 feet (9144 mm) of such structure.
2. No doors serving as a required exit are located between such structure and the abutted building.
3. The exterior wall of the abutted building meets the requirements of Section 705 for fire walls.

3102.10 Exits. In addition to the requirements of Chapter 10, travel distance to an exit from any point within a tent, air-supported structure, or air-inflated structure shall not exceed 75 feet (22 860 mm).

3102.10.1 Exit openings from tents. Exit openings from tents shall remain open unless covered by a flame-resistant curtain of a contrasting color to the tent. Such curtain shall be supported at least 80 inches (2032 mm) above the floor level at the exit and, when open, no part of the curtain shall obstruct the exit.

3102.10.2 Exit openings from air-supported structures and air-inflated structures. Exit doors in air-supported structures and air-inflated structures shall close automatically against normal operational pressures. Opening force at the edge of such doors shall not exceed 15 pounds (6.80 kg), with the structure at operational pressure. Exit doors shall be located in frames constructed such that they will remain operative and support the weight of the pressurized membrane structure in a state of total collapse.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 31: SPECIAL CONSTRUCTION
SECTION BC 3103: TEMPORARY STRUCTURES

NYC Administrative Code § 28-BC 3103

3103.1 General.

The provisions of this section shall apply to temporary platforms, reviewing stands, outdoor bandstands and similar miscellaneous structures erected for a period of 30 days or less. Such structures may be constructed of wood whether located inside or outside of the fire districts.

3103.1.1 Permit required. Temporary structures that cover an area in excess of 120 square feet (11.16 m²), including connecting areas or spaces with a common means of egress or entrance, shall not be erected, operated or maintained for any purpose without obtaining a permit from the department.

3103.2 Construction documents. A permit application and construction documents shall be submitted for each installation of a temporary structure. The construction documents shall include a site plan indicating the location of the temporary structure and information delineating the means of egress and the occupant load.

3103.3 Location. Temporary structures shall be located in accordance with the requirements of Table 602 based on the fire-resistance rating of the exterior walls for the proposed type of construction.

3103.4 Means of egress. Temporary structures shall conform to the means of egress requirements of Chapter 10 and shall have a maximum exit access travel distance of 100 feet (30 480 mm).



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 31: SPECIAL CONSTRUCTION
SECTION BC 3104: PEDESTRIAN WALKWAYS AND TUNNELS

NYC Administrative Code § 28-BC 3104

3104.1 General.

This section shall apply to connections between buildings such as pedestrian walkways or tunnels, located at, above or below grade level, that are used as a means of travel by persons. The pedestrian walkway shall not contribute to the building area or the number of stories or height of connected buildings.

3104.2 Separate structures. Connected buildings shall be considered to be separate structures.

Exceptions:

1. Buildings on the same tax lot in accordance with Section 503.1.3.
2. For purposes of calculating the number of Type B units required by Chapter 11, structurally connected buildings and buildings with multiple wings shall be considered one structure.

3104.3 Construction. The pedestrian walkway shall be of a construction type that is at least equal to the higher type of the two buildings connected.

Exception: Exterior pedestrian walkways serving as a required exit shall be constructed of noncombustible materials.

3104.4 Contents. Only materials approved by the department shall be located in the pedestrian walkway. Decorations may be permitted in accordance with the New York City Fire Code.

3104.5 Fire barriers between pedestrian walkways and buildings. Walkways shall be separated from the interior of the building by fire barrier walls with a fire-resistance rating of not less than 2 hours. This protection shall extend vertically from a point 10 feet (3048 mm) above the walkway roof surface or the connected building roof line, whichever is lower, down to a point 10 feet (3048 mm) below the walkway and horizontally 10 feet (3048 mm) from

each side of the pedestrian walkway. Openings within the 10-foot (3048 mm) horizontal extension of the protected walls beyond the walkway shall be equipped with devices providing a 3/4-hour fire protection rating in accordance with Section 715.

Exception: On pedestrian walkways having a maximum height above grade of 3 stories or 40 feet (12 192 mm), whichever is less; or 5 stories or 55 feet (16 764 mm) where sprinklered, whichever is less, the walls separating the pedestrian walkway from a connected building are not required to have a fire barrier by this section where any of the following conditions exist:

1. The distance between the connected buildings is more than 10 feet (3048 mm), the pedestrian walkway and connected buildings are equipped throughout with an automatic sprinkler system in accordance with NFPA 13 as modified in Appendix Q and the wall is constructed of a tempered, wired or laminated glass wall and doors subject to the following:

1.1. The glass shall be protected by an automatic sprinkler system in accordance with NFPA 13 as modified in Appendix Q and the sprinkler system shall completely wet the entire surface of interior sides of the glass wall when actuated.

1.2. The glass shall be in a gasketed frame and installed in such a manner that the framing system will deflect without breaking (loading) the glass before the sprinkler operates.

1.3. Obstructions shall not be installed between the sprinkler heads and the glass.

2. The distance between the connected buildings is more than 10 feet (3048 mm), and both sidewalls of the pedestrian walkway are at least 50 percent open with the open area uniformly distributed to prevent the accumulation of smoke and toxic gases.

3. Buildings are on the same tax lot, in accordance with Section 503.1.3.

4. Where exterior walls of connected buildings are required by Section 704 to have a fire-resistance rating greater than 2 hours, the walkway shall be equipped throughout with an automatic sprinkler system installed in accordance with NFPA 13 as modified in Appendix Q.

5. The pedestrian walkway does not serve as a required exit.

3104.6Public way.Pedestrian walkways over a public way shall also comply with Chapter 32.

3104.7Width.The unobstructed width of pedestrian walkways shall not be less than 36 inches (914 mm). The total width shall not exceed 30 feet (9144 mm).

3104.8Egress.Access shall be provided at all times to a pedestrian walkway that serves as a required exit. Doors satisfying the requirements of Chapter 10 shall enclose each end of such pedestrian walkway. The width of such pedestrian walkway shall be at least equal to the width of the doors opening onto such pedestrian walkway, but in no case less than 44 inches (1118 mm). The floor level at doors shall be the same as that of the connected building.

Exception: The floor level at doors of open pedestrian walkways shall be at least 7 1/2 inches (191 mm) below the level of the door. Where the requirements of Chapter 11 are applicable, the differences in levels shall be accommodated by means of ramps in compliance with the provisions of Chapter 11.

3104.9Exit access travel.The length of exit access travel shall not exceed 200 feet (60 960 mm).

Exceptions:

1. Exit access travel distance on a pedestrian walkway equipped throughout with an automatic sprinkler system in accordance with NFPA 13 as modified in Appendix Q shall not exceed 250 feet (76 200 mm).

2. Exit access travel distance on a pedestrian walkway constructed with both sides at least 50 percent open shall not exceed 300 feet (91 440 mm).

3. Exit access travel distance on a pedestrian walkway constructed with both sides at least 50 percent open, and equipped throughout with an automatic sprinkler system in accordance with NFPA 13 as modified in appendix Q, shall not exceed 400 feet (122 m).

3104.10Tunneled walkway.Separation between the tunneled walkway and the building to which it is connected shall not be less than 2-hour fire-resistant construction and openings therein shall be protected in accordance with Table 715.3.

3104.11Ventilation.Smoke and heat vents shall be provided for enclosed walkways and tunneled walkways as required for Group F-1 occupancies in accordance with Section 910.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 31: SPECIAL CONSTRUCTION
SECTION BC 3105: AWNINGS AND CANOPIES

NYC Administrative Code § 28-BC 3105

3105.1 General.

Awnings and canopies shall comply with the requirements of this section, the requirements of Chapter 32 for projections over public ways, and other applicable sections of this code.

Exception: Canopies projecting over public rights-of-way governed by Title 19 of the Administrative Code and rules of the New York City Department of Transportation.

3105.2 Definition. The following term shall, for the purposes of this section and as used elsewhere in this code, have the meaning shown herein.

RETRACTABLE AWNING. A retractable awning is a cover with a frame that retracts against a building or other structure to which it is entirely supported.

3105.3 Design and construction. Awnings and canopies shall be designed and constructed to withstand wind or other lateral loads and live loads as required by Chapter 16 with due allowance for shape, open construction and similar features that relieve the pressures or loads. Structural members shall be protected to prevent deterioration. Awnings shall have frames of noncombustible material, covered with flame-resistant fabric in accordance with NFPA 701, plastic in accordance with Section 2605, sheet metal, or other equivalent material, and shall be either fixed, retractable, folding or collapsible.

3105.4 Reserved.



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SECTION BC 3106: MARQUEES

NYC Administrative Code § 28-BC 3106

3106.1 General.

Marquees shall comply with this section and other applicable sections of this code. Marquees projecting beyond the street line shall also comply with the requirements of Chapter 32. Signs placed on marquees shall also comply with Section 3107.

3106.2 Thickness. The maximum height or thickness of a marquee measured vertically from its lowest to its highest point shall not be limited.

Exception: Marquees projecting beyond the street line shall meet the height and thickness requirements of Chapter 32.

3106.3 Roof construction. Where the roof or any part thereof is a skylight, the skylight shall comply with the requirements of Chapter 24. Every roof and skylight of a marquee shall be drained in accordance with the provisions of the New York City Plumbing Code.

3106.4 Location prohibited. Every marquee shall be so located as not to interfere with the operation of any exterior standpipe, and such that the marquee does not obstruct the clear passage of stairways or exit discharge from the building or the installation or maintenance of street lighting.

3106.5 Construction. A marquee shall be supported entirely from the building and constructed of noncombustible materials. Marquees shall be designed as required in Chapter 16. Structural members shall be protected to prevent deterioration.



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SECTION BC 3107: SIGNS

NYC Administrative Code § 28-BC 3107

3107.1 General.

Signs shall be designed, constructed and maintained in accordance with Appendix H.



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SECTION BC 3108: RADIO, TELEVISION, AND TELECOMMUNICATIONS TOWERS AND ANTENNAS

NYC Administrative Code § 28-BC 3108

3108.1 General.

Subject to the provisions of Chapter 16 and the requirements of Chapter 15 governing the fire-resistance ratings of buildings for the support of roof structures, radio, television, and telecommunications towers and antennas shall be designed and constructed as herein provided. All such towers and antennas shall be collectively referred to as "towers" for the purposes of this section.

3108.2Location and access.Towers shall be located and equipped with step bolts and ladders so as to provide ready access for inspection purposes. Guy wires or other accessories shall not cross or encroach upon any street or other public space, or over above-ground electric utility lines, or encroach upon any privately owned property without written consent of the owner of the encroached-upon property, space or above-ground electric utility lines.

3108.3Construction.Towers shall be constructed of approved corrosion-resistant noncombustible material. The minimum type of construction of isolated radio towers not more than 100 feet (30 480 mm) in height shall be Type IIB.

3108.4Loads.Towers shall be designed to resist wind loads in accordance with TIA/EIA-222. Consideration shall be given to conditions involving wind load on ice-covered sections.

3108.4.1Dead load.Towers shall be designed for the dead load plus ice load.

3108.4.2Wind load.Towers shall be provided with adequate foundations and anchorage designed to resist two times the calculated wind load.

3108.5Grounding.Towers shall be permanently and effectively grounded in accordance with the New York City Electrical Code.



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Chapter 31: SPECIAL CONSTRUCTION
SECTION BC 3109: SWIMMING POOLS, SWIMMING POOL ENCLOSURES, AND SAFETY DEVICES

NYC Administrative Code § 28-BC 3109

3109.1 General.

Swimming pools, swimming pool enclosures, and swimming pool safety devices shall comply with the requirements of this section and other applicable sections of this code.

3109.2 Definitions. The following terms shall, for the purposes of this section and as used elsewhere in this code, have the meaning shown herein.

SWIMMING POOL. Any indoor or outdoor swimming, wading, spa, or special-purpose pool.

Exceptions:

1. Portable, freestanding wading pools containing water less than 24 inches (610 mm) in depth.
2. Float tanks or relaxation tanks sized for use by one person at a time.
3. Pools used for religious purposes.
4. Spa pools used for prescribed medical therapy or rehabilitation and under medical supervision.

SWIMMING POOL, PRIVATE. A swimming pool that is accessory to a one- or two-family dwelling, or to a single dwelling unit of a multiple dwelling, and that is solely for the use of the occupants for non-commercial purposes.

SWIMMING POOL, PUBLIC. A swimming pool that is not a private swimming pool. Public swimming pools include swimming pools that are accessory to bathing establishments as such term is defined in the New York City Health Code, whether owned or operated by city agencies, or commercial interests or private entities, including, but not limited to, public or private schools, corporations, hotels, motels, camps, apartment houses, condominiums, country clubs, gymnasias and health establishments.

3109.3 All swimming pools. Public and private swimming pools shall comply with the requirements for safety and accessibility as provided in this section.

3109.3.1 Entrapment avoidance. Where the suction inlet system, such as an automatic cleaning system, is a vacuum cleaner system which has a single suction inlet, or multiple suction inlets which can be isolated by valves, each suction inlet shall protect against user entrapment by an approved antivortex cover, a 12-inch by 12-inch (305 mm by 305 mm) or larger grate, or other approved means. In addition, all swimming pools and spas shall be equipped with an alternative backup system which shall provide vacuum relief should grate covers be missing. Alternative vacuum relief devices shall include one of the following:

1. Approved vacuum release system.
2. Approved vent piping.
3. Other approved devices or means.

3109.3.2 Water circulation, water treatment, and drainage. The supply, circulation, treatment, and drainage of water for swimming pools shall meet the requirements of the New York City Plumbing Code.

3109.3.3 Electrical precautions. No overhead electrical conductors shall be installed within 15 feet (4572 mm) of any swimming pool. All metal fences, enclosures, or railings that might become electrically charged as a result of contact with broken overhead conductors or from any other cause near, or adjacent to, a swimming pool shall be grounded in accordance with the provisions of lightning protection in the New York City Electrical Code.

3109.3.4 Facilities for people with disabilities. Facilities for people with physical disabilities shall be provided where required by Chapter 11 of this code.

3109.4 Public swimming pools. Public swimming pools shall comply with the requirements for safety and accessibility as provided in Section 3109.3 and 3109.4.

Exceptions: A swimming pool with a power safety cover or a spa with a safety cover complying with ASTM F 1346.

3109.4.1 Barrier height and clearances. Public swimming pools shall be completely enclosed by a fence, wall, building, or other solid barrier, or any combination thereof, at least 6 feet (1829 mm) in height. Openings in the enclosure shall not permit the passage of a 4-inch-diameter (102 mm) sphere. The enclosure shall be equipped with self-closing and self-latching gates.

Exception: Enclosures shall be at least 4 feet (1219 mm) in height when surrounding wading pools with water less than 24 inches (610 mm) in depth.

3109.4.2 Other laws. In addition to the requirements of this section, any other, more stringent requirements for the construction and design of swimming pool and barriers that may be provided for in Article 165 of the New York City Health Code, as administered by the New York City Department of Health and Mental Hygiene, shall also be applicable.

3109.5 Private swimming pools. Private swimming pools shall comply with the requirements for safety and accessibility as provided in Section 3109.3 and this section.

Exception: An above-ground private swimming pool which has a maximum water depth of 4 feet (1219 mm) and an area not exceeding 500 square feet (46.45 m²) that is accessory to an R-3 occupancy and is privately used for non-commercial purposes shall not be required to comply with Sections 3109.3.1, 3109.3.2, 3109.5.2, 3109.5.3, and 3109.5.4.

3109.5.1Barrier height and clearances.The top of the barrier enclosing a private swimming pool shall be at least 48 inches (1219 mm) above grade measured on the side of the barrier that faces away from the swimming pool. The maximum vertical clearance between grade and the bottom of the barrier shall be 2 inches (51 mm) measured on the side of the barrier that faces away from the swimming pool. Where the top of the pool structure is above grade, the barrier is authorized to be erected at grade level or mounted on top of the pool structure. The maximum vertical clearance between the top of the pool structure and the bottom of the barrier shall be 4 inches (102 mm).

3109.5.1.1Openings.Openings in the barrier shall not allow passage of a 4-inch-diameter (102 mm) sphere.

3109.5.1.2Solid barrier surfaces.Solid barriers which do not have openings shall not contain indentations or protrusions except for normal construction tolerances and tooled masonry joints.

3109.5.1.3Closely spaced horizontal members.Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is less than 45 inches (1143 mm), the horizontal members shall be located on the swimming pool side of the fence. Spacing between vertical members shall not exceed 13/4 inches (44 mm) in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 13/4 inches (44 mm) in width.

3109.5.1.4Widely spaced horizontal members.Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is 45 inches (1143 mm) or more, spacing between vertical members shall not exceed 4 inches (102 mm). Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 13/4 inches (44 mm) in width.

3109.5.1.5Chain link dimensions.Maximum mesh size for chain link fences shall be a 21/4 inch square (57 mm square) unless the fence is provided with slats fastened at the top or the bottom which reduce the openings to no more than 13/4 inches (44 mm).

3109.5.1.6Diagonal members.Where the barrier is composed of diagonal members, the spacing between parallel diagonal members shall be no more than 13/4 inches (44 mm).

3109.5.1.7Gates.Access gates shall comply with the requirements of Sections 3109.5.1.1 through 3109.5.1.6 and shall be equipped to accommodate a locking device. Pedestrian access gates shall open outward away from the pool and shall be self-closing and have a self-latching device. Gates other than pedestrian access gates shall have a self-latching device. Where the release mechanism of the self-latching device is located less than 54 inches (1372 mm) from the bottom of the gate, the release mechanism shall be located on the pool side of the gate at least 3 inches (76 mm) below the top of the gate, and the gate and barrier shall have no opening greater than 1/2 inch (12.7 mm) within 18 inches (457 mm) of the release mechanism.

3109.5.1.8Dwelling wall as a barrier.Where a wall of a dwelling serves as part of the barrier, one of the following shall apply:

1. Doors with direct access to the swimming pool through that wall shall be equipped with an alarm which produces an audible warning when the door and its screen are opened. The alarm shall sound continuously for a minimum of 30 seconds immediately after the door is opened and be capable of being heard throughout the dwelling during normal household activities. The alarm shall automatically reset under all conditions. The alarm shall be equipped with a manual means to temporarily deactivate the alarm for a single opening. Such deactivation shall last no more than 15 seconds. The deactivation switch shall be located at least 54 inches (1372 mm) above the threshold of the door.

2. The swimming pool shall be equipped with a power safety cover which complies with ASTM F 1346.

3. The door providing access to the swimming pool from the dwelling shall open inward, away from the swimming pool, and shall be self-closing and have a self-latching device. The release mechanism of the self-latching device shall

be located no less than 54 inches (1372 mm) from the bottom of the door.

3109.5.1.9Pool structure as barrier.Where an aboveground private swimming pool structure is used as a barrier or where the barrier is mounted on top of the pool structure, and the means of access is a ladder or steps, then the ladder or steps either shall be capable of being secured, locked or removed to prevent access, or the ladder or steps shall be surrounded by a barrier which meets the requirements of Sections 3109.5.1.1 through 3109.5.1.8. When the ladder or steps are secured, locked or removed, any opening created shall not allow the passage of a 4-inch-diameter (102 mm) sphere.

3109.5.2Indoor swimming pools.Walls surrounding indoor private swimming pools shall not be required to comply with Section 3109.5.1.8.

3109.5.3Prohibited locations.Barriers shall be located so as to prohibit permanent structures, equipment or similar objects from being used to climb the barriers.

3109.5.4Construction requirements.Private swimming pools shall be constructed so as to be water tight and easily cleaned. They shall be built of nonabsorbent materials with smooth surfaces and shall be free of open cracks and open joints.

3109.5.4.1Walls.The walls of swimming pools shall be vertical for at least the top 30 inches (762 mm) below the normal water level. The junctions between the side walls and the bottom shall be coved. A swimming pool overflow shall be provided meeting the requirements of the New York City Plumbing Code.

3109.5.4.2Bottom slopes.The bottom of the swimming pool shall slope downward toward the main drains. The slope in shallow areas with depths less than 5 feet (1524 mm) shall not exceed 1 unit vertical in 12 units horizontal. In portions of the swimming pool with depth greater than 5 feet (1524 mm), the slope shall not be steeper than 1 unit vertical in 3 units horizontal.

3109.5.4.3Ladders.There shall be a ladder or steps with handrails at the deep end and at the shallow end of every swimming pool. Ladders and steps shall have no slip treads. All ladders shall be rigidly installed and shall be constructed of corrosion-resistant materials.

3109.5.4.4Walkways .Every swimming pool shall have a walkway at least 5 feet (1524 mm) wide around its entire perimeter. The walkway shall have a non-slip surface and shall be constructed to drain away from the swimming pool.

3109.5.4.5Handholds.Every swimming pool shall be constructed so that either the overflow gutter, if provided, or the tops of the side walls afford a continuous handhold for bathers.

3109.5.4.6Markings.Permanent markings showing the depth of the shallow end, break points, diving depth, and deep end shall be provided so as to be visible from both inside and outside the swimming pool.

3109.5.4.7Diving boards and towers.Diving towers shall be rigidly constructed and permanently anchored. The depth of the water below a diving board shall be at least 102 inches (2591 mm) for a board 39 inches (991 mm) or less above the water. For a diving board more than 39 inches (991 mm) and not more than 118 inches (2997 mm) above the water, the depth of the water below the board shall be at least 144 inches (3658 mm). For a diving board or platform more than 118 inches (2997 mm) above the water, the depth of the water below the board shall be at least 192 inches (4877 mm). Indoor swimming pools shall provide at least 144 inches (3658 mm) overhead clearance above all diving boards.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 3: USE AND OCCUPANCY CLASSIFICATION
SECTION BC 311: STORAGE GROUPS

NYC Administrative Code § 28-BC 311

311.1 Storage Group S.

Storage Group S occupancy includes, among others, the use of a building or structure, or a portion thereof, for storage, such as for warehouses, storage rooms, freight depots and distribution centers, when not classified as a hazardous occupancy.

311.2 Moderate-hazard storage, Group S-1. Buildings occupied for storing any flammable or combustible materials that are likely to permit the development and production of fire with moderate rapidity including, but not limited to, storage of the following:

Aerosols, Levels 2 and 3

Bags; cloth, burlap and paper

Bamboos and rattan

Baskets

Belting; canvas and leather

Books and paper in rolls or packs

Boots and shoes

Buttons, including cloth covered, pearl or bone

Cardboard and cardboard boxes

Clothing, woolen wearing apparel

Cordage

Furniture

Furs

Glues, mucilage, pastes and size

Grains

Horns and combs, other than celluloid

Leather

Linoleum

Lumber

Photo engravings

Resilient flooring

Silks

Soaps

Sugar

Tires, bulk storage of

Tobacco, cigars, cigarettes and snuff

Upholstery and mattresses

Wax candles

311.3 Low-hazard storage, Group S-2. Includes, among others, buildings used for the storage of noncombustible materials such as products on wood pallets or in paper cartons with or without single thickness divisions; or in paper wrappings. Such products are permitted to have a negligible amount of plastic trim, such as knobs, handles or film wrapping. Storage uses shall include, but not be limited to, storage of the following:

Asbestos

Beverages up to and including 12-percent alcohol in metal, glass or ceramic containers

Cement in bags

Chalk and crayons

Dairy products in nonwaxed coated paper containers

Dry cell batteries

Electrical coils

Electrical motors

Empty cans

Food products

Foods in noncombustible containers

Fresh fruits and vegetables in nonplastic trays or containers

Frozen foods

Glass

Glass bottles, empty or filled with noncombustible liquids

Gypsum board

Inert pigments

Ivory

Meats

Metal cabinets

Metal desks with plastic tops and trim

Metal parts

Metals

Mirrors

Oil-filled and other types of distribution transformers

Parking garages, open or enclosed

Porcelain and pottery

Stoves

Talc and soapstones

Washers and dryers



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 31: SPECIAL CONSTRUCTION
SECTION BC 3110: SIDEWALK CAFES

NYC Administrative Code § 28-BC 3110

3110.1 General.

Sidewalk cafes provided beyond the building line shall comply with the requirements of this section, the New York City Zoning Resolution, the Commissioners of the Department of Consumer Affairs and Department of Transportation, and with the projection limitations of Chapter 32 of this code.

3110.2Enclosures.Enclosed sidewalk cafes shall be constructed of noncombustible material. The walls of such enclosures shall not extend more than 8 feet (2438 mm) above the sidewalk. Light transmitting plastic glazing complying with Section 2606 shall be permitted as glazing within such walls. Light-transmitting plastic skylight glazing complying with Section 2610 may be installed in the roofs of such enclosures.

3110.3Awnings.Awnings supported entirely from the building may be placed over unenclosed sidewalk cafes provided they are at least 8 feet (2438 mm) clear above the sidewalk and within the limits specified by the Commissioner of the Department of Consumer Affairs. Such awnings shall be in compliance with Section 3105 of this code.

3110.4Obstructions prohibited.No part of any awning, enclosure, fixture, equipment or removable platform of a sidewalk cafe shall be located:

1. Beneath a fire escape so as to obstruct operation of fire escape drop ladders or counter-balanced stairs;
2. So as to obstruct any exit from a building;
3. So as to obstruct any cellar access hatch or areaway;
4. So as to interfere with any vent or other mechanical ventilation outlet or inlet;
5. So as to interfere with or obscure any standpipe connections, hydrant or associated signage in any way that

would hinder its use by the fire department.

Exception: Upon special application, the commissioner may permit an easily removable, prominently designated platform, designed in accordance with Section 3110.5, to cover a cellar entrance or areaway that is not used as a required means of egress.

3110.5Removable platforms.Removable platforms of sidewalk cafes shall be constructed in accordance with the requirements of this section.

3110.5.1Continuity.Removable platforms shall be constructed to provide for a continuous unbroken and level floor without openings or cracks so as to prevent any material or liquid from falling through to the area beneath.

3110.5.2Maintenance.No papers, trash or other materials may be permitted to accumulate in the area beneath the floor of any removable platform.

3110.6Accessibility.Sidewalk cafes and access thereto shall comply with Chapter 11.

3110.7Assembly seating.Unless separated from seating inside the building by fire partitions complying with Section 708, the seating for enclosed sidewalk cafes shall be added to that inside the building in order to determine whether a place of assembly permit is required.

3110.8Rules.In addition to the requirements specified herein, the commissioner may promulgate such additional rules necessary to secure safety.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 31: SPECIAL CONSTRUCTION
SECTION BC 3111: FENCES

NYC Administrative Code § 28-BC 3111

3111.1 Permitted heights.

Fences are permitted to be erected to a maximum height of 10 feet (3048 mm) above the ground.

Exceptions:

1. In residence districts, as established by the New York City Zoning Resolution, fences are permitted to be erected to a maximum height of 6 feet (1829 mm) above the ground.
2. Fences in residence districts used in conjunction with non-residence buildings and public playgrounds, excluding buildings accessory to dwellings, are permitted to be erected to a maximum height of 15 feet (4572 mm) above the ground.
3. Higher fences may be permitted by the commissioner where required for the enclosure of public playgrounds, school yards, parks, and similar public facilities.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 3: USE AND OCCUPANCY CLASSIFICATION
SECTION BC 312: UTILITY AND MISCELLANEOUS GROUP U

NYC Administrative Code § 28-BC 312

312.1 General.

Buildings and structures of an accessory character and miscellaneous structures not classified in any specific occupancy shall be constructed, equipped and maintained to conform to the requirements of this code commensurate with the fire and life hazard incidental to their occupancy. Group U shall include, but not be limited to, the following:

Carports

Fences more than 6 feet (1829 mm) high

Private garages as per Section 406.1

Retaining walls

Sheds or greenhouses accessory to Group R-3 occupancies, that are: freestanding, less than 120 square feet (11.15 m²) in area, not permanently affixed to the ground, and used for household goods or items associated with the garden or lawn. Any other shed shall be classified as either S-1 or S-2.

Tanks

Towers



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 32: ENCROACHMENTS INTO THE PUBLIC RIGHT-OF-WAY
SECTION BC 3201: GENERAL

NYC Administrative Code § 28-BC 3201

3201.1 Scope.

The provisions of this chapter shall govern the encroachment of structures into the public right-of-way.

3201.1.1 Encroachments removable. All encroachments permitted beyond the street line by the provisions of this chapter shall be constructed so that they may be removed at any time without endangering the structural safety or fire safety of the building except that footings as permitted under Section 3202.1.1 of this code need not be removable.

3201.2 Measurement. The projection of any structure or appendage shall be the distance measured horizontally from the lot line to the outermost point of the projection.

3201.3 Other laws. The provisions of this chapter shall not be construed to permit the violation of other laws regulating the use and occupancy of public property.

3201.3.1 Restrictions on construction and projections on certain streets, parkways, boardwalks and beaches. Notwithstanding the provisions of this chapter, it shall be unlawful to build, erect, or make areaways, steps or other encroachments or projections prohibited by Sections 19-131, 19-132, 19-135, 18-109, 18-112 and 18-113 of the Administrative Code.

3201.4 Drainage. Drainage water collected from a roof, awning, canopy or marquee, other than canvas and flexible material, and condensate from mechanical equipment shall not flow over a public walking surface.

3201.5 Permission revocable. Any permission, expressed or implied, permitting the construction of encroachments within the area of the street under the provisions of this chapter shall be revocable, except footings as permitted under Section 3202.1.1.

3201.6 Existing projections. Any part of a building that projects beyond a street line on January 1, 1938 may be maintained as constructed until its removal is directed in accordance with applicable law.

3201.7 Alteration of existing encroachments. Alterations to existing encroachments beyond the street line may be permitted in whole or in part, provided that such alterations conform with the requirements of this chapter.

3200.8 Definitions. As used in this chapter, the following terms shall have the following meanings:

CURB LINE. The line coincident with the face of the street curb adjacent to the roadway.

FOOTING. A foundation element consisting of an enlargement of a foundation pier or foundation wall, wherein the soil materials along the side of and underlying the element may be visually inspected prior to and during its construction.

PROJECTING SIGN. A sign other than a wall sign, which projects from and is supported by a wall of a building or structure.

SIGN. Any letter, figure, character, mark, plane, point, marquee sign, design, poster, pictorial, picture, stroke, stripe, line, trademark, reading matter or illuminated service, which shall be constructed, placed, attached, painted, erected, fastened or manufactured in any manner whatsoever, so that the same shall be used for the attraction of the public to any place, subject, person, firm, corporation, public performance, article, machine or merchandise, whatsoever, which is displayed in any manner outdoors. Every sign shall be classified and conform to the requirements of that classification as set forth in this chapter.

STREET. A thoroughfare dedicated or devoted to public use by legal mapping or other lawful means, or a public way.

STREET LINE. A lot line separating a street from other land.

VAULT. Any space below the surface of the a street, that is covered over, except those openings that are used exclusively as places for descending, by means of steps, to the cellar or basement of any building.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 32: ENCROACHMENTS INTO THE PUBLIC RIGHT-OF-WAY
SECTION BC 3202: ENCROACHMENTS

NYC Administrative Code § 28-BC 3202

3202.1 Encroachments below grade.

Encroachments below grade shall comply with Sections 3202.1.1 through 3202.1.4.

3202.1.1Footings.Exterior wall and column footings may be constructed to project beyond the street line not more than 12 inches (305 mm), provided that the top of the footing is not less than 8 feet (2438 mm) below the ground or sidewalk level. Foundation walls required to support permitted projections may be constructed to project not more than the permitted projection beyond the street line.

3202.1.2Vaults.Vaults may be permitted in accordance with the New York City Charter and Chapter 19 of the Administrative Code. Such vaults shall comply with the provisions of this code and other applicable laws and rules.

3202.1.3Areaways.Areaways, subject to approval by the Commissioner of the Department of Transportation, shall be protected by grates, guards or other approved means.

3202.1.4Tunnels between buildings.Tunnels connecting buildings, and projecting beyond street lines, may be constructed subject to the approval of the Commissioner of the Department of Transportation. Such tunnels shall comply with the provisions of this code and other applicable laws and regulations.

3202.2Encroachments above grade.Encroachments into the public right-of-way above grade shall be prohibited except as provided for in Sections 3202.2.1 through 3202.2.3.

3202.2.1Encroachments subject to the area limitations.Encroachments that are subject to area limitations are those elements listed in sections 3202.2.1.1 through 3202.2.1.8, generally of an architectural character, that form an integral part of the building facade. The aggregate area of all such elements constructed to extend beyond the street line shall not exceed 10 square feet (0.93 m²) within any 100 square feet (9.1 m²) of wall area, except that a veneer may be applied to the entire facade of a building erected before December 6, 1968, if such veneer does not project more than 4 inches (102

mm) beyond the street line. The area of any such projection shall be measured at that vertical plane, parallel to the wall, in which the area of the projection is greatest. This plane of measurement may be at the street line, the line of maximum projection, or any point in between.

3202.2.1.1 Entrance details. Entrance details, including steps, and doors when fully open, may be constructed to project beyond the street line not more than 18 inches (457 mm). Entrance steps that project beyond the street line shall be guarded at each end by railings or check pieces at least 3 feet (914 mm) high or by other members of the entrance detail providing equivalent protection.

3202.2.1.2 Architectural details. Details such as cornices, eaves, bases, sills, headers, band course, opening frames, sun control devices, rustications, applied ornament or sculpture, grilles, windows when fully open, air conditioning units, and other similar elements may be constructed:

1. To project not more than 4 inches (102 mm) beyond the street line when less than 10 feet (3048 mm) above the ground or sidewalk level.

2. To project not more than 10 inches (254 mm) beyond the street line when more than 10 feet (3048 mm) above the ground or sidewalk level.

Exception: Architectural details that are more than 10 feet (3048 mm) above the sidewalk and that project more than 10 inches (254 mm) may be permitted subject to the approval of the Commissioner of the Department of Transportation.

3202.2.1.3 Balconies. Balconies, including railings and supporting brackets, no parts of which are less than 10 feet (3048 mm) above the ground or sidewalk level, may be constructed to project not more than 22 inches (559 mm) beyond the street line. When permitted by the provisions of this code, fire escapes that are part of a required exit may be constructed to project not more than 4 feet 6 inches (1372 mm) beyond the street line provided no part, including any movable ladder or stair, is lower than 10 feet (3048 mm) above the ground or sidewalk level when not in use.

3202.2.1.4 Marquees. Marquees may be constructed to project beyond the street line provided that they comply with Section 3106 and Sections 3202.2.1.4.1 through 3202.2.1.4.5.

3202.2.1.4.1 Height. Marquees shall receive structural support only from the building, and shall be at least 10 feet (3048 mm) above the ground level or sidewalk.

3202.2.1.4.2 Projection. Marquees shall project no closer to the curb line than 2 feet (610 mm). 3202.2.1.4.3 Thickness. Marquees shall be no thicker nor shall the fascia be higher than 3 feet (914 mm) when measured from top to bottom.

3202.2.1.4.4 Dimensions. Dimensions shall include all decoration, but shall exclude any tension supports suspending the marquee from the wall.

3202.2.1.4.5 Occupancy restrictions. Marquees may be erected on:

1. Buildings of an essentially public nature including but not limited to the following:

- 1.1 Public buildings.

- 1.2. Theatres.

- 1.3. Hotels.

- 1.4. Terminals.

1.5. Large department stores.

1.6. Supermarkets.

1.7. Multiple dwellings.

2. Warehouses or markets in one of the following established market areas:

2.1. Bronx.

2.1.1. Edgewater Road and Halleck Street between Lafayette Avenue and East Bay Avenue.

2.1.2. Lafayette Avenue between Edgewater Road and the Bronx River.

2.1.3.

East Bay Avenue between Halleck Street and the Bronx River.

2.1.4. Hunt's Point Avenue between East Bay Avenue and the Bronx River.

2.1.5. Exterior Street between East 149th Street and East 157th Street.

2.1.6. Cromwell Avenue between East 150th Street and East 153rd Street.

2.1.7. East 150th Street between Exterior Street and River Avenue.

2.1.8. Westchester Avenue between St. Ann's Avenue and Bergen Avenue.

2.1.9. Brook Avenue between East 150th Street and East 156th Street.

2.1.10. Bergen Avenue between East 149th Street and East 156th Street.

2.1.11. East 152nd Street between Bergen Avenue and Brook Avenue.

2.1.12. East 153rd Street between Bergen Avenue and Brook Avenue.

2.2. Brooklyn.

2.2.1. North 6th Street between Berry Street and Wythe Avenue.

2.3. Manhattan.

2.3.1. John Street to Fulton Street between South Street and Front Street.

2.3.2. Fulton Street to Dover Street between South Street and Water Street.

2.3.3. South Street and Front Street between John Street and Dover Street.

2.3.4. Water Street between Fulton Street and Dover Street.

2.3.5. Horatio Street to West 14th Street between West Street and 9th Avenue.

2.3.6. West Street, Washington Street, Greenwich Street

2.3.7. 9th Avenue and 10th Avenue between Horatio Street and West 14th Street.

2.3.8. West 16th Street, north side, and West 17th Street, south side, between 10th Avenue and 11th Avenue.

2.3.9. West 24th Street to West 26th Street, south side, between 11th Avenue and 12th Avenue.

2.3.10. West 27th Street, north side, to West 28th Street between 11th Avenue and 12th Avenue.

2.3.11. 12th Avenue and St. Claire Place between 125th Street and 132nd Street.

2.3.12. 12th Avenue, west side, between 132nd Street and 133rd Street.

2.4. Queens.

2.4.1. 95th Avenue, north side, between Sutphin Boulevard and 148th Street.

3202.2.1.4.6 Change of occupancy. When the occupancy or use of a building with a marquee is changed to an occupancy or use for which a projecting marquee is not permitted, the marquee shall be removed.

Exception: Where such marquee is subject to the jurisdiction of the Landmarks Preservation Commission such marquee shall not be removed without the prior approval of the Landmarks Preservation Commission.

3202.2.1.4.7 Other agency approvals. An applicant wishing to erect a marquee shall provide proof that the Commissioners of the Departments of Transportation, Consumer Affairs, and Environmental Protection have not permitted the use of a space or structure on or under the sidewalk beneath the proposed marquee in such a manner that the construction of the proposed marquee shall interfere with the removal or repair of any such permitted use or structure.

3202.2.1.5 Light fixtures. Light fixtures that are supported entirely from the building may be constructed to project not more than 2 feet (610 mm) beyond the street line, provided no part of the fixture is less than 8 feet (2438 mm) above the ground or sidewalk level.

3202.2.1.6 Flagpoles. Flagpoles that are supported entirely from the building may be constructed to project not more than 18 feet (5486 mm) beyond the street line, but not closer than 2 feet (610 mm) to the curb line, provided that no part of the flagpole is less than 15 feet (4572 mm) above the ground or sidewalk level.

3202.2.1.7 Wall signs. Wall signs may be constructed to project not more than 12 inches (305 mm) beyond the street line when conforming to the requirements of this code and Section H111 of Appendix H.

3202.2.1.8 Projecting signs. All permitted projecting signs may be constructed to project not more than 10 feet (3048 mm) beyond the street line, but not closer to the curb line than 2 feet (610 mm), when conforming to the requirements of this code and Section H112 of Appendix H, and provided that no part of the sign is less than 10 feet (3048 mm) above the ground or sidewalk level.

Exceptions: Permanent projecting signs are prohibited on buildings in the areas indicated below:

1. Borough of Manhattan.

1.1. Projecting signs. No permanent projecting sign shall be erected on any building on:

1.1.1. 5th Avenue between Washington Square north and 110th Street;

1.1.2. 34th Street between Park Avenue and 7th Avenue;

1.1.3. Madison Avenue between 23rd Street and 96th Street;

- 1.1.4. 57th Street between Lexington Avenue and Broadway;
- 1.1.5. Vanderbilt Avenue between 42nd Street and 47th Street;
- 1.1.6. Park Avenue between 32nd Street and 40th Street;
- 1.1.7. Park Avenue between 45th Street and 96th Street;
- 1.1.8. 33rd Street between Lexington Avenue and 5th Avenue;
- 1.1.9. 35th through 41st Streets between Lexington Avenue and 5th Avenue;
- 1.1.10. 43rd through 56th Streets between Lexington Avenue and 5th Avenue;
- 1.1.11. 58th Street between Lexington Avenue and 5th Avenue;
- 1.1.12. 60th Street between Lexington Avenue and 5th Avenue;
- 1.1.13. Nassau Street between Wall Street and Frankfort Street; or
- 1.1.14. John Street between Broadway and William Street.

1.2. Illuminated projecting signs. No permanent illuminated projecting sign shall be erected on any building on:

- 1.2.1. 72nd Street between Central Park West and River Drive.

2. Borough of Brooklyn.

2.1. Projecting signs. No permanent projecting sign shall be erected on any building on:

- 2.1.1. Fulton Street between Flatbush Avenue and Joralemon Street and Willoughby Street.

2.2. Illuminated projecting signs. No permanent illuminated projecting sign shall be erected on any building on:

- 2.2.1. Fulton Street between Flatbush Avenue and Prospect Street and Henry Street;
- 2.2.2. Washington Street between Myrtle Avenue and Prospect Street;
- 2.2.3. Court Street between Fulton Street and Livingston Street;
- 2.2.4. Pierrepont Street between Fulton Street and Clinton Street;
- 2.2.5. Montague Street between Court Street and Clinton Street;
- 2.2.6. Remsen Street between Court Street and Clinton Street; or
- 2.2.7. Joralemon Street between Court Street and Clinton Street.

3202.2.2 Encroachments not subject to area limitations.

3202.2.2.1 Ramps. When a building erected prior to December 6, 1969 is altered to provide access to individuals who use wheelchairs, ramps constructed to provide such access may, with the approval of the commissioner, project beyond the street line for a distance of not more than 44 inches (1118 mm). Ramps shall comply with the applicable provisions of Chapter 11.

3202.2.2.2Bridges between buildings.Bridges connecting buildings, and projecting beyond street lines may be permitted in accordance with applicable law. Such bridges shall be of a construction class that is at least equal to the higher class of the two buildings connected, and shall otherwise comply with the provisions of this code and other applicable laws and rules.

3202.2.3Awnings.Awnings constructed in accordance with Section 3105 and supported entirely from the building may project beyond the street line as follows:

3202.2.3.1Store front awnings.Store front awnings may project beyond the street line not more than 8 feet (2438 mm), provided no part of the awning is less than 8 feet (2438 mm) above the ground or sidewalk level, except for a flexible valance which may be not less than 7 feet (2134 mm) above the ground or sidewalk level, and provided that the awning box or cover does not project more than 12 inches (305 mm).

3202.2.3.2Awnings over windows or doors.Awnings over windows or doors may project beyond the street line not more than 5 feet (1524 mm), provided that no part of the awning is less than 8 feet (2438 mm) above the ground or sidewalk level.

3202.3Reserved.

3202.4Temporary encroachments.Encroachments of temporary nature shall comply with Sections 3202.4.1 and 3202.4.2.

3202.4.1Sidewalk cafes.Enclosures for sidewalk cafes, where permitted by the Commissioner of the Department of Consumer Affairs pursuant to applicable law and constructed in compliance with Section 3110, may be constructed beyond the street line.

3202.4.2Storm enclosures.Storm enclosures projecting not more than 18 inches (457 mm) beyond the street line may be permitted during the period between November 15 and the following April 15. Such enclosures shall be removed at the end of this period. Construction of storm enclosures must comply with the requirements of this code including the fire resistance rating of the building to which it is appurtenant and Chapter 11 of this code.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3301: GENERAL

NYC Administrative Code § 28-BC 3301

3301.1 Scope.

The provisions of this chapter shall govern the conduct of all construction or demolition operations with regard to the safety of the public and property. For regulations relating to the safety of persons employed in construction or demolition operations, OSHA Standards shall apply.

3301.1.1 Responsibility for safety. Nothing in this chapter shall be construed to relieve persons engaged in construction or demolition operations from complying with other applicable provisions of law, nor is it intended to alter or diminish any obligation otherwise imposed by law on the owner, construction manager, general contractor, contractors, materialmen, registered design professionals, or other party involved in a construction or demolition project to engage in sound design and engineering, safe construction or demolition practices including but not limited to debris removal, and to act in a reasonable and responsible manner to maintain a safe construction or demolition site.

3301.1.2 Fire Code. In addition to the requirements of this chapter, construction or demolition operations shall also be conducted in conformance with the New York City Fire Code.

3301.2 Contractors. Contractors, construction managers, and subcontractors engaged in building work shall institute and maintain safety measures and provide all equipment or temporary construction necessary to safeguard all persons and property affected by such contractor's operations.

3301.3 Site Safety Managers, Coordinators and Superintendent of Construction. A Site Safety Manager or Site Safety Coordinator must be designated and present on the construction or demolition of major buildings as defined by and in accordance with Section 3310. A Superintendent of Construction is required for the construction or demolition of such other buildings identified pursuant to rules promulgated by the commissioner.

3301.4 Inspection of operations. Inspection of operations for compliance with the provisions of this chapter may be performed by, or under, the authority of the person superintending the work. Unless otherwise specified by the

provisions of this chapter, inspection and test reports relating to operations within the scope of this chapter shall be maintained by the permit holder or the person responsible for the inspection and made available to the department upon request.

Exception: Operations specifically required by this code to be inspected only by a registered design professional or special inspector.

3301.5 Inspection of equipment. Any equipment or device, except hand tools, that would affect public safety when operated shall be inspected by the person superintending the work or by his or her designated representative before the equipment or device is used on a specific job. Such inspection shall be made, and every defect or unsafe condition shall be corrected before use is permitted.

Any unsafe equipment or device shall immediately be made safe or removed from the site. Periodic inspection of equipment shall be performed during construction or demolition operations, and a record of such inspections shall be kept at the site for the duration of the work and made available to the department upon request.

3301.6 Sizes and stresses of materials and equipment.

3301.6.1 Sizes. All sizes and dimensions prescribed in this chapter are minimum requirements. Lumber sizes are nominal or commercial except where stated otherwise.

3301.6.2 Stresses. Temporary equipment and constructions shall be designed so that the allowable stress values for the material as specified by this code are not exceeded.

3301.6.3 Design capacity. No structure, device, or equipment, whether permanent or temporary, including all partly or fully completed elements or sections of the building, shall be loaded in excess of its design capacity.

3301.7 Design. Whenever design is required by the provisions of this chapter, such design shall be executed by, or under, the supervision of a registered design professional who shall cause his or her seal and signature to be affixed to any drawings or specifications that may be required for the work unless specifically indicated by this chapter that the design may be executed by another individual. All such documents shall be kept at the site for inspection by the commissioner for the duration of the job.

3301.8 Accident reporting. The department shall be notified promptly, in accordance with the circumstances, of all accidents at construction or demolition sites.

3301.9 Required signs. The signs required below in Sections 3301.9.1 to 3301.9.6 shall be constructed of 3/4 inch (19 mm) plywood or sheet metal. The letters on the required signs shall be black on white background.

The required signs must be in place 24 hours prior to commencement of any construction or demolition activity and remain visible at the site until all work is completed. The signs shall be no larger than that needed to accommodate the required information in letters no less than 3 inches (76 mm) high.

Exception: Where construction or demolition operations are limited to the interior components of the building.

3301.9.1 New buildings or demolitions. At sites where a new building or full demolition permit is required, a sign with the statement "TO ANONYMOUSLY REPORT UNSAFE CONDITIONS AT THIS WORK SITE THAT ENDANGER WORKERS, CALL 311" in both English and Spanish shall be posted at a height of no more than 12 feet (3658 mm) above the ground on each perimeter of the site fronting a public thoroughfare.

3301.9.2 Construction sites. At a height of no more than 12 feet (3658 mm) above the ground on each perimeter of a construction site fronting a public thoroughfare, a sign shall be erected containing the following information:

1. The name, address and telephone number of the owner of the property;
2. The name, address and telephone number of the general contractor; and
3. The phone number for reporting complaints.

In addition, copies of all permits shall be displayed in a conspicuous location readily visible by the public.

3301.9.3 Demolition sites. At a height of no more than 12 feet (3658 mm) above the ground on each perimeter of a demolition site fronting a public thoroughfare, a sign shall be erected containing the following information:

1. The name, address, and telephone number of the owner of the property;
2. The name, address, and telephone number of the demolition contractor; and
3. The phone number for reporting complaints.

In addition, copies of all permits shall be displayed in a conspicuous location readily visible by the public.

3301.9.4 Major buildings. At all major building sites as defined in Section 3310, the following information shall be included, in both English and Spanish. The information may be included on the required construction or demolition sign, or on a separate sign placed at a height of no more than 12 feet (3658 mm) above the ground on each perimeter of the construction or demolition site fronting a public thoroughfare:

1. The telephone numbers of the department special units in charge of complaints on major buildings; and
2. The telephone number of the department of transportation.

3301.9.5 Sidewalk sheds. Following the receipt of a permit to erect a sidewalk shed, the permit holder shall post a readily visible sign on the sidewalk shed. Such sign shall include:

1. The name, address, and telephone number of the permit holder;
2. The permit number; and
3. The expiration date of the permit. .

3301.9.6 Scaffolds and Hoists. Following the receipt of a permit to erect or suspend a scaffold, or erect a material or personnel hoist, the permit holder shall post a sign. Such sign shall be plainly visible from the street and include the name, address, telephone number of the permit holder, and permit number. The sign shall also include the expiration date of the permit.

The sign shall either be:

1. Affixed to the scaffold, runback structure, or a protective structure described in Section 3307. When attached to a scaffold or runback structure, the effects of wind on the sign shall be taken into consideration by a qualified individual in accordance with the provisions of Section 3314.3; or
2. Placed at the job site in at least one place readily visible to the public.

3301.10 Obscured lawful signs. When a protective structure is constructed in accordance with Section 3307, a temporary sign may be posted on such protective structure when the structure is adjacent to any building and obscures from view a lawful and existing sign. The temporary sign shall comply with the following requirements:

1. The temporary sign shall be securely fastened to the face of the protective structure at a location directly in front of such business storefront;

2. No projecting temporary signs shall be permitted, and all temporary signs shall be limited to a maximum height of 4 feet (1219 mm), and when affixed to a sidewalk shed shall not project above the parapet;

3. No temporary signs shall be permitted on the ends of any protective structure, unless the lawful and existing sign would otherwise be obscured from view by a deck or parapet of a sidewalk shed or bridge; and

4. No temporary sign shall project below the deck of any sidewalk shed.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

3301.9.4 Item 1 amended L.L. 8/2008 § 165, eff. July 1, 2008.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3302: DEFINITIONS

NYC Administrative Code § 28-BC 3302

3302.1 Definitions.

The following words and terms shall, for the purposes of this chapter, have the following meanings.

ARCHITECT. See Chapter 1 of Title 28 of the Administrative Code.

ARTICULATING BOOM CRANE. A power operated machine for lifting or lowering a load and moving it horizontally that utilizes a boom consisting of a series of folding pin connected structural members, typically manipulated to extend or retract by power from hydraulic cylinders, with or without a hoisting mechanism integral to the machine.

AXIS OF ROTATION. The vertical axis around which the crane superstructure rotates.

AXLE. The shaft or spindle with which or about which a wheel rotates. On truck and wheel mounted cranes it refers to an automotive type of axle assembly including housing, gearing, differential, bearings and mounting appurtenances.

BASE (MOUNTING). The base or carrier on which the rotating superstructure is mounted such as a truck, crawler or platform.

BEARER (PUTLOG). A horizontal transverse scaffold member (which may be supported by legs or runners) upon which the scaffold platform rests and joins scaffold uprights, posts, poles, and similar members.

BOOM. A section or strut, of which the heel (lower end) is affixed to a base, carriage or support, and whose upper end supports a cable and sheaves where the load is lifted by means of wire rope and a hook.

BOOM POINT. The outward end of the top section of the boom, containing the hoist sheave assembly.

BRAKE. A device used for retarding or stopping motion by friction or power means.

BUCKET HOIST. A power or manually operated suspended bucket contained by guide rails used for raising or lowering material exclusively and controlled from a point outside the conveyance.

CABLEWAY. A power operated system for moving loads in a generally horizontal direction in which the loads are conveyed on an overhead cable, track or carriage.

CERTIFICATE OF APPROVAL. A certificate issued by the department upon review and approval of the engineering and testing of a specific make and model of hoisting equipment to ensure compliance with the applicable provisions of this code and its referenced standards

CERTIFICATE OF OPERATION. A certificate issued by the department annually upon satisfactory inspection of the hoisting equipment holding a certificate of approval to ensure that the equipment continues to be in compliance with this code and its referenced standards.

CERTIFICATE OF ON-SITE INSPECTION. A certificate issued by the department based on a site specific approval of the placement, founding and operation of hoisting equipment.

CLAMSHELL. A shovel bucket with two jaws which clamp together by their own weight when it is lifted by a closing line.

CLIMBING/JUMPING. The raising or lowering of a tower or climber crane to different floors or levels of a building or structure.

COMMERCIAL TRUCK MOUNTED CRANE (BOOM TRUCK). A crane consisting of a rotating superstructure (center post or turntable), boom, operating machinery, and one or more operator's stations mounted on a frame attached to a commercial truck chassis, usually retaining a payload hauling capability whose power source usually powers the crane. Its function is to lift, lower, and swing loads at various radii.

COMPETENT PERSON. One who is capable of identifying existing predictable hazards in the surroundings or conditions that are unsanitary, hazardous or dangerous, and who has authorization to take prompt corrective measures to eliminate such hazards.

CONSTRUCTION. The excavation, erection, alteration, and repair of buildings or any component parts, including all operations incidental thereto.

CORNER SCAFFOLD (ANGLE SCAFFOLD). A suspended scaffold consisting of an assembly of two or more platforms connected non-linearly and designed and manufactured to fit around a corner or a projecting part of a building.

COUNTERWEIGHT. Weight used to supplement the weight of the machine in providing stability for lifting loads.

CRANE. A power operated machine for lifting or lowering a load and moving it horizontally which utilizes wire rope and in which the hoisting mechanism is an integral part of the machine. The definition of a crane shall also include articulating boom crane, regardless of whether it has a hoisting mechanism integral to the machine.

CRAWLER CRANE. A crane consisting of a rotating superstructure with a power plant, operating machinery, and boom, mounted on a base and equipped with crawler treads for travel. Its function is to lift, lower, and swing loads at various radii.

DEBRIS NET or NETTING. A netting of a fine mesh of a size and strength sufficient to catch debris such as falling tools and materials.

DEMOLITION. Full or partial demolition.

DEMOLITION, FULL. The dismantling, razing, or removal of all of a building or structure, including all operations incidental thereto.

DEMOLITION, PARTIAL. The dismantling, razing, or removal of structural members, floors, interior bearing walls, and/or exterior walls or portions thereof, including all operations incidental thereto.

DERRICK. An apparatus consisting of a mast or equivalent member held at the end by guys or braces, with or without a boom, for use with a hoisting mechanism and operating ropes, for lifting or lowering a load and moving it horizontally.

DISMANTLING. The final process of taking apart, piece by piece, in a specific sequence, the components of a crane. Dismantling shall include climbing and jumping.

DRUM. The cylindrical member around which a rope is wound for raising and lowering the load or boom.

ENGINEER. See Chapter 1 of Title 28 of the Administrative Code.

ERECTION. The assembly and placement of crane sections and components into place, including all operations incidental thereto. Erection shall include climbing and jumping.

FULL DEMOLITION. See "Demolition, Full."

GUARDRAIL SYSTEM (SCAFFOLD). A vertical barrier as described in Section 3314.8 consisting of, but not limited to, top rails, mid rails and posts, erected to prevent falling from a scaffold platform or walkway to lower levels.

GUY. A rope used to steady or secure the mast or other members in the desired position.

HEAVY DUTY SIDEWALK SHED. A sidewalk shed designed to carry a live load of at least 300 pounds per square foot (1465 kg/m²).

HOISTING MACHINE. A power operated machine used for lifting or lowering a load, utilizing a drum and a wire rope, excluding elevators. This shall include but not be limited to a crane, derrick, cableway and hydraulic lifting system, and articulating booms.

HOISTING MECHANISM. A hoist drum and rope reeving system used for lifting and lowering loads.

HOISTING EQUIPMENT. Equipment used to raise and lower personnel and/or material with intermittent motion.

JIB. An extension attached to the boom point to provide added boom length for lifting specified loads. The jib may be in line with the boom or offset to various angles in the vertical plane of the boom.

JUMP (JUMPING). The process of adding or removing mast or tower sections to equipment that has already been erected.

LAY. That distance measured along a wire rope in which one strand makes one complete helical convolution about the core or center.

LIGHT DUTY SIDEWALK SHED. A sidewalk shed designed to carry a live load of at least 150 pounds per square foot (732.3 kg/m²).

LOAD (WORKING). The external load, in pounds (kilograms), applied to the crane or derrick, including the weight of auxiliary load attaching equipment such as lower load blocks, shackles and slings.

LOAD RATINGS. Crane and derrick ratings in pounds (kilograms) established by the manufacturer in accordance with standards set forth in rules promulgated by the commissioner.

LOAD RATING CHART. A full and complete range of manufacturer's crane load ratings at all stated operating radii, boom angles, work areas, boom lengths and configurations, jib lengths and angles (or offset), as well as alternative ratings for use and nonuse of optional equipment on the crane, such as outriggers and extra counterweights, that affect ratings.

LOWER LOAD BLOCK. The assembly of hook or shackle, swivel, sheaves, pins and frame suspended by the hoisting ropes.

MAST-CLIMBING WORK PLATFORMS. A powered device consisting of an elevating platform mounted on a base or chassis and mast, that when erected is capable of supporting personnel, material, equipment and tools on a deck or platform that is capable of traveling vertically in infinitely adjustable increments to reach the desired work level.

MATERIAL HANDLING EQUIPMENT. A power or manually operated platform, bucket, car or cage that moves horizontally and is mainly used for transporting material during construction, alteration, repair or demolition of a building or structure.

MATERIAL HOIST (MATERIAL HOISTING EQUIPMENT). A power or manually operated platform, bucket, car or cage that moves vertically and is used for raising or lowering material exclusively during construction, alteration, repair or demolition of a building or structure, and is controlled from a point outside the conveyance.

MOBILE CRANE. A commercial truck mounted crane, crawler crane, wheel mounted crane (multiple control stations), or wheel mounted crane (single control station).

MOBILE SCAFFOLD. A powered or unpowered, portable, caster, track or wheel-mounted supported scaffold.

MULTI-POINT ADJUSTABLE SUSPENSION SCAFFOLD. A suspension scaffold consisting of a platform(s) that is suspended by more than two ropes from overhead supports and equipped with a means to raise and lower the platform to the desired work levels.

OUTRIGGER (CRANE). Extendable or fixed members attached to the mounting base that rest on supports at the outer ends used to support the crane.

OUTRIGGER (SCAFFOLD). The structural member of a supported scaffold used to increase the base width of a scaffold in order to provide support for and increased stability of the scaffold.

OUTRIGGER BEAM (THRUSTOUT). The structural member of a suspension scaffold or outrigger scaffold that provides support for the scaffold by extending the scaffold point of attachment to a point out and away from the structure or building.

OUTRIGGER SCAFFOLD. A supported scaffold consisting of a platform resting on outrigger beams (thrustouts) projecting beyond the wall or face of the building or structure, the inboard ends of which are secured inside the building or structure

PARTIAL DEMOLITION. See "Demolition, Partial."

PERSONNEL HOIST. A mechanism and its hoistway, equipped with a car that moves vertically on guide members, used for hoisting or lowering workers or workers and materials for the construction, alteration or demolition of a building structure or other work

PLATFORM. A work surface elevated above lower levels. Platforms can be constructed using individual wood

planks, fabricated planks, or fabricated decks.

POWER BUGGIES. An automotive vehicle designed or used for the transportation of materials on or about construction or demolition sites. It shall not include automobiles, motor trucks, general purpose tractors, or excavating or material handling machinery.

QUALIFIED PERSON. A person who by possession of a recognized degree, certificate or professional standing, or who by knowledge, training and experience, has demonstrated his or her ability to solve or resolve problems related to the subject matter, the work or the project.

REGISTERED DESIGN PROFESSIONAL. An architect or engineer.

ROPE. Wire rope unless otherwise specified.

RUNBACK STRUCTURE. A temporary system of hoistway landing runways, vertical supports and horizontal diaphragms designed to bridge between the hoistway and the parent structure and to transmit both vertical and horizontal loads to the supporting structure and/or foundation.

SCAFFOLD. Any temporary elevated platform and its supporting structure (including points of anchorage) used for supporting workers or workers and material. Includes supported scaffold, suspension scaffold and mobile scaffold.

SINGLE-POINT ADJUSTABLE SUSPENSION SCAFFOLD. A suspension scaffold consisting of a platform suspended by one rope from an overhead support and equipped with means to permit the movement of the platform to desired work levels.

STANDARD GUARDRAIL SYSTEM (SCAFFOLD). See Guardrail System (Scaffold).

STRUCTURAL NET or NETTING. A system of nets capable of complying with the prototype test described in ANSI A10.11-1989.

SUPERSTRUCTURE. The rotating upper frame structure of the machine and the operating machinery mounted thereon.

SUPPORTED SCAFFOLD. One or more platforms supported by outrigger beams, brackets, poles, legs, uprights, posts, frames, including pre-fabricated frames that are mechanized but not motorized, or any similar rigid support, including back structures connecting hoistways to buildings, and including structures where sidewalk protection is constructed as an integral part of the apparatus.

SUSPENSION SCAFFOLD. One or more platforms suspended by ropes or other means from an overhead structure.

SUSTAINED WIND. Winds with a one minute average duration lasting for a one hour period or longer.

SWING. Rotation of the superstructure for movement of loads in a horizontal direction about the axis of rotation.

TOWER. A vertical structural frame consisting of columns and bracing that are capable of supporting working and dynamic loads and transmitting them to the support(s).

TOWER CRANE. A power operated hoisting machine that utilizes a vertical tower with a rotating superstructure and includes a load boom (jib) in order to lift or lower a load and move it horizontally.

TRANSIT. The moving or transporting of a crane from one job site to another.

TRAVEL. The function of the machine moving from one location to another on a job site.

TWO-POINT SUSPENSION SCAFFOLD (SWING STAGE). A suspension scaffold consisting of a platform supported by hangers (stirrups) suspended by two ropes from overhead supports and equipped with means to permit the raising and lowering of the platform to desired working levels.

WHEEL MOUNTED CRANE (MULTIPLE CONTROL STATIONS). A crane consisting of a rotating superstructure, operating machinery, and operator's station and boom, mounted on a crane carrier equipped with axles and rubber-tired wheels for travel, a power source(s), and having separate stations for driving and operating. Its function is to lift, lower, and swing loads at various radii.

WHEEL MOUNTED CRANE (SINGLE CONTROL STATION). A crane consisting of a rotating superstructure, operating machinery, and boom, mounted on a crane carrier equipped with axles and rubber-tired wheels for travel, a power source, and having a single control station for driving and operating. Its function is to lift, lower, and swing loads at various radii.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

Climbing/jumping added L.L. 46/2008 § 1, eff. Dec. 21, 2008.

Dismantling added L.L. 46/2008 § 1, eff. Dec. 21, 2008.

Erection added L.L. 46/2008 § 1, eff. Dec. 21, 2008.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3303: SAFEGUARDS AND MAINTENANCE OF SITE

NYC Administrative Code § 28-BC 3303

3303.1 Equipment.

3303.1.1Machinery.All exposed, electrically charged, moving or otherwise dangerous parts of machines and construction or demolition equipment shall be located, guarded, shielded, or barricaded so as to prevent contact by the public.

3303.1.2Service lines and conduits.Hose lines, wires, ropes, pipes, chains and conduits shall be located so that they will not constitute a tripping hazard. Where it is necessary to carry such lines across sidewalks, or any public way, they shall either be suspended at least 8 feet (2438 mm) above the walks, or suitable chamfered planks or a pedestrian bridge shall be provided.

3303.1.3Contractors sheds.Contractors sheds and offices located within 30 feet (9144 mm) of new construction or existing buildings shall be made of metal or other noncombustible material. Fire retardant treated wood may be used when protected from the weather.

3303.1.4Internal combustion-powered equipment.In addition to the requirements of this chapter, the use of internal combustion-powered equipment shall also comply with the New York City Fire Code.

3303.2Utilities.

3303.2.1Existing services.The location of all existing utilities and service lines shall be determined and adequate measures taken, or devices provided, to safeguard the public and property before such utilities are disturbed. If any utility is to be removed, relocated, or have its service interrupted, the utility company or city agency affected shall be notified at least 72 hours in advance.

3303.2.2Maintaining essential services.Fire preventive, sanitary, or other facilities that have been provided for the protection of life, health, and property shall be continuously maintained and protected unless authorization is obtained

from the agency having jurisdiction to temporarily or permanently disconnect such facility.

3303.2.3Electrical work.All temporary electrical equipment and wiring shall meet the requirements of the New York City Electrical Code, and shall be maintained in compliance with such requirements. Portions of permanent electrical installations may be used for temporary operations provided the requirements of the New York City Electrical Code are met.

The person superintending the work shall notify the utility company affected at least 72 hours before the commencement of work that may affect a power line, above or below ground.

3303.2.4Sanitary facilities.Sanitary facilities shall be provided during construction, remodeling, or demolition activities in accordance with the New York City Plumbing Code.

3303.3Obstruction of sidewalks and streets.No street or sidewalk shall be closed either in whole or in part without a permit from the department of transportation. Such permit shall be displayed at the job site.

The closing or temporary use of streets or sidewalks or the obstruction of any part thereof shall comply with the requirements of the department of transportation.

3303.4Housekeeping.

3303.4.1Maintenance.All areas used by the public shall be maintained free from ice, snow, grease, debris, equipment, materials, projections, tools, or other items, substances, or conditions that may constitute a slipping, tripping, or other hazard.

3303.4.2Waste dumpsters, debris boxes and skip boxes.Waste dumpsters, debris boxes and skip boxes shall comply with the following:

1. Waste dumpsters, debris boxes and skip boxes shall be secured by rope, cable or chocking at wheels at the end of the workday in order to prevent movement. Such waste dumpsters, debris boxes and skip boxes shall not be placed at the edge of the building at any time, except when being moved from the floor or building.

2. Containers containing debris or waste shall be covered at the end of the workday and at any time when full to near the rim. Containers need not be covered when they are not in use or while stored in a fully enclosed space at the end of the workday.

3303.4.3Containers.Sufficient containers of metal, canvas, plastic or other material acceptable to the commissioner shall be available for the storage of all garbage and debris.

3303.4.4Debris.Debris control shall comply with the following:

1. All debris shall be cleaned off floors daily.

2. The roof of the sidewalk shed and the street shall be cleaned of construction or demolition debris daily.

3. A daily inspection shall be made for construction or demolition debris on all floors and if the building is a major building, such inspection shall be noted in the site safety log.

3303.4.5Storage of materials during construction or demolition.Materials stored on the floors of a building during construction or demolition operations shall comply with Sections 3303.4.5.1 and 3303.4.5.2.

3303.4.5.1Housekeeping.Housekeeping shall be conducted as follows:

1. When not being used, materials, equipment and tools that might fall from levels above areas used by the public shall be kept away from edges or openings.

2. When exterior walls are not in place, stored material shall be kept at least 10 feet (3048 mm) back from the perimeter of the building. However, when the floor area is less than 1,000 square feet (304.8 square meters), stored material may be kept not less than 5 feet (1524 mm) back from the perimeter of the building.

3. Material may be stored between 5 and 10 feet (1524 and 3048 mm) back from the perimeter of the building when such material weighs less than 750 pounds (340.2 kg).

4. Material stored on floors of a building or elsewhere on the site shall be secured when not being used.

3303.4.5.2Storage of materials at top working floors.Storage of materials at top working floors shall comply with the following:

1. Material may be stored within 2 feet (610 mm) of the edge of a building provided that such material is stored not more than two stories below the stripping operation on concrete structures, or the uppermost concrete floor on steel frame structures. Such material shall be secured against accidental movement. Storage of material on all other floors shall conform to Section 3303.4.5.1 and shall be secured when not being used.

2. No material shall hang over the edge of a building unless banded and braced preparatory to relocation at the end of the workday. Where such material is so banded and braced, it may overhang the floor of the stripping operation by not more than one-third of its length so long as it is relocated on the next workday for concrete operations.

3. Where the steel mill and lumber mill are located, material may overhang for relocation until the next workday. No more than two floors shall be designated as steel mills or lumber mills.

3303.4.6Storage of combustible material and equipment.Storage of combustible material and other material and equipment that may present a fire hazard shall comply with the New York City Fire Code.

3303.5Removal of waste material.Waste materials shall be removed in a manner that prevents injury or damage to persons, adjoining properties and public rights-of-way.

3303.5.1Removal of combustible waste material.Combustible waste material or combustible debris shall not be permitted to accumulate, and shall be removed from the site at reasonable intervals in accordance with the requirements of the New York City Fire Code.

3303.5.2Dropping or throwing prohibited.No material shall be dropped or thrown outside the exterior walls of a building.

3303.5.3Clogging.Precautions shall be taken to prevent concrete or mortar washings, sand, grit, or any other material that would cause clogging from entering a sewer or drain.

3303.5.4Air pollution.The provisions of the Air Pollution Control Code shall apply in order to prevent particulate matter from becoming airborne.

3303.5.5Chutes.Chutes used in association with the removal of materials shall comply with Sections 3303.5.5.1, 3305.5.2, 3305.5.3, and 3305.5.4.

3303.5.5.1Enclosures.Chute enclosures shall comply with the following requirements:

1. Material chutes that are at an angle of more than forty-five degrees with the horizontal shall be entirely enclosed on all sides, except for openings at the floor levels for the receiving of materials. Such openings shall not exceed 48

inches (1219 mm) in height, measured along the wall of the chute, and all openings, except the top opening, shall be closed and secured when not in use.

2. Chutes at an angle of less than forty-five degrees with the horizontal may be open on the upper side.

3303.5.5.2Chute construction.Chute construction shall comply with the following requirements:

1. Every chute used to convey waste material from a building shall be rigidly supported and braced throughout its height. Chutes less than 24 inches (610 mm) in maximum dimension shall be constructed of not less than 1-inch (25.4 mm) (nominal) wood or 1/8 inch (3.18 mm) thick steel. Chutes more than 24 inches (610 mm) in maximum dimensions shall be constructed of not less than 2-inch (51 mm) (nominal) wood or 3/16 inch (4.76 mm) thick steel.

2. Chutes shall be provided with a metal impact plate where material is forced to change direction while falling.

3. A gate shall be provided at the lower end of every chute to control the loading of material into trucks and to close the chute at all other times. Splashboards or baffles shall be erected to prevent materials from rebounding into the street or under the sidewalk shed.

4. A bumper or curb at least 4 inches by 4 inches (102 by 102 mm) in section shall be provided at each chute opening where such opening is level with, or below, the floor or platform. Every space between the chute and the edge of the opening in the floor or platform shall be solidly planked.

3303.5.5.3Fire retardant construction.When used in the following applications, all chutes constructed of combustible material shall be covered on the exterior with corrugated steel sheeting having a minimum thickness of 24 gauge through their entire height. Alternatively, chutes shall be constructed of non-combustible material:

1. Chutes exceeding 75 feet (22 860 mm) in height.
2. Alteration, repair or partial demolition of buildings where the main use or dominant occupancy is in Group I.

3303.5.5.4Supports.All structural supports of material chutes shall be of noncombustible material.

3303.6Escape hatches.Where salamanders or other heating equipment are used to provide temporary heating during the placing of concrete for a floor, an escape hatch shall be provided from the floor where the concrete is being placed and shall extend through at least one story immediately below such floor. The escape hatch shall be located as near to the center of the building as practical.

3303.6.1Required ladders and metal shields.The escape hatch shall be constructed with at least two ladders enclosed in a metal shield. The ladders shall extend from a distance of 3 feet (914 mm) above the floor under construction to at least two stories below, unless such floor is less than two stories above the lowest floor. The metal shield shall enclose the ladders on all sides from the top of the floor where the concrete is being placed to at least the top of the floor next below. The inside dimensions between faces of the shield shall be not less than 3 feet 8 inches (1118 mm).

3303.6.2Shield space and decking.The space between the shield and the perimeter of the opening in the floor under construction and also between the shield and the perimeter of the opening in the floor next below, shall be decked over with 2-inch (51 mm) or heavier planking covered with plywood or sheet metal so as to make the decking smoke tight. At the termination of the ladders, the opening in the floor shall be covered completely with 2-inch (51 mm) planking or other material of equivalent strength.

3303.7Fire prevention and fire protection.Fire fighting equipment, access at the construction or demolition site and the conduct of all construction or demolition operations affecting fire prevention and fire fighting shall comply with the New York City Fire Code.

3303.7.1Water supply.No hazardous or combustible material shall be kept at the site unless water supply for fire protection, either temporary or permanent, is available at the site.

3303.7.2Fire extinguishers.Fire extinguishers shall be provided in accordance with the New York City Fire Code.

3303.8Standpipe systems during construction, alteration or demolition.During construction, alteration or demolition operations, standpipe systems shall comply with the following:

1. When work reaches a height greater than 75 feet (22 860 mm) in a building for which a standpipe system will be required, a permanent or temporary standpipe meeting the requirements of Section 905 shall be kept in readiness at all times for use by fire fighting personnel. The system shall be a dry system when freezing conditions may be encountered.

2. Existing standpipe systems in structures undergoing demolition shall be maintained as dry standpipes. At the commencement of demolition, the standpipe risers shall be capped above the outlet on the floor immediately below the floor being demolished so as to maintain the standpipe system on all lower floors for Fire Department use. Standpipe hose, nozzles and spanners are not required to be maintained and may be removed at any time. Siamese hose connections shall be kept free from obstruction and shall be marked by a metal sign reading, "Standpipe Siamese Connection" and by a red light at night.

3. The standpipe system may be used for water supply necessary to demolition operations. In freezing weather, such standpipe system shall be completely drained after use to prevent freezing. Existing standpipe systems shall not be utilized to convey compressed air unless the standpipe consists of two or more risers. In such case and upon fire department approval, one of the risers may be used to convey compressed air to any floor or portion of the premises.

3303.9Elements to be maintained during remodeling and additions.Required exits, existing structural elements, fire protection devices and sanitary safeguards shall be maintained at all times during remodeling, alterations, repairs or additions to any building or structure.

Exception: When such required elements or devices are being remodeled, altered or repaired and adequate alternate provisions are made.

3303.10Repair and alteration operations in occupied buildings.Where repairs or alterations are conducted in occupied buildings, barricades, signs, drop cloths, and other protective means shall be erected as required to provide reasonable protection for the occupants against hazard and nuisance. In buildings containing occupied dwelling units, all work shall be performed in accordance with a tenant protection plan as required by Chapter 1 of Title 28 of the Administrative Code.

3303.11Maintenance of exits during construction or demolition.Required means of egress shall be maintained at all times during construction or demolition.

Exception: Where there are approved temporary means of egress systems and facilities.

3303.11.1Temporary stairways in unoccupied buildings.Where a building being constructed reaches a height greater than 50 feet (15 240 mm) or four stories, or where an existing unoccupied building exceeding 50 feet (15 240 mm) in height is altered, at least one temporary lighted stairway shall be provided, unless one or more of the permanent stairways are erected or maintained as the construction progresses. Demolition work shall comply with item 6 of 3306.9.9.

3303.11.1.1Maximum distance.The maximum distance between the working deck of such a building under construction or alteration and the highest floor accessible to a temporary or permanent stair shall be no more than 40 feet or 4 floors. In concrete construction, the working deck is the floor being formed. In steel construction the working

deck is the floor where the metal decking and steel components are being placed before concrete is poured.

3303.12 Temporary elevator or hoist. Whenever construction or demolition work reaches a height greater than 75 feet (22 860 mm), at least one elevator meeting the requirements of Chapter 30, or a hoist meeting the requirements of Section 3318 shall be kept in readiness at all times for Fire Department use. The maximum distance between the highest accessible floor from a temporary elevator or hoist and the working deck of the building under construction or demolition shall be no more than 75 feet (22 860 mm) or 7 floors. In concrete construction, the working deck is the floor being formed. In steel construction the working deck is the floor where the metal decking and steel components are being placed before concrete is poured.

If the travel of the hoist cannot be increased due to inclement weather, it shall be increased by the end of the next working day.

3303.13 Abandoned and discontinued operations.

3303.13.1 Fencing. If any construction or demolition operation is abandoned, discontinued or interrupted, a solid fence meeting the requirements of Section 3307.7 shall be provided to protect the public from potential hazards on the site.

3303.13.2 Filling and grading. When permits have expired and when no permits have been issued within three months of the cessation of excavation operations, the lot shall be filled and graded to eliminate all steep slopes, holes, obstructions, or similar sources of hazard.

Fill shall consist of clean, noncombustible material. The final surface shall be graded in such a manner as to drain the lot, eliminate pockets in the fill, and prevent the accumulation of water, without damaging any foundations on the premises or on adjoining property.

3303.14 Drainage. No condition shall be created as a result of construction or demolition operations that will interfere with natural surface drainage.

Water courses, drainage ditches, etc., shall not be obstructed by refuse, waste building materials, earth, stones, tree stumps, branches, or other debris that may interfere with surface drainage or cause the impoundment of surface waters.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

3303.5.5 renumbered and amended L.L. 8/2008 § 166, eff. July 1, 2008.

3303.5.5.1 renumbered L.L. 8/2008 § 166, eff. July 1, 2008.

3303.5.5.2 renumbered L.L. 8/2008 § 166, eff. July 1, 2008.

3303.5.5.3 renumbered L.L. 8/2008 § 166, eff. July 1, 2008.

3303.5.5.4 renumbered L.L. 8/2008 § 166, eff. July 1, 2008.

3303.11.1 amended L.L. 8/2008 § 166, eff. July 1, 2008.

3303.11.1.1 amended L.L. 8/2008 § 166, eff. July 1, 2008.

3303.12 open par amended L.L. 8/2008 § 166, eff. July 1, 2008.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3304: EXCAVATION

NYC Administrative Code § 28-BC 3304

3304.1 Scope.

The provisions of this section shall apply to all excavations, including those made for the purposes of taking earth, sand, gravel, or other material, as well as for purposes of construction or demolition. During excavation, the provisions of Section 3309 for the protection of adjoining property shall also apply.

3304.2Excavation and fill.Excavation and fill operations shall be conducted in such a manner that life and property are not endangered.

3304.2.1Removal of wood.Stumps and roots shall be removed from the soil to a depth of at least 12 inches (305 mm) below the surface of the ground in the area to be occupied by the building. Wood forms which have been used in placing concrete, if within the ground or between foundation sills and the ground, shall be removed before a building is occupied or used for any purpose. Before completion, loose or casual wood shall be removed from direct contact with the ground under the building.

3304.3Notification.

3304.3.1Notification of the department.No earthwork within the property line shall commence unless the permit holder notifies the department, via phone or electronically, at least 24 hours, but no more than 48 hours prior to the commencement of such work. The notification shall state the date that such earthwork is to commence. Should the notification date fall on a weekend or official holiday, the permit holder shall notify the department on the last business day before the commencement date.

In the event that the earthwork does not begin on the date provided in the notification to the department, the permit holder shall notify the department of its cancellation not more than 24 hours prior to but no later than the date for which the earthwork was scheduled. Should the cancellation date fall on a weekend or an official holiday, the permit holder shall notify the department on the next business day after the intended commencement date. The permit holder shall

notify the department of a new intended commencement date pursuant to the provisions above.

The commissioner may issue a stop work order if there is a failure to provide notice as required in this section and if the work is found to violate any of the provisions of this code, the Zoning Resolution, or other applicable laws or rules. Upon the issuance of such stop work order, the work shall be stopped for a minimum of three business days to enable the department to take any other appropriate action to ensure that the earthwork is being performed in a safe manner. The earthwork shall not recommence until the stop work order has been lifted.

Exceptions:

1. Hand excavation work that extends 5 feet (1524 mm) or less below the grade existing at the time of earthwork commencement and is 2 feet (610 mm) or more from an existing foundation. This exception shall not apply to any hand excavation work performed anywhere in existing or demolished basements or cellars that adjoin existing foundations.

2. Excavations for geotechnical observation that do not exceed 10 feet (3048 mm) in length, width or diameter and that are excavated under the supervision of a registered design professional.

3. Work on cemetery grounds for burials.

4. Emergency work performed by the Department of Housing Preservation and Development (HPD) or other agency as directed by the commissioner or work on unsafe buildings performed by HPD or other agency pursuant to a precept.

3304.3.2 Notification of adjacent building owners. When an excavation to a depth of 5 to 10 feet (1524 mm to 3048 mm) is to be made within 10 feet (3048 mm) of an adjacent building, or when any excavation over 10 feet (3048 mm) is to be made anywhere on the site, the person causing an excavation to be made shall provide written notice to the owners of the adjacent building or buildings not less than 10 days prior to the scheduled starting date of the excavation. The written notice shall provide a description of the work to be performed, the timeframe and schedule, and contact information of the person causing the excavation and of the department. Foundation or earthwork that is to be done with the use of explosives shall also be subject to the notification requirements set forth in Sections 3307.5.3 and 3307.5.4 of the New York City Fire Code.

3304.3.3 Underground construction operations. Whenever excavation or drilling, for any purpose, to a depth greater than 100 feet (30 480 mm) is proposed in a block that has any part of its boundary falling within 500 feet (152 m) horizontal distance from the centerline of any water tunnel as measured at or near the surface (the "Corridor"), or whenever excavation of any depth is proposed within 200 feet (60 960 mm) of any subway, an approval and permit shall be obtained from the New York City Department of Environmental Protection and from the New York City Transit Authority, respectively. The owner of the premises or the contractor shall notify the New York City Department of Environmental Protection or the New York City Transit Authority prior to commencement of any such activity. The issuance of any permit or approval by the department shall not relieve the applicant of the obligation to comply with any approval or permitting requirements of the New York City Department of Environmental Protection or the New York City Transit Authority.

3304.3.3.1 Excavations requiring permit from the New York State Department of Environmental Conservation. Whenever drilling or excavation is planned deeper than five hundred (500) feet below grade, a permit may be required from the New York State Department of Environmental Conservation. The issuance of any permit or approval by the department shall not relieve the applicant of the obligation to comply with any approval or permitting requirements of the New York State Department of Environmental Conservation. Whenever any drilling for borings or geothermal wells is planned, the owner of the premises or the contractor shall notify the New York State Department of Environmental Conservation prior to commencement of such activity to determine if a permit is necessary.

3304.4 Protection of sides of excavations.

3304.4.1 Shoring and bracing and sheeting. The sides of all excavations, including related or resulting embankments, that are 5 feet (1524 mm) or greater in depth or height measured from the level of the adjacent ground surface to the deepest point of the excavation, shall be protected and maintained by shoring, bracing, sheeting, sheet piling, or by other retaining structures as may be necessary to prevent the sides of the excavation from caving in before permanent supports are provided. Such methods of protection shall be subject to special inspection in accordance with the provisions of Chapter 17.

Alternatively, excavation sides may be sloped not steeper than 45 degrees or stepped so that the average slope is not steeper than 45 degrees with no step more than 5 feet (1524 mm) high, provided such slope does not endanger any structure, including subsurface structures. Deviation from the foregoing limitations for cut slopes shall be permitted only upon the completion of a soil investigation report acceptable to the commissioner.

Exception: Rock cut excavation.

3304.4.1.1 Sheet piling and bracing. Sheet piling and bracing used in trench excavations shall be at least equivalent in strength to that specified in Tables 3304.4.1.1(1) and 3304.4.1.1(2). Table 3304.4.1.1 (1) Minimum Sizes of Timber Bracing and Timber Sheet Piling for Trenches Four Feet Wide or Less

Depth of Trench (ft.)	Sheet Piling Size (in.)	Horizontal Spacing (ft.)	Stringers Size (in.)	Vertical Spacing (ft.)	Cross Bracing Size (in.)	Horizontal Spacing (ft.)
Hard and solid soil	5-102x6	6	2x6	6	2x6	6
10-152x6	64	2x6	6	2x6	4	More than 152x6
tight	4x8	4	4x8	6	Soil likely to crack or crumble	5-102x6
3	2x6	5	2x6	5	10-152x6	2
2	2x6	4	2x6	4	More than 152x6	tight
4	2x6	4	2x6	4	More than 152x6	tight
4	4x10	4	4x10	6	Soft, sandy filled-in loose soil	5-102x6
tight	4x6	6	4x6	6	10-152x6	tight
4	2x6	5	4x6	6	More than 152x6	tight
4	4x12	4	4x12	6	Where hydrostatic pressure exists	To 102x6
tight	6x8	4	6x8	6	More than 103x6	tight
6	6x10	4	6x10	6	Note for Table 3304.4.1 (1): a Steel sheet piling and bracing of equivalent strength may be substituted for wood sheet piling and timber bracing.	Note: For SI: 1 inch = 25.4 mm

[SEE tabular material in printed version]

Note for Table 3304.4.1(2): a Steel sheet piling and bracing of equivalent strength may be substituted for wood sheet piling and timber bracing. Note: For SI: 1 inch = 25.4 mm

3304.4.2 Rainstorms. All sides or slopes of excavations or embankments shall be inspected after rainstorms, or any other hazard-increasing event, and safe conditions shall be restored.

3304.4.3 Fence. Every site with an excavation shall be enclosed with a fence that meets the requirements of Section 3307.7.

3304.4.4 Guardrail. A standard guardrail that meets the requirements of Section 3307.8, or a solid enclosure at least 3 feet 6 inches (1067 mm) high shall be provided along the open sides of excavations, except that such standard guardrail or solid enclosure may be omitted from a side or sides when access to the adjoining area is precluded, or where side slopes are one vertical to three horizontal or flatter.

3304.4.5 Placing of excavation equipment and excavated material. Excavated material and superimposed loads such as equipment and trucks shall not be placed closer to the edge of the excavation than a distance equal to one and one-half times the depth of such excavation, unless the excavation is in rock or unless the sides of the excavation have been sloped or sheet piled (or sheeted) and shored to withstand the lateral force imposed by such superimposed loads. When sheet piling is used, it shall extend at least 6 inches (152 mm) above the natural level of the ground. In the case of open excavations with side slopes, the edge of excavation shall be taken as the toe of the slope.

3304.4.6 Mechanical diggers. Where trenching more than 5 feet (1524 mm) in depth is done by a mechanical digger, the required protection shall follow the boom as closely as practical.

3304.5 Underpinning requirements. The requirements of Section 1814 shall apply.

3304.6 Retaining walls. The requirements of Section 1806 shall apply.

3304.7Access. Every excavation shall be provided with a safe means of ingress and egress that is kept available at all times.

3304.8Drainage. All excavations shall be drained and the drainage maintained as long as the excavation continues or remains. Where necessary, pumping shall be used, provided proper permits are obtained from the New York City Department of Environmental Protection.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

3304.3.2 amended L.L. 26/2008 § 8, eff. July 1, 2008.

3304.3.2 amended Int. No. 732-A of 2008 § 8, passed City Council May 28,

2008, eff. July 1, 2008 and upon the approval of the Mayor.



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Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3305: ERECTION OPERATIONS

NYC Administrative Code § 28-BC 3305

3305.1 Protection of pedestrians and adjoining property.

During erection operations, the applicable provisions of Sections 3307, 3308, and 3309 shall apply.

3305.2 Structural steel assembly. The requirements of Section 2205.6.4 shall apply.

3305.3 Concrete formwork. The requirements of Section 1906 shall apply.



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Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3306: DEMOLITION

NYC Administrative Code § 28-BC 3306

3306.1 Scope.

All full demolition and partial demolition operations shall be performed in accordance with the requirements of this section.

3306.2 Protection of pedestrians and adjoining property. Demolition operations shall not commence until the applicable pedestrian and adjoining property protection is in place as required by Sections 3307, 3308, and 3309.

3306.2.1 Safety zone. A safety zone approved by the commissioner shall be provided around the demolition area. Fences that meet the requirements of Section 3307.7 shall be erected to prevent persons other than workers from entering such safety zone.

Exception. Partial demolition operations limited to the interior components of the building where mechanical demolition equipment, other than handheld devices, are not used.

3306.3 Notification. The permit holder shall notify the department and adjoining building owners prior to the commencement of full and partial demolition operations in accordance with Sections 3306.3.1 and 3306.3.2.

3306.3.1 Notification of the department. The permit holder shall notify the department via phone or electronically, at least 24 hours, but no more than 48 hours prior to the commencement of such work.

3306.3.2 Notification of adjoining property owners. Adjoining property owners shall be notified of upcoming demolition operations in writing not less than 10 days prior to the scheduled starting date of the demolition. The written notice shall provide a description of the work to be performed, the timeframe and schedule, and contact information of the person causing the demolition and of the department. Demolition or removal work that is to be done with the use of explosives shall also be subject to the notification requirements set forth in Sections 3307.5.3 and 3307.5.4 of the New York City Fire Code.

Exception. Partial demolition operations limited to the interior components of the building where mechanical demolition equipment, other than handheld devices, are not used.

3306.4Mechanical demolition.Where mechanical demolition equipment, other than handheld devices, is to be used in the full or partial demolition of a building or is to be used to remove debris or move material, approval of the commissioner for the use of the mechanical demolition equipment must be obtained prior to the commencement of demolition operations.

Unless permitted by the commissioner, mechanical demolition equipment shall not be used where a building or portion thereof occupied by one or more persons is located within the safety zone.

3306.5Submittal documents for demolition.Where mechanical demolition equipment, other than handheld devices, are to be used in the full or partial demolition of a building from within the building, or are to be used within the building to remove debris or move material, documents prepared by or under the supervision of an engineer must be submitted and approved by the department before demolition work begins. The documents shall be signed and sealed by the engineer. The approved set of documents shall be kept at the site at all times and be accessible for inspection. At a minimum,the demolition documents shall include the following:

1. Plans, sections, and details of the building or portion thereof to be demolished clearly showing the extent, sequence, and means and methods of demolition.
2. Listing and description of all proposed demolition equipment, other than hand held devices, to be used in demolition, including the scope of equipment work and positioning of equipment on the existing structure. Description of equipment shall include calculations showing adequacy of the existing structure to support loads imposed by such equipment. If more than one piece of demolition equipment is proposed to be used at the same time, the effect of the simultaneous loads imposed on the existing structure shall be described and investigated.
3. Bracing and shoring necessary to support all demolition operations and equipment through all sequences of full or partial demolition.
4. Description of compliance with the provisions of Section 3306.9.

3306.5.1Partial Demolition operations.The registered design professional of record shall submit details of the partial demolition operation as part of the construction documents filed for alteration of the building provided:

1. Where mechanical demolition equipment, other than handheld devices, is used, construction documents shall show compliance with all the requirements of Section 3306.5.
2. Where mechanical demolition equipment is not used, the registered design professional shall show at a minimum:
 - 2.1. Plans, sections, and details of the building or portion thereof to be demolished clearly showing the extent, sequence, and means and methods of demolition.
 - 2.2. Bracing and shoring necessary to support all demolition operations through all sequences of the partial demolition.
 - 2.3. Description of compliance with the applicable provisions of Section 3306.9.

3306.6Special inspection.Where mechanical demolition equipment, other than handheld devices, is to be used in the full or partial demolition of a building from within the building, or is to be used within the building to remove debris or move material, such demolition operation shall be subject to special inspection in accordance with the provisions of Chapter 17. The special inspector shall visit the site a minimum of three times: before demolition operations start,

during demolition, and at the conclusion of demolition.

3306.7Demolition of weakened structures.Where a structure to be demolished has been partially wrecked or weakened by fire, flood, explosion, age, or other causes, it shall be shored or braced to the extent necessary to permit orderly full demolition or partial demolition without collapse. The necessary measures to ensure a safe demolition shall be determined by the owner's registered design professional and shall be approved by the commissioner.

3306.8Full and partial demolition of structural steel, reinforced concrete, and heavy timber construction.Steel, reinforced concrete and heavy timber construction shall be demolished column length-by-column length and tier-by-tier. Any structural member that is being dismembered shall not support any load other than its own weight, and such member shall be chained or lashed in place to prevent any uncontrolled swing or drop.

Structural members shall not be thrown or dropped from the building, but shall be slowly and carefully lowered by hoists equipped with adequate brakes and non-reversing safety devices.

3306.9Full demolition and partial demolition operations.In addition to the requirements of Article 105 of chapter 1 of Title 28 of the Administrative Code, the following requirements shall apply to all full demolition and partial demolition operations.

3306.9.1Utilities and service lines.Service utility connections shall be discontinued and capped, and certifications to that effect issued by the representative utility company shall be filed with the department.

Exception. Partial demolition operations.

3306.9.2Party wall exits, fire exits.No party wall balcony or horizontal fire exit shall be demolished, removed, or obstructed in any manner that would destroy the full effectiveness of such fire exit as a means of egress, unless a substitute means of egress meeting the requirements of Chapter 10 has been provided.

3306.9.3Dust.Dust producing operations shall be wetted down to the extent necessary to control the dust.

3306.9.4Water accumulation.Provision shall be made to prevent the accumulation of water or water damage to any foundations on the premises or to the adjoining property.

3306.9.5Temporary elevators and standpipe systems.See Sections 3303.8 and 3303.12 for requirements.

3306.9.6Sprinkler systems.When existing sprinkler systems with siamese hose connections are present in structures undergoing full or partial demolition, such systems shall be maintained as a non-automatic sprinkler system. When demolition starts, the sprinkler risers shall be capped immediately below the floor being demolished so as to maintain the sprinkler system on all lower floors for Fire Department use. Siamese hose connections shall be kept free from obstruction and shall be marked by a metal sign reading "Sprinkler Siamese Connection" and by a red light at night.

3306.9.7Use of explosives.The use of explosives in demolition operations shall conform to the requirements and limitations imposed by the New York City Fire Code and Section 3312.

3306.9.8Hazards to be removed.Hazards shall be removed in accordance with the following requirements:

1. Before commencement of actual demolition, all glass in windows, doors, skylights, and fixtures shall be removed.

2. In any structure more than 25 feet high (7620 mm), any window or other exterior wall opening that is within 20 feet (6096 mm) of a floor opening used for the passage of debris from floors above shall be solidly boarded up or otherwise substantially covered, unless such window or opening is so located as to preclude the possibility of any person being injured by material that may fall from such window or opening.

3. Before demolition is started, the cellar and all floors shall be thoroughly cleaned of combustible materials and debris. All fixtures and equipment that would cause voids in the fill shall be removed. If the cellar is to be filled to grade, the first floor construction shall be removed and the existing cellar floor shall be broken up to the extent necessary to provide ground drainage and prevent accumulation of water. If the cellar is not to be filled, positive cellar drainage shall be provided.

4. All asbestos shall be removed and certifications to that effect shall be filed with the department and the Department of Environmental Protection.

3306.9.9Walls.Demolition of walls and partitions shall comply with the following requirements:

1. Demolition of walls and partitions shall proceed in a systematic manner, and all work above each tier of floor beams shall be completed before any of the supporting structural members are disturbed.

2. Sections of masonry walls shall not be loosened or permitted to fall in such masses as to affect the carrying capacity of floors or the stability of structural supports.

3. No wall, chimney, or other structural part shall be left in such condition that it may collapse or be toppled by wind, vibration or any other cause.

4. No section of wall with a height more than 22 times its thickness shall be permitted to stand without bracing designed by a registered design professional.

5. Where brick or masonry chimneys cannot be safely toppled or dropped, all materials shall be dropped down on the inside of such chimneys.

6. All enclosed vertical shafts and stairs shall be maintained enclosed at all floors except the uppermost floor being demolished, and all work on the uppermost floor shall be completed before stair and shaft enclosures on the floor below are disturbed. All hand rails and banisters shall be left in place until actual demolition of such floor is in progress.

3306.9.10Floors.No bearing partition shall be removed from any floor until the floor framing system on the floor above has been removed and lowered. All header beams and headers at stair openings and chimneys shall be carefully examined, and where required shall be shored from the cellar floor through successive floors. All operations shall be continually inspected as the work progresses to detect any hazards that may develop.

3306.9.11Storage of material.Material shall not be stored on catch platforms, working platforms, floors, or stairways of any structure, except that any one floor of a building to be demolished may be used for the temporary storage of material when such floor can be evaluated by an engineer and proven to be of adequate strength to support one and one-half times the load to be superimposed. Such evaluation by the engineer shall be maintained by the permit holder and made available to the department upon request.

Storage spaces shall not interfere with access to any stairway or passageway, and suitable barricades shall be provided so as to prevent material from sliding or rebounding into any space accessible to the public. All material shall be safely piled in such storage locations in a manner that will not overload any part of the structure or create any hazard.

3306.9.11.1Examination.Before any material is stored on any floor, the existing flooring adjacent to bearing walls, shear walls, beams and columns shall be removed and the connections of the floor framing system to the bearing walls, shear walls, beams and columns shall be carefully examined by a competent person to ascertain their condition and adequacy to support such material. If the connections are found to be in poor condition or inadequate to support the stored material, no material shall be deposited on the floor until these connections are shored from the cellar floor through each successive floor or otherwise strengthened to safely support such material.

3306.9.11.2 Removal of floor slabs for storage. In buildings of noncombustible construction, floor slabs to an elevation of not more than 25 feet (7620 mm) above the legally established curb level may be removed to provide temporary storage for debris, provided that:

1. The stored debris is piled with sufficient uniformity to prevent lateral displacement of interior walls or columns as determined by a registered design professional.
2. The height of the piled material will not burst the exterior walls due to horizontal loading as determined by a registered design professional.
3. The operation does not otherwise endanger the stability of the structure.

3306.9.11.3 Cellar storage. Debris stored in the cellar shall not be piled above the level of the adjacent exterior grade unless the contractor provides sheet-piling, shoring, bracing, or such other means necessary to insure the stability of the walls and to prevent any wall from collapsing due to horizontal loading created by the debris as determined by a registered design professional.

3306.9.12 Removal of material. Debris, bricks, and similar material shall be removed through openings in the floors of the structure, or by means of chutes, buckets, or hoists that comply with the provisions of this chapter. Openings in any floor shall not aggregate more than 25 percent of the area of that floor unless it can be shown by submission from a registered design professional to the satisfaction of the commissioner that larger openings will not impair the stability of the structure.

Every opening used for the removal of debris in every floor, except the top or working floor, shall be provided with a tight enclosure from floor to floor, equivalent to that afforded by planking not less than 2 inches (51 mm) in thickness. As an alternative, in buildings not more than 6 stories in height, such openings may be protected by a tight temporary covering equivalent to that afforded by planks not less than 2 inches (51 mm) in thickness and laid close. Wherever such covering has been temporarily removed to permit debris removal, floor openings shall be protected by standard guardrails that meet the requirements of Section 3307.8. Such covering shall be promptly replaced in position upon the ceasing of such work at the end of each workday.

Every opening not used for the removal of debris in any floor shall be solidly planked over.

3306.9.13 Rodent extermination. A licensed exterminator shall effectively treat the premises for rodent extermination as per the requirements of the Department of Health and Mental Hygiene.

Exception. Partial demolition operations.

3306.10 Completion of Demolition Operations. All work required for structural stability and permanent waterproofing of adjacent buildings must be completed prior to demolition sign-off.

At the completion of demolition operations, unless new construction is to follow within a period of three months, the site shall be graded, drained, or otherwise protected as provided in Section 3303.13.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

3306.3.2 amended L.L. 26/2008 § 9, eff. July 1, 2008.

3306.3.2 amended Int. No. 732-A of 2008 § 9, passed City Council May 28,

2008, eff. July 1, 2008 and upon the approval of the Mayor.

3306.5 amended L.L. 8/2008 § 167, eff. July 1, 2008.



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SECTION BC 3307: PROTECTION OF PEDESTRIANS

NYC Administrative Code § 28-BC 3307

3307.1 Protection required.

Pedestrians shall be protected during construction, alteration, remodeling, or demolition activities as required by this section and the rules of the Department of Transportation. Signs shall be provided to direct pedestrian traffic.

3307.1.1 Signs. Other than as specified in Section 3301.10, there shall be no information, pictorial representation, or any business or advertising messages posted on a sidewalk shed, bridge, fence, or other structure listed in this section that is erected at the construction or demolition site.

Where a protective structure required by this section obscures from view a lawful existing sign, a temporary sign may be installed in accordance with Section 3301.10.

No illuminated signs shall be permitted on any protective structure required by this section.

3307.2 Sidewalks and walkways. A sidewalk, walkway, or temporary walkway shall be provided for pedestrian travel in front of every construction or demolition site unless the Department of Transportation authorizes the sidewalk to be fenced or closed.

3307.2.1 Temporary walkways. Temporary walkways shall be of sufficient width to accommodate the pedestrian traffic, but in no case shall it be less than 5 feet (1524 mm) in width, and shall be provided with a durable walking surface.

All temporary walkways shall be illuminated at all times either by natural or artificial light. The level of illumination shall be the equivalent of that produced by 200 watt, 3400 lumen minimum, standard incandescent lamps enclosed in vandal-proof fixtures and spaced 15 feet (4572 mm) apart and 8 feet (2438 mm) above the floor level. Artificial lighting units shall be inspected nightly; and burned out or inoperative units shall be replaced or repaired immediately.

Temporary walkways shall be provided with adequate slopes so that they are accessible and shall be designed to support all imposed loads, and in no case shall the design live load be less than 150 pounds per square foot (732.3kg/m²).

Where permission has been granted by the Department of Transportation to locate a temporary walkway beyond the curb line, such temporary walkway shall be provided with a guardrail in accordance with the Department of Transportation's requirements.

3307.2.2Foot bridges.Foot bridges shall be of sufficient width to accommodate the pedestrian traffic, but in no case shall it be less than 5 feet (1524 mm) in width, and shall be provided with a durable walking surface.

All foot bridges shall be illuminated at all times either by natural or artificial light. The level of illumination shall be the equivalent of that produced by 200 watt, 3400 lumen minimum, standard incandescent lamps enclosed in vandal-proof fixtures and spaced 15 feet (4572 mm) apart and 8 feet (2438 mm) above the floor level. Artificial lighting units shall be inspected nightly; and burned out or inoperative units shall be replaced or repaired immediately.

Foot bridges shall be provided with adequate slopes so that they are accessible and shall be designed to support all imposed loads and in no case shall the design live load be less than 150 pounds per square foot (732.3 kg/m²). The walkway on such bridge shall be provided with guardrails for its entire length and shall have cleats to prevent slipping. Where planks are used to pave the walkway, they shall be laid close and securely fastened to prevent displacement. Planks shall be of uniform thickness, and all exposed ends on ramps shall be provided with beveled fillers to eliminate tripping hazards.

3307.3Protection of sidewalks, walkways and temporary walkways.Unless the street is officially closed to the public during construction or demolition operations pursuant to a permit from the Department of Transportation, the following minimum safeguards shall be provided for the protection of the public.

Exception. Partial demolition operations limited to the interior components of the building.

3307.3.1Sidewalk shed.A sidewalk shed that meets the requirements of Section 3307.6 shall be erected as follows:

1. When a structure higher than 40 feet (12 192 mm) is to be constructed and the horizontal distance from the top of the structure to the inside edge of the sidewalk, walkway or temporary walkway is equal to one-half or less of the height of the structure.

2. When a structure higher than 25 feet (7620 mm) is to be demolished and the horizontal distance from the top of the structure to the inside edge of the sidewalk, walkway or temporary walkway is equal to one-half or less of the height of the structure, or when a structure 25 feet (7620 mm) or less is to be demolished and a sidewalk shed is required by the commissioner as part of a safety zone per Section 3306.2.1.

3. When, regardless of the height of the structure or the horizontal distance between the structure and the sidewalk, walkway or temporary walkway, material or debris is to be moved by a hoist, crane, derrick, or chute over a sidewalk, walkway or temporary walkway that is not closed to the public.

4. When a portion of a facade over 40 feet (12 192 mm) above curb level is being altered or repaired and the horizontal distance from the portion of the structure being altered or repaired to the inside edge of the sidewalk, walkway or temporary walkway is less than one-half the height of the structure being altered or repaired.

Exception: Access to walkways that are not under the jurisdiction of the Department of Transportation, and that are located in an area that is within a distance equal to or less than half the height of the highest work area, may be closed off by the authority having jurisdiction in lieu of providing a sidewalk shed provided the walkway is not required as part of the means of ingress or egress for a building.

3307.3.2Fence.All new construction or demolition sites, regardless of the height of the building to be constructed or demolished, shall be enclosed with a fence that meets the requirements of Section 3307.7.

A fence may be used in lieu of a sidewalk shed when a structure higher than 40 feet (12 192 mm) is to be constructed, or a structure higher than 25 feet (7620 mm) is to be demolished, and the horizontal distance from the structure being built or demolished to the inside edge of the sidewalk, walkway or temporary walkway is between one-half and three-quarters of the height of the structure.

3307.3.3Guardrail.For cases that do not fall within the circumstances described in Sections 3307.3.1 and 3307.3.2, a standard guardrail that meets the requirements of Section 3307.8 may be constructed along the inside edge of the sidewalk, walkway or temporary walkway. The rail shall be returned at its ends to the extent necessary to effectively close off the site.

If permission to close the sidewalk has been obtained from the Department of Transportation, the railing may be constructed along the curb or outside of the curb to such extent as approved by the Department of Transportation.

3307.3.4Openings.Openings in sidewalk sheds, fences, barriers, and railings for loading and unloading purposes shall be kept closed at all times except during actual loading and unloading operations.

3307.4Warning signs and lights.Warning signs and lights shall be installed to protect the public from the hazards of construction or demolition sites in accordance with Sections 3307.4.1 to 3307.4.3.

3307.4.1Obstructions and openings.Where a material pile or other obstruction, or an excavation, opening, or other hazard is located in or adjacent to a public way, such hazard shall be indicated by red flags or signs during daylight hours, and by red lanterns, red lights, oil flares, flashing beacons, lighted signs, or equivalent devices from sunset to sunrise. Such warning devices shall be located no more than 30 feet (9144 mm) apart.

3307.4.2Dangerous areas.In areas where special danger to the public exists, such as at vehicle entrances and exits, hoisting areas, points of storage of explosives or highly flammable material, or discharge ends of chutes, descriptive warning signs shall be provided. Such warning signs shall contain the word "DANGER" in prominent letters and, where in, or adjacent to, a public way, shall be illuminated from sunset to sunrise. Barricades and/or designated personnel shall be provided to the extent necessary to keep the public away from such areas or to guide them around the areas.

3307.4.3Vehicular traffic.Whenever any work is being performed over, on, or in close proximity to a highway, street, or similar public way, control and protection of traffic shall be provided by barricades, signals, signs, flagperson, or other devices, equipment, and personnel in accordance with the requirements of the Department of Transportation.

3307.5Watchperson and flagperson.

3307.5.1Watchperson.Where a building being constructed or demolished occupies a ground area between 5,000 square feet (1524 m²), and 40,000 square feet (12 192 m²), a competent watchperson shall be on duty at the site during all hours when operations are not in progress. Where the construction or demolition area occupies a ground area of more than 40,000 square feet (12 192 m²), at least one additional watchperson shall be on duty for each additional 40,000 square feet (12 192 m²) of construction or demolition area, or fraction thereof. The watchperson shall be familiar with the location of street fire alarm boxes and the location and use of fire fighting equipment on the job site.

3307.5.2Flagperson.A flagperson shall be provided whenever intermittent operations are conducted on, or adjacent to, areas open to use by persons other than workers, or when dangerous operations, such as blasting, may affect such areas.

3307.6Sidewalk sheds.Sidewalk sheds shall be erected when required by Section 3307.3.1. No sidewalk shed shall be erected without a permit in accordance with the requirements of Chapter 1 of Title 28. Following the receipt of a

permit to erect a sidewalk shed, the permit holder shall post a sign on the sidewalk shed that meets the requirements of Section 3301.9.5.

Every sidewalk shed deck shall be designed and constructed as a heavy duty sidewalk shed to carry a live load of at least 300 pounds per square foot (1464.6 kg/m²). However, a light duty sidewalk shed constructed to carry a live load of 150 pounds per square (732.3 kg/m²) foot may be used when the building to be constructed, altered, or demolished is less than 100 feet (30 480 mm) in height.

Exception: Sidewalk sheds that provide a base for a scaffold or contractor's shed shall be designed by an engineer to have a live load capable of supporting the scaffold or contractor's shed plus an additional 200 pounds per square foot (976.4 kg/m²). No storage is allowed on sidewalk sheds that support scaffolds or contractor sheds unless the sidewalk shed has been designed to have a live load capable of supporting the scaffold or contractor's shed, the total storage load, and an additional 200 pounds per square foot (976.4 kg/m²). The ground where the shed is to be constructed shall be examined by an engineer to determine it is capable of supporting the total load.

3307.6.1 Sidewalk shed required. When a sidewalk shed is required for the construction or alteration of a structure, the work shall stop at a height of 40 feet (12 192 mm) unless, and until, the sidewalk shed has been completed. Such shed shall remain in place until the structure is enclosed, all exterior work completed and the sash is glazed above the second story, the exterior of the facade is cleaned down, and until completion of all outside handling of material, equipment and machinery, and all dismantling of material hoists, or climber or tower cranes including the use of a derrick in their removal, above the second story.

When a sidewalk shed is required for the demolition of a structure, the sidewalk shed shall be completed before any demolition work is performed. Such shed shall remain in place until the structure has been razed to the height of the shed.

3307.6.2 Areas to be protected. Protection shall be provided for those sidewalks or walkways that are in front of the building to be constructed, altered, or demolished. Sidewalks or walkways in a plaza or other similar space that lead from the street to an entrance or exit into or out of the building that cannot be officially closed shall be similarly protected.

Where deemed necessary by the commissioner, the deck shall cover the entire width of the sidewalk or walkway in front of the building, except for reasonably small clearances at the building line and the curb. In all other instances, the sidewalk shed shall protect the sidewalk or walkway to a minimum 5 foot (1524 mm) width. Sidewalk sheds may extend beyond the curb to such extent as may be approved by the Department of Transportation pursuant to a permit from such department.

Unless constructed solely to comply with Section 3307.3.1, item 3, sidewalk sheds shall extend 5 feet (1524 mm) past the building when the building is less than 100 feet (30 480 mm) in height, and 20 feet (6096 mm) past the building when the building is over 100 feet (30 480 mm) in height, regardless of whether such extensions are in front of the property being developed or in front of adjacent property. Extensions of sidewalk sheds complying with the foregoing shall be constructed so as not to unreasonably obstruct, either visually or physically, entrances, egress, driveways, and show windows of adjacent properties.

3307.6.3 Design of sidewalk sheds. All sidewalk sheds shall be designed by an engineer.

Exception: Sidewalk sheds that follow a standard design approved by the department or the Board of Standards and Appeals.

3307.6.4 Construction of sidewalk sheds. Sidewalk sheds shall be constructed in accordance with the following:

1. Sidewalk sheds shall be constructed out of wood, steel, or other materials having equivalent strength and

suitability.

2. The members of the sidewalk shed shall be adequately braced and connected to prevent displacement or distortion of the framework. Where posts supporting the shed deck are placed beyond the curb, such posts shall be protected against displacement by vehicles as directed by the Department of Transportation. Such placement shall require a permit from the Department of Transportation.

3. The upright members of the sidewalk shed shall be plumb. The tolerance is $L/100$. L is measured as the distance from the ground to the first x-brace or bottom of the beam.

4. The deck of the sidewalk shed shall consist of planking closely laid, and made tight.

5. Unless the top deck of the sidewalk shed is built solidly against the face of the structure in such a manner that no material can fall onto the sidewalk, the side of the shed toward the structure shall be solidly sealed with wood or other suitable material for the full height of the shed. Solid sliding or in swinging gates may be provided as necessary for the proper prosecution of the work.

6. The outer side and ends of the deck of the shed shall be provided with a substantial enclosure at least 3 feet 6 inches (1067 mm) high. Such enclosure may be vertical or inclined outward at approximately 45 degrees, and shall consist of boards laid close together and secured to braced uprights, of galvanized wire screen not less than no. 16 steel wire gage with a 1/2 inch (13 mm) mesh, of corrugated metal, or of solid plywood. Temporary removal of portions of the enclosure shall be permitted for handling material.

7. All sidewalk sheds shall provide protection for the full width of the shed extending upward at an angle of 45 degrees from the ends of the deck and outward a horizontal distance of at least 5 feet (1524 mm) beyond the ends of the shed. Such sloping end protection shall be constructed to meet the requirements of numbered items two and three with substantial outriggers bearing on and securely attached to the deck.

8. The passageway under the shed shall have a minimum clear ceiling height of 8 feet (2438 mm).

3307.6.5 Use and maintenance of sidewalk sheds. The use of sidewalk sheds shall be in accordance with the following:

1. Material and debris shall not be stored on sidewalk sheds unless the shed has been so designed for storage in accordance with rules promulgated by the commissioner.

2. The underside of sidewalk sheds shall be lighted at all times either by natural or artificial light. The level of illumination shall be the equivalent of that produced by 200 watt, 3400 lumen minimum, standard incandescent lamps enclosed in vandal-proof fixtures and spaced 15 feet (4572 mm) apart and 8 feet (2438 mm) above the floor level. Artificial lighting units shall be inspected nightly; and burned out or inoperative units shall be replaced or repaired immediately.

3307.7 Fences. When required by this code, fences shall be at least 8 feet (2438 mm) high, and constructed of wood or other suitable material. They shall be built solid for their entire length, except for openings with solid sliding or in swinging gates as are required for the proper prosecution of the work, and for viewing panels, which shall be blocked with plexiglass or equivalent nonfrangible material.

The fence shall be constructed along the inside edge of the sidewalk, walkway or temporary walkway. If permission to close the sidewalk has been obtained from the Department of Transportation, such fence may be erected along the curb or outside of the curb to such extent as approved by the Department of Transportation. The fence shall be returned at its ends to the extent necessary to effectively close off the site.

3307.8Standard guardrail.A standard guardrail shall consist of a 2 inch by 4 inch (51 by 102 mm) wood top rail or equivalent capable of withstanding, without failure, a force applied in any downward or horizontal direction at any point along its top edge of at least 200 pounds (90.7 kg). The guardrail shall be not less than 3 feet (914 mm) nor more than 3 feet 6 inches (1067 mm) above the platform and there shall be a 1 inch by 4 inch (25 by 102 mm) wood intermediate rail midway between the top rail and the floor or standard toeboard, both supported by 2 inch by 4 inch (51 by 102 mm) wood posts spaced not more than 8 feet (2438 mm) apart.

To provide necessary openings for intermittent operations one or more sections of a required railing may be hinged or supported in sockets. When supported in sockets, rails shall be so constructed that they cannot be jolted out. A button or hook may be used to hold the rail in a fixed position. Substantial chains or ropes may be used to guard such openings in standard railings. Where so used, the chains or ropes shall be taut at the same height as the rails of the standard railing.

In lieu of wood construction, posts and rails may be constructed of at least 1 1/4 inch (32 mm) diameter standard pipe of at least 2 inch by 2 1/4 inch (51 by 57 mm) angles. Spacing of rails and posts shall be as required above

3307.8.1Standard toeboard.Where a toeboard is required, it shall be at least 5 1/2 inches (140 mm) high and constructed of metal, wood, or other substantial material. It shall be installed along the edge of the floor, opening, platform, ramp, or runway. Such standard toeboard shall be securely fastened to the posts and installed so that no open space exists between the floor and the standard toeboard.

3307.9Safety netting.Safety netting shall be provided as required by Section 3308.

3307.10Repair, maintenance and removal.Pedestrian protection required by this chapter or by the Department of Transportation shall be maintained in place and kept in good order for the entire length of time pedestrians may be endangered. The owner or the owner's agent, upon the completion of the construction or demolition activity, shall immediately remove sidewalk sheds, fences, guard rails, temporary walkways, debris and other obstructions and leave such public property in as good a condition as it was before such work was commenced.

In the event the Department of Transportation must repair, maintain, or install intersection control signs or electrical equipment, including traffic signals or street lighting poles at a location where pedestrian protection required by this chapter is located, such pedestrian protection shall be removed as directed by the department of buildings as long as the removal is deemed to be safe and, if necessary, suitable appropriate pedestrian protection that does not interfere with the work of the Department of Transportation is installed.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3308: SAFETY NETTING

NYC Administrative Code § 28-BC 3308

3308.1 Safety netting during construction or demolition operations.

Horizontal and vertical safety netting shall be provided when required below. Safety netting is required in addition to the sidewalk sheds, fences, and other pedestrian protection required by Section 3307.

Exception: A supported scaffold may be used in lieu of horizontal safety netting provided the bottom, outer faces and ends of the scaffold are enclosed with debris netting or its equivalent so as to prevent the falling of material and debris.

3308.1.1 Vertical netting. When in the course of construction the building reaches a height of 4 stories or 40 feet (12 192 mm), vertical safety netting shall be maintained at each story except at the story at grade, the story immediately above the sidewalk shed and the roof level where a parapet is installed.

3308.1.2 Horizontal netting during exterior wall construction. When exterior walls are being constructed, altered or repaired at a height greater than 6 stories or 75 feet (22 860 mm), horizontal safety netting shall be provided on the sides of the structure where the structure is not enclosed. A structure shall be considered to be enclosed when the permanent facade is completed except for the windows. Such windows shall be protected to a height specified in Section 3308.3 unless there is a sill not less than 2 feet 6 inches (762 mm) in height and vertical mullions or piers with a maximum opening of 5 feet (1524 mm) and a non-corrosive wire cable capable of withstanding a load of at least 200 pounds (90.7 kg) applied in any direction except upward.

3308.1.3 Horizontal netting during new construction and structural additions. When during the course of construction the building reaches a height of 6 stories or 75 feet (22 860 mm), horizontal safety netting shall be maintained at a level not more than two stories or 30 feet (9144 mm) below the stripping operation on concrete structures or the uppermost finished (and walkable) concrete floor on steel frame structures. The horizontal safety netting may be removed after the formwork for the topmost level of concrete is removed or after the topmost level of concrete for a steel building is poured.

3308.1.4Horizontal netting during demolition. When demolition of the exterior walls or the roof of a structure occurs at a height greater than 6 stories or 75 feet (22 860 mm), horizontal safety netting shall be provided. The horizontal safety netting shall be constructed and maintained not more than two stories or 30 feet (9144 mm) below the story from which the exterior walls and roof are being removed until the demolition has progressed to within six stories or 75 feet (22 860 mm) off the ground or adjoining roof level

3308.1.5Horizontal netting and tarpaulins. When tarpaulins encase one or more floors immediately below the finished concrete floor in order to maintain temporary heat, the horizontal nets may be located no more than three floors below the finished concrete floor.

3308.1.6Designated crane and derrick lifting areas. Required horizontal safety netting may be omitted in designated crane and derrick lifting areas so long as such lifting area is as indicated on the crane application and on the site safety program.

3308.2Horizontal safety netting requirements. Horizontal safety netting shall consist of a horizontal system of nets and their supports that meet requirements set forth in department rules, and shall include a structural net lined with a debris net of a size and strength sufficient to catch falling tools and materials.

Horizontal safety netting shall project outward horizontally from the edge of the floor a minimum distance of 10 feet (3048 mm).

3308.3Vertical safety netting requirements. Vertical safety netting shall consist of a vertical system of nets and their supports that meet requirements set forth in department rules. Vertical safety netting shall be of a fine mesh of a size and strength sufficient to contain falling tools and materials. Wall opening screens, grills or tarpaulins may be used in lieu of vertical safety netting, provided that they shall be of such construction and mounting as to retain debris.

On every story where vertical safety netting is required, it shall extend from the floor to a height of not less than 60 inches (1524 mm). Vertical safety nets and their components shall also meet the requirements set forth in rules promulgated by the commissioner.

3308.4Responsibility. The holder of the work permit and his or her designee shall be responsible for the installation and maintenance of all horizontal and vertical netting, and for complying with the requirements of this section.

3308.5Appeals. Where requests are made regarding interpretations, consultations, and reconsiderations of safety netting, the commissioner may, in specific cases, modify these regulations where proper methods are proposed to be employed.

Any appeal shall state the specific relief requested and shall make reference to the Site Safety Program, where applicable, the practical difficulty, proposed equivalencies consistent with public safety, and any stipulations.



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SECTION BC 3309: PROTECTION OF ADJOINING PROPERTY

NYC Administrative Code § 28-BC 3309

3309.1 Protection required.

Adjoining public and private property shall be protected from damage during construction or demolition work. Protection must be provided for footings, foundations, party walls, chimneys, skylights and roofs. Provisions shall be made to control water run-off and erosion during construction or demolition activities.

3309.2License to enter adjoining property.The responsibility of affording any license to enter adjoining property shall rest upon the owner of the adjoining property involved; and in case any tenant of such owner fails or refuses to permit the owner to afford such license, such failure or refusal shall be a cause for the owner to dispossess such tenant through appropriate legal proceedings for recovering possession of real property.

3309.3Physical examination.When permission to enter upon adjoining property has been obtained, a physical examination of such property shall be conducted by the person causing the construction or demolition operations prior to the commencement of the operations and at reasonable periods during the progress of the work. Observed conditions shall be recorded by the person causing the construction or demolition operations, and such records shall be made available to the department upon request.

3309.4Excavation or filling operations affecting adjoining property.Regardless of the excavation or fill depth, the person who causes an excavation or fill to be made shall, at all times and at his or her own expense, preserve and protect from damage any adjoining structures, provided such person is afforded a license in accordance with the requirements of Section 3309.2 to enter and inspect the adjoining buildings and property, and to perform such work thereon as may be necessary for such purpose. If the person who causes the excavation or fill is not afforded a license, such duty to preserve and protect the adjacent property shall devolve to the owner of such adjoining property, who shall be afforded a similar license with respect to the property where the excavation is to be made.

No excavation work to a depth of 5 to 10 feet (1524 mm to 3048 mm) within 10 feet (3048 mm) of an adjacent building, or an excavation over 10 feet (3048 mm) anywhere on the site shall commence until the person causing an

excavation to be made has documented the existing conditions of all adjacent buildings in a pre-construction survey.

3309.4.1 Additional safeguards during excavation. The following additional requirements shall apply during excavation:

1. The person causing the excavation shall support the vertical load of the adjoining structure by proper foundations, underpinning, or other equivalent means where the level of the foundations of the adjoining structure is at or above the level of the bottom of the new excavation.

2. Where the existing adjoining structure is below the level of the new construction or demolition, provision shall be made to support any increased vertical or lateral load on the existing adjoining structure caused by the new construction or demolition.

3. Where the new construction or demolition will result in a decrease in the frost protection for an existing foundation below the minimums established in Section 1805.2.1, the existing foundation shall be modified as necessary to restore the required frost protection.

3309.4.2 Support of party walls. Where a party wall will be affected by excavation, regardless of the depth, the person who causes the excavation to be made shall preserve such party wall at his or her own expense so that it shall be, and shall remain, in a safe condition. Where an adjoining party wall is intended to be used by the person causing an excavation to be made, and such party wall is in good condition and sufficient for the uses of the existing and proposed buildings, it shall be the duty of such person to protect such party wall and support it by proper foundations, so that it shall be and remain practically as safe as it was before the excavation was commenced.

3309.5 Underpinning. Whenever underpinning is required to preserve and protect an adjacent property from construction or excavation work, the person who causes the construction or excavation work shall, at his or her own expense, underpin the adjacent building provided such person is afforded a license in accordance with the requirements of Section 3309.2 to enter and inspect the adjoining buildings and property, and to perform such work thereon as may be necessary for such purpose. If the person who causes the construction or excavation is not afforded a license, such duty to preserve and protect the adjacent property shall devolve to the owner of the adjoining property, who shall be afforded a similar license with respect to the property where the excavation is to be made.

3309.6 Foundation operations affecting adjacent properties. Whenever subsurface operations are conducted that may impose loads or movements on adjoining property, such as driving of piles, compaction of soils, or soil solidification, the effects of such operations on adjoining property and structures shall be monitored.

Where placement of a foundation will cause changes in the ground water level under adjacent buildings, the effects of such changes on the stability and settlement of the adjacent foundations shall be investigated and provision shall be made to prevent damage to such buildings.

When, in the opinion of the commissioner, a potential hazard exists, elevations of the adjacent buildings shall be recorded by a registered design professional at intervals of 24 hours or less as determined by the commissioner to ascertain if movement has occurred.

3309.7 Retaining Structures. When the regulation of a lot requires the ground on such lot to be raised or lowered and kept higher than the ground of the adjoining lot, provided the ground of such adjoining lot is not maintained at a grade lower than in conformity with the street or streets on which it is situated, or where an excavation has been made or a fill placed on any lot meeting the curb level requirements, and the adjoining land is maintained at a grade in conformity with or lower than the streets or streets on which it is situated, and is without permanent structures other than frame sheds or similar structures, a retaining structure shall be constructed for the safe support of adjoining ground, unless the bank between the adjoining properties is maintained at a safe angle of repose. Any necessary retaining wall shall be built and maintained jointly by the owners on each side, unless otherwise agreed to by both owners.

3309.7.1 Surplus Retaining Structures. Where any owner maintains his or her ground either higher or lower than the legal regulation prescribed in the Administrative Code, the surplus retaining structure that may be necessary to support such height or provide for such excavation shall be made at the sole expense of such owner, and any additional thickness that may be required shall be built on the land of such owner.

3309.7.2 Removal of Retaining Structures. Any retaining structure erected as provided above, standing partly on the land of each owner, may be removed by either owner when the original reason for the erection of such retaining structure ceases to exist.

3309.8 Adjoining walls. When any construction or demolition operation exposes or breaches an adjoining wall, including load bearing and non load-bearing walls as well as party walls and non party walls, the person causing the construction or demolition operation shall, at his or her own expense, perform the following:

1. Maintain the structural integrity of such walls, have a registered design professional investigate the stability and condition of the wall, and take all necessary steps to protect such wall.

2. Maintain all required fire exits and passageways or provide substitutions meeting the requirements of this code.

3. Cut off close to the walls all beams in party walls, remove stub ends without weakening existing masonry, clean beam pockets of loose mortar, bend over all wall anchors at the beam ends in the standing wall, and brick-up all open beam holes with sound brick and cement mortar.

4. During demolition operations, where the floor beams of the adjacent building bear on the party wall, the person causing the demolition shall ascertain that such beams are anchored into the wall and, where such anchorage is lacking, shall provide anchorage or otherwise brace the standing wall.

5. During demolition operations, all non load-bearing chimney breasts, projections and any other debris exposed on party walls shall be examined and monitored by the person causing the demolition. Removal of such items shall be made under the supervision of a registered design professional only if the stability of the adjacent building or structure will not be affected. All openings shall be bricked up flush on the exterior side of the party wall. All masonry that is in poor condition shall be pointed and patched.

3309.9 Weatherproof integrity of adjoining buildings. Where the waterproof integrity of an adjoining wall or building has been impaired due to construction or demolition operations, the person causing the construction or demolition operations shall, at his or her own expense, provide all necessary measures to permanently waterproof the adjoining wall or building in order to restore the weatherproof integrity of such adjoining wall or building. This shall include, but is not limited to:

1. Bending over and flashing all roofing material of adjoining buildings;

2. Sealing and permanently waterproofing all doors or other openings in party walls;

3. Properly sealing all cornices, where cut;

4. Pointing up and making waterproof any walls and parapets and any walls that have been disturbed;

5. Removing all exposed furring, lath, and plaster on party walls; and

6. Removing, replacing, and firmly anchoring any loose wall material.

3309.10 Protection of roofs, skylights, chimneys, etc. Whenever any building is to be constructed or demolished above the roof of an adjoining building, it shall be the duty of the person causing such building to be constructed or demolished to protect the roof, skylights and other roof outlets of the adjoining building from damage, and to use every

reasonable means to avoid interference with the use of the adjoining building during the course of construction or demolition. Such person shall be afforded a license in accordance with the requirements of Section 3309.2 to enter and inspect the adjoining building and perform such work thereon as may be necessary for such purpose; otherwise, the duty of protecting the roof, skylights and other roof outlets of the adjoining building shall devolve upon the owner of such adjoining building.

In addition, any person having the duty to alter or maintain chimneys of any adjoining building under and pursuant to the provisions of this code or the New York City Mechanical Code or other applicable laws and rules, shall likewise be afforded a license in accordance with the requirements of Section 3309.2 to enter and inspect such adjoining building and perform such work thereon as may be necessary for such purpose; otherwise, such duty shall devolve upon the owner of such adjoining building.

3309.11Protection of trees.No trees outside the property line within the public right of way shall be disturbed or removed without the permission of the commissioner of the department of parks and recreation. Protection meeting the requirements of the department of parks and recreation shall be provided around the trunks of all such trees, and written notification shall also be made to the department of parks and recreation at least 48 hours prior to commencement of such work. No deleterious, caustic, or acid materials shall be dumped or mixed within 10 feet (3048 mm) of any such tree, nor shall salt for the removal of ice or snow be applied when runoff will drain to a tree.



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SECTION BC 3310: REQUIREMENTS FOR THE CONSTRUCTION OR DEMOLITION OF MAJOR BUILDINGS

NYC Administrative Code § 28-BC 3310

3310.1 Scope.

This section outlines the requirements for site safety programs for major building construction or demolition that are in addition to the other applicable requirements of this chapter. These requirements are not intended to supersede other applicable city, state or federal requirements that address site safety and construction or demolition activity.

3310.2Major buildings.A major building is a building proposed to have any of the following characteristics:

1. Be constructed to a height of 10 or more stories;
2. Be constructed to a height of 125 feet (38 100 mm) or more;
3. Have a lot coverage of 100,000 square feet (30 480 m²) or more regardless of height; or
4. As designated by the commissioner.

3310.3Site safety plan and site safety program required.No permit shall be issued for the construction or demolition of a major building, or for the alteration of the faade of a major building when a sidewalk shed is required until a site safety plan that meets the requirements of Chapter 1 of Title 28 of the Administrative Code has been approved by the department.

Exceptions:

1. A site safety plan and site safety program is not required for the alteration of the faade of a major building between 10 and 14 stories in height.
2. A site safety plan and site safety program is not required for partial demolition operations in major buildings where the partial demolition operation is limited to the interior components of the building and where mechanical

demolition equipment, other than handheld devices, are not used.

3310.4 Required signs. The requirements of Section 3301.9 shall apply.

3310.5 Requirement for a site safety manager or coordinator. A site safety manager certified by the department in accordance with the requirements of Chapter 4 of Title 28 of the Administrative Code is required for the construction or demolition of a major building, or the alteration of the facade of a major building when a sidewalk shed is required.

Exceptions:

1. A site safety coordinator certified by the department in accordance with the requirements of Chapter 4 of Title 28 of the Administrative Code may be used instead of a site safety manager for a major building that is:

- 1.1. Less than 15 stories in height;
- 1.2. Less than 200 feet (60 960 mm) in height; and
- 1.3. Less than 100,000 square feet (30 480 m²) of lot coverage.

2. A site safety manager or coordinator is not required for the alteration of the facade of a major building that is:

- 2.1. Less than 15 stories in height; and
- 2.2. Less than 200 feet (60 960 mm) in height; and
- 2.3. Less than 100,000 square feet (30 480 m²) of lot coverage.

3. A site safety manager or coordinator is not required for partial demolition operations in major buildings where the partial demolition operation is limited to the interior components of the building and where mechanical demolition equipment, other than handheld devices, are not used.

3310.6 Designation of site safety manager and site safety coordinator. It shall be the responsibility of the builder/owner, agent, construction manager, or general contractor (the "Contractor") to designate a site safety manager or coordinator who must be present on a construction or demolition site when required, and who shall be responsible for all site safety requirements as specified in this chapter.

In the event that an alternate manager or coordinator will be acting as the full-time safety manager or coordinator for a period longer than two weeks, the department must be so notified. Any permanent change of site safety manager or coordinator requires immediate notification of the department. No proposed alternate manager or coordinator shall have as his or her primary duty the job of site safety manager or coordinator on any other construction or demolition project.

3310.7 Contractor's responsibility. The contractor shall notify all of its supervisory personnel and all of its subcontractors working on the construction or demolition site of the name and responsibilities of the site safety manager or coordinator. The contractor shall state to its directly employed personnel and also to its subcontractors that the site safety manager or coordinator is responsible for monitoring compliance with laws and rules governing site safety, and that they are required to obey and implement all orders and directives relating to safety requirements.

In the event the site safety manager or coordinator discovers violation of the site safety regulations, he or she shall immediately notify the person or persons responsible for creating the violation, whether these persons are employed by the contractor or by subcontractors. If the site safety manager or coordinator is unable to obtain the cooperation of these persons in correcting the violation, he or she shall inform his or her direct supervisor immediately and request that the supervisor order the necessary corrective action. If the supervisor of the site safety manager or coordinator is not present at the site or is otherwise unavailable, the site safety manager or coordinator shall notify any other supervisory

personnel of the contractor present on the job or any other responsible manager or officer of the contractor. All such violations and corrective work shall be recorded in the daily log.

3310.8 Site safety manager's and coordinator's responsibility.

3310.8.1 Monitor compliance. It is the responsibility of the site safety manager or coordinator to monitor compliance with the safety requirements of this chapter and to perform all other safety duties assigned by the owner or contractor to meet legal requirements.

The site safety manager or coordinator) shall meet on a weekly basis with the designated representative of each subcontractor to ascertain that all subcontractors are complying with the applicable provisions of this chapter.

3310.8.2 Notification. The site safety manager or coordinator shall immediately notify the department directly if he or she discovers any of the following conditions in the routine performance of the job:

1. A person is operating a crane, derrick or hoisting equipment on the site without a permit and refuses to desist from operating the equipment;
2. A crane is being operated by an unlicensed operator and such unlicensed operator refuses to desist from operating the crane;
3. No flagperson is present during crane operation where required by this chapter;
4. Sidewalk sheds required by the site safety plan are not in place during construction or demolition activity;
5. Permits have not been issued for the sidewalk sheds;
6. The designer and/or supplier of sidewalk sheds has not certified that the sheds have been erected in accordance with the approved plans; or
7. There has been an accident involving the public, or private or public property.

3310.8.2.1 Responsibility. Upon proper notification to the department of the existence of any of the above-noted circumstances, any responsibility the site safety manager or coordinator has under this code arising out of, relating to, or as a result of the existence of that circumstance, shall cease.

3310.8.3 Inspections. It shall be the responsibility of the site safety manager or coordinator to inspect personally, on a regular basis, specific areas and items on the construction or demolition site, as prescribed by rules promulgated by the commissioner, and to notify responsible personnel employed by the general contractor, construction manager or any subcontractor when violations of this chapter occur. The site safety manager or coordinator shall maintain a log of the inspection in accordance with the requirements set forth in rules promulgated by the commissioner.

3310.8.4 Reasonable prudence. In addition to the above requirements, the site safety manager or coordinator shall use reasonable prudence to ensure that safety is maintained at the job site as job conditions dictate.

3310.9 Additional site safety personnel. The following additional personnel shall be employed to oversee concrete operations at major buildings as defined in section 3310.2 and such other classes of buildings or operations as the commissioner may designate by rule. These personnel shall coordinate directly with the site safety manager or coordinator designated in accordance with section 3310.6. In all instances, the designated site safety manager or coordinator retains responsibility for ensuring compliance with the provisions of section 3310 of this code and all applicable rules, and for signing the site safety log. The name and contact information of the additional site safety personnel shall be recorded in the site safety log.

3310.9.1 Concrete safety manager. Beginning January 1, 2009, a concrete safety manager shall be designated by the concrete contractor at those sites where the concrete portion of the project involves the pouring of a minimum of 2,000 cubic yards of concrete or such lesser amount as the commissioner may determine by rule. Concrete safety managers shall have five years of experience in concrete operations and shall have satisfactorily completed, by July 1, 2009 or within the five calendar years prior to registration, a thirty hour course approved by the commissioner that is sufficient to qualify the individual as a competent person under OSHA standards to oversee concrete operations, including such topics as formwork design, construction and stripping operations, rebar handling, and rigging. Concrete safety managers shall register with the department in the same manner as construction superintendents, and shall provide evidence of meeting the eligibility requirements set forth herein. As of July 1, 2009, no person shall perform the duties of a concrete safety manager without being registered as such with the department. The commissioner shall promulgate rules establishing the duration that such registration shall be valid and the requirements for renewal of the registration. The concrete safety manager shall be present during all concrete operations. For purposes of this section, "concrete operations" shall mean the pouring of concrete and the construction and stripping of concrete forms and related activities as specified by the commissioner.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

3310.5 amended L.L. 8/2008 § 168, eff. July 1, 2008.

3310.9 added L.L. 40/2008 § 1, eff. Jan. 1, 2009. [See Note 1]

NOTES:

1. L.L. 40/2008:

§ 2. This local law shall take effect on January 1, 2009, provided that the commissioner of buildings shall take such actions as necessary for its implementation prior to such effective date and shall approve the thirty hour course as required by New York city building code section 3310.9.1, as added by section one of this local law, no later than January 1, 2009 and shall consult with relevant stakeholders and officials at the Department of Labor's Occupational Safety and Health Administration in developing the curriculum for such course.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3311: EXPLOSIVE POWERED AND PROJECTILE TOOLS

NYC Administrative Code § 28-BC 3311

3311.1 Approved.

All explosive powered and projectile tools shall be approved by the commissioner or other approved agency.

3311.2 Projectile tools.

3311.2.1 Basic requirements. Design and construction of the tool must be such as to safely retain all internal pressures that may occur during its operation. The discharge mechanism shall be such that the projectile cannot be discharged by dropping the tool. The discharge mechanism shall be such that the discharge of each projectile shall be dependent on a separate and distinct act by the operator, and all safety features shall be durable.

A tool shall have such other characteristics as the commissioner may find necessary. Such other characteristics may include devices and materials external to the tool itself but associated with its function, and may also include in respect to high velocity projectile tools the basic requirements set forth above for explosive powered tools that discharge projectiles with comparable velocities.

3311.2.2 Maintenance. Every projectile tool shall be properly maintained. No such tool shall be used if any part necessary to retain internal pressures or to prevent accidental discharge of a projectile is not in sound and operable condition.

3311.2.3 Operation. The operation of projectile tools shall comply with the following:

1. A projectile tool shall be operated only by an authorized operator who shall be the owner, lessee, or other person having custody of the tool, or any other person whom he or she may authorize to operate it.
2. While a projectile tool is in the care and custody of an authorized operator, no other person shall handle or in any way utilize or modify it.

3. No authorized operator of a projectile tool shall leave it unattended while it is in a condition to discharge a projectile.

4. No person shall use a projectile tool for any purpose other than that for which it was manufactured.

5. No person shall point a projectile tool at another person or hold it at an angle that allows the projectile to fly free.

6. No person shall use a projectile tool in such a way as to endanger persons who may be in the vicinity.

3311.3 Explosive powered tools. The provisions of ANSI A10.3-1995, as modified in Section 3311.4 shall apply. The storage, handling and use of explosives shall comply with the New York City Fire Code and Section 3307.4.2.

3311.4 Modifications to ANSI A10.3-1995. The text of ANSI A10.3-1995 shall be modified as indicated in Sections 3311.4.1 through 3311.4.11.

3311.4.1 ANSI A10.3-1995, Section 4.2.2. Delete Sections 4.2.2.2, 4.2.2.3 and 4.2.2.4 in their entirety and modify Section 4.2.2.1 to read as follows:

4.2.2.1 Medium-velocity tools, indirect-acting (piston) type, as defined in section 3, shall not be accepted.

3311.4.2 ANSI A10.3-1995, Section 4.2.3. Delete Sections 4.2.3.2, 4.2.3.3 and 4.2.3.4 in their entirety and modify Section 4.2.3.1 to read as follows:

4.2.3.1 High velocity tools, direct-acting or indirect-acting type, as defined in section 3, shall not be accepted.

3311.4.3 ANSI A10.3-1995, Section 5.6. Add a new section 5.6 to read as follows:

5.6 Selection of load. No employer shall knowingly furnish to an employee for use in a tool any cartridge or load not suitable for safe use in that tool, whether by reason of excessive power, improper design or poor material. The operator shall use due care to select the proper cartridges or power loads, or other means of controlling the force of the explosion so that the tool develops no more than the necessary pressure to bring about the desired penetration. In doing so, the operator shall be guided by the manufacturer's specifications.

5.6.1 Proper Load. When doubt exists as to proper load, the operator shall make a trial shot to test the surface and the strength of the material to be penetrated. The trial shot shall be made with the lowest power level and then increasing strength until a proper fastening is made. During this test, the operator and all bystanders shall adhere to all safety rules including but not limited to wearing goggles and hard hats required for the job.

3311.4.4 ANSI A10.3-1995, Section 7.11. Add the following sentence at the beginning of section 7.11:

7.11 The operator shall always verify the thickness and type of material into which the stud, pin or fastener is to be driven.

3311.4.5 ANSI A10.3-1995, Section 9.4. Add a new section 9.4 to read as follows:

9.4 Storage of power loads shall be in accordance with the requirements of the New York City Fire Code and regulations of the Fire Department.

3311.4.6 ANSI A10.3-1995, Section 10.3.1. Add a new section 10.3.1 to read as follows:

10.3.1 The authorized instructors' card shall list the specific model(s) of powder actuated tool(s) for which training may be given.

3311.4.7 ANSI A10.3-1995, Section 10.6. Add a new section 10.6 to read as follows:

10.6 All authorized instructors shall hold a Certificate of Fitness issued by the Fire Department.

3311.4.8ANSI A10.3-1995, Section 11.4.1.Add a new section 11.4.1 to read as follows:

11.4.1 The qualified operator's card shall list the specific model(s) of powder actuated tool(s) that may be used.

3311.4.9ANSI A10.3-1995, Section 11.6.Add a new section 11.6 to read as follows:

11.6 All qualified operators shall hold a Certificate of Fitness issued by the Fire Department.

3311.4.10ANSI A10.3-1995, Section 12.Add a new section 12 to read as follows:

12 Equipment Acceptance.

12.1 Powder-actuated tools using ammunition (power loads) shall be approved by the commissioner or other approved agency.

12.2 Labeling. A certificate or label indicating that the tool is approved shall be attached to the toolbox or operator's manual and shall be made available for inspection upon request of the commissioner.

3311.4.11ANSI A10.3-1995, Section 13.Add a new section 13 to read as follows:

13 Fire Department Requirements.

13.1 The requirements of the New York City Fire Code and regulations of the Fire Department shall apply.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**

CHAPTER 7: THE NEW YORK CITY BUILDING CODE

Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION

SECTION BC 3312: EXPLOSIVES AND BLASTING

NYC Administrative Code § 28-BC 3312

3312.1 General.

All handling, transporting, and use of explosives shall comply with the New York City Fire Code and Section 3307.4.2. The use of explosives is strictly prohibited unless the written consent of the commissioner and the Fire Department is obtained.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3313: FLAMMABLE AND COMBUSTIBLE MIXTURES, COMPRESSED GASES, AND OTHER
HAZARDOUS MATERIALS

NYC Administrative Code § 28-BC 3313

3313.1 General.

The transportation, handling, storage, installation, connection, ventilation, and use of all volatile flammable oils, flammable and combustible mixtures, compressed gases, and other hazardous materials shall comply with the New York City Fire Code, and shall also be safeguarded in accordance with the requirements of Section 3307.4.2.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3314: SCAFFOLDS

NYC Administrative Code § 28-BC 3314

3314.1 Scope.

All scaffolds shall be erected and maintained so that the safety of public and property will not be endangered by falling material, tools or debris, or by collapse of the scaffold.

3314.1.1 Notification prior to commencement of work. The permit holder or person directly in charge of any suspended scaffold supported by c-hooks or outrigger beams shall notify the department in a form and manner specified by the department at least 24 hours, but not more than 48 hours, prior to the installation or use of such scaffolding equipment.

3314.1.2 Notification of scaffolding accidents. The permit holder or person directly in charge of any scaffolding equipment shall immediately notify the commissioner following any accident involving scaffolding equipment. Following an incident, no person shall permit either of the following, without the permission of the commissioner:

1. Use of such scaffolding equipment; or
2. Removal of the scaffolding equipment or any part thereof from the area of the job site.

3314.2 Permit. Supported scaffolds 40 feet (12 192 mm) or more in height, outrigger scaffolds, and suspension scaffolds, including all supports, fastenings, connections and details, shall not be erected or installed unless and until a written permit has been issued by the commissioner on the basis of plans, drawings, and specifications. Copies of the permit shall be posted in a conspicuous location at the site visible to the general public. Copies of the approved plans shall be maintained at the site and made available to the commissioner upon request.

Exceptions:

1. Any two-point suspended scaffold supported by a parapet using C-hooks that meet the requirements of Section 3314.10.2 provided that prior notification is provided to the department in accordance with Section 3314.1.1.

2. Any suspended scaffold or outrigger scaffold on new construction, or on alterations where the operation of the scaffold is confined within the property and the site is protected in accordance with Section 3307.

3. Window washing equipment that is permanently anchored to the building or structure by a davit.

3314.2.1 Signs. Following the receipt of a permit to erect or suspend a scaffold, the permit holder shall post a sign that meets the requirements of Section 3301.9.6. Such sign shall be clearly visible from the street. Other than as required by Section 3301.10, there shall be no information, pictorial representation, or business or advertising messages posted on a scaffold.

3314.3 Design of scaffolds.

3314.3.1 Design. All supported scaffolds 40 feet (12 192 mm) or more in height, outrigger scaffolds, and suspension scaffolds, including all supports, fastenings, connections, and details shall be designed in accordance with the provisions below.

Each scaffold and its components shall be capable of supporting, without failure, its own weight and at least four times the maximum intended load applied or transmitted to it in accordance with Section 3314.3.3. Each suspension rope, including connecting hardware, used on non-adjustable suspension scaffolds shall be capable of supporting, without failure, at least six times the maximum intended load applied or transmitted to the rope.

Where applicable, scaffolds and their connections to the building or structure shall be designed for wind loads as prescribed in Section 1609.

Copies of the plans, drawings, and specifications for all supports, fastenings, connections, and details shall be kept at the site and made available to the commissioner upon request.

3314.3.1.1 Supported scaffolds. Supported scaffolds between 40 feet and 75 feet (12 192 mm and 22 860 mm) must be designed by a qualified person or company or a registered design professional. Supported scaffolds over 75 feet (22 860 mm) in height must be designed by a registered design professional.

3314.3.1.2 Outrigger scaffolds. Outrigger scaffolds must be designed by a registered design professional.

3314.3.1.3 Suspension scaffolds. Two-point suspended scaffolds having a support structure with a height from the roof or floor of less than 15 feet (4572 mm) must be designed by a licensed master or special rigger, or a registered design professional. All other suspension scaffolds must be designed by a registered design professional.

3314.3.1.4 Excess loads. Scaffolds with loads exceeding 75 pounds per square foot (366.15 kg/m²) shall be designed by a registered design professional.

3314.3.1.5 Frame scaffold brackets. Where brackets are used for any purpose other than the support of workers, the scaffold and brackets shall be designed by an engineer.

3314.3.1.6 Parapet clamps. Where parapet clamps are used to support a vertical load, a registered design professional shall verify that the supporting structure will not be overstressed.

3314.3.1.7 Multiple trades. When more than one trade is to use a scaffold simultaneously, the scaffold shall, at a minimum, be designed for a minimum of 50 pounds per square foot (244 kg/m²).

3314.3.2 Plans. When plans are required by this section, they shall include a plan view, an elevation view, details of anchorage, scaffold designation in accordance with Section 3314.3.3 and, for supported scaffolds, the number of planked levels and the number of levels to be loaded simultaneously.

3314.3.3Loading. All scaffolds shall be designed for one of the intended loads described in Section 3314.3.3.1 to 3314.3.3.4. No scaffold shall be loaded in excess of the maximum load for which it is designed. Loads shall not be concentrated so as to cause stresses in excess of the allowable values designated for the applicable material described in this code.

3314.3.3.1Light duty scaffold. The light duty scaffold is to be used for loads up to 25 pounds per square foot (122.05 kg/m²), and is intended for use by carpenters, painters, or others of similar trades. It shall not be used to support loads more severe than those imposed by such workers and a minimum amount of lightweight materials.

3314.3.3.2Medium duty scaffold. The medium duty scaffold is to be used for loads up to 50 pounds per square foot (244.1 kg/m²), and is intended for use by bricklayers, plasterers, pipe fitters or other similar trades. It shall not be used to support loads more severe than those imposed by such workers and a moderate amount of their materials.

3314.3.3.3Heavy duty scaffold. The heavy duty scaffold is to be used for loads up to 75 pounds per square foot (366.15 kg/m²), and is intended for use by stone masons. It shall not be used to support loads more severe than those imposed by such workers and a reasonable supply of their materials.

3314.3.3.4Extra heavy duty scaffold. The extra heavy duty scaffold is to be used for loads exceeding 75 pounds per square foot (366.15 kg/m²) and shall be designed in accordance with Section 3314.3.1.4.

3314.3.4Fire retardant construction. With the exception of the planking, the following scaffolds shall be constructed of noncombustible materials:

1. Exterior scaffolds exceeding 75 feet (22 860 mm) in height.
2. Interior scaffolds exceeding 21 feet (6.4 mm) in height.
3. All scaffolds used in the alteration, repair, or partial demolition of buildings in occupancy groups I-1 to I-4.

3314.4Installation and use of scaffolds.

3314.4.1Installation. Scaffolds that require a permit or design shall be erected and installed in accordance with the construction documents, drawings, and specifications for the scaffold. Upon completion of the installation of the scaffold, an inspection report verifying that the scaffold has been installed in accordance with the design drawings, construction documents and specifications shall be prepared by the designer, installer, or an approved inspection agency designated by both the designer and installer.

3314.4.2Maintenance and repair. All scaffolds shall be maintained in a safe condition. No scaffold shall be altered, removed or partially dismantled while it is in active use, unless done by a qualified person.

Every damaged or weakened scaffold shall be immediately repaired or secured and shall not be used until satisfactory repairs have been completed, and the scaffold is inspected under the provisions of Section 3314.4.3.

3314.4.3Inspections. All scaffolds, except for suspended scaffolds, shall be inspected daily before each use by a competent person designated by the trade(s) using the scaffold. A record of such daily inspections shall be maintained and available at the site where the scaffold has been erected. Suspended scaffolds shall be inspected in accordance with Section 3314.4.3.1.

3314.4.3.1Inspection of suspended scaffolds. Before use, all suspended scaffolds shall be inspected daily by the licensed rigger or his or her foreman in accordance with Section 404 of Title 28 of the Administrative Code, or the licensed sign hanger or his or her foreman in accordance with Section 415 of Title 28 of the Administrative Code, or the superintendent of construction if the work is not performed by or under the supervision of a licensed rigger or sign hanger in accordance with the exception to Section 404.1 of Title 28 of the Administrative Code and Section 415.2 of

Title 28 of the Administrative Code.

A record of such inspections shall be kept and maintained at the job site and shall be readily available and presented to department personnel upon request. The record shall be signed by the individual responsible for the inspection and shall also show the individual's name clearly and legibly printed.

3314.4.4Storage of material and debris. Material and debris susceptible to dislodgment shall not be stored on scaffolds while work is not being performed.

3314.4.5Requirements for workers who erect, repair, maintain, modify or remove supported scaffolds. Only workers with experience in erecting, repairing, maintaining, modifying, or removing supported scaffolds and with the training required by this paragraph shall be employed to perform this work. They shall be supervised by a designated superintendent or foreman who shall enforce such measures as necessary for the protection of the public and property.

No person shall knowingly permit or cause an individual who does not have the experience and training required by this paragraph to perform any of the work described in this paragraph.

Workers who erect, repair, maintain, modify or remove supported scaffolds 40 feet (12 192 mm) or more in height shall, at a minimum, have completed a department-approved training program or course that is at least 32 hours long, and shall complete a department-approved 8-hour refresher program or course every 4 years thereafter. The training program or course shall be based on the United States Department of Labor Occupational Safety and Health Department ("OSHA") scaffold safety and training guidelines and the scaffold requirements of this chapter. The training program or course shall be conducted by a registered New York State Department of Labor apprenticeship training program or by an educational institution or school chartered, licensed or registered by the New York State Department of Education or by a provider approved by the department and presented by an instructor(s) deemed qualified and competent in accordance with OSHA regulations.

Successful completion of the training program or course shall be evidenced by a dated scaffold certificate of completion issued by the provider of the training program or course. The certificate or a valid wallet card version of the certificate shall be readily available to the commissioner upon request, and shall be deemed valid for four years from its date of issuance.

Workers who erect, repair, maintain, modify, or remove a sidewalk shed that provides a base for a scaffold 40 feet (12 192 mm) or more in height are subject to the above requirements.

The requirement that a refresher program or course be completed every four years shall apply retroactively to individuals who satisfied such requirements prior to the effective date of this code.

3314.4.6Requirements for workers who use a supported scaffold. Every worker who uses a supported scaffold to perform his or her job tasks shall complete a department-approved four-hour training program or course, and a department-approved four-hour refresher program or course every four years thereafter, that includes instruction on the nature of electrical hazards, fall and falling object hazards, material handling on scaffolds, personal protection equipment, the nature of braces and tiebacks and their safe removal and the maximum intended load and load-handling capacities of scaffolds. The training program or course shall be conducted by a registered New York State Department of Labor apprenticeship training program or by an educational institution or school chartered, licensed or registered by the New York State Department of Education or by a provider approved by the department, and presented by an instructor(s) deemed qualified and competent in accordance with OSHA regulations.

Successful completion of the training program or course shall be evidenced by a dated scaffold user certificate issued by the provider of the training program or course. The certificate or a valid wallet card version of the certificate shall be readily available to the commissioner upon request, and shall be deemed valid for four years from its date of issuance.

No person shall knowingly permit or cause an individual who does not have the training required by this paragraph to use a supported scaffold.

The requirement that a refresher program or course be completed every four years shall apply retroactively to individuals who satisfied such requirements prior to the effective date of this code.

3314.4.7Exemptions.The provisions of paragraphs 3314.4.5 and 3314.4.6 of this subdivision shall not apply to:

1. the erection, dismantling, repair, maintenance or modification of any supported scaffold performed by an employee of a public utility when such supported scaffold is located within the interior of a building or structure owned or operated by such utility and when such utility has a safety training program of not less than 32 hours for its employees who erect, dismantle, repair, maintain or modify such scaffolds; or

2. employees of a public utility performing work while using a supported scaffold, provided that such employees are trained, pursuant to the United States department of labor occupational safety and health administration's requirements, to be able to recognize the hazards associated with the type of supported scaffold being used, and to understand the procedures to control those hazards; or

3. the erection, dismantling, repair, maintenance or modification of stand alone, one story sidewalk sheds; or

4. a registered architect or professional engineer who is using a supported scaffold to perform inspections, as long as the architect or engineer does not perform work from or participate in the erection, dismantling, repair, maintenance or modification of any building or structure, including the supported scaffold.

3314.4.8Requirements for workers who erect or use suspension scaffolds.Workers who erect, repair, maintain, modify, remove or use suspension scaffolds shall meet the requirements set forth in rules promulgated by the commissioner.

3314.5Platform construction.Platforms on all working levels of a scaffold shall be fully planked or decked between the front uprights and the guardrail system supports in accordance with Sections 3314.5.1 through 3314.5.6.

Exception: Platforms used solely as walkways or used solely by workers performing scaffold erection and dismantling shall be planked to provide safe working conditions.

3314.5.1Platform spacing.Each platform unit shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 1 inch (25 mm) wide except where a qualified person can demonstrate that a wider space is necessary.

3314.5.2Maximum span for wood plank.All lumber used in scaffolds or their supports shall be at least equal in strength and quality to construction grade lumber in accordance with Section 2301. See Table 3314.5.2 for the maximum span for scaffold planks.

Material	Full Thickness Undressed Lumber	Lumber of Nominal Thickness	Working Load (psf)
2x10	10	8	6
2x8	8	6	5
2x6	6	5	5

Note: For SI: 1 inch = 25.4 mm

3314.5.3Minimum overhang.The end of a platform shall extend over the centerline of its support a minimum of 6 inches (152 mm) unless cleated or otherwise restrained by hooks or equivalent means.

3314.5.4Maximum cantilever.

3314.5.4.1Ten feet or less.The end of a platform 10 feet (3048 mm) or less in length shall not extend over the centerline of its support more than 12 inches (305 mm) unless the platform and its tiedown are designed by a qualified person or the platform has guardrails to prevent access to the cantilevered end.

3314.5.4.2 More than ten feet. The end of a platform more than 10 feet (3048 mm) in length shall not extend over the centerline of its support more than 18 inches (457 mm) unless the platform and its tiedown are designed by a qualified person or the platform has guardrails to prevent access to the cantilevered end.

3314.5.5 Platform tiedown. All platforms shall be tied down, cleated or otherwise restrained by hooks or equivalent means to prevent dislodgment.

3314.5.6 Platform deflection. Platforms shall not deflect more than 1/60 of the span when loaded.

3314.6 Footings and anchorage. The footings and anchorage for every scaffold shall be sound and rigid, capable of carrying the maximum load without excessive settlement or deformation and secure against movement in any direction. Supports such as barrels, boxes, loose brick, loose stone, or other unstable materials shall not be used.

3314.6.1 Safe points of anchorage. Safe points of anchorage include structural members of a building. Window cleaners anchors, window frames, mullions, handrails, standpipes, vents and other piping systems, electrical conduit, outrigger beams, counterweights or similar elements shall not be used as anchors or braceback points.

3314.6.2 Lifeline anchorage. Lifeline anchorage shall be fastened to a fixed safe point of anchorage, shall be independent of the scaffold, and shall be protected from sharp edges and abrasion.

3314.6.3 Lifelines and suspension ropes. Lifelines, tiebacks, and suspension ropes shall each be attached to a different point of anchorage.

3314.6.4 Scaffolds supported on structure. Loads from supported and suspended scaffolds imposed on an existing roof or floor or similar structure shall not be concentrated so as to cause stresses in excess of the allowable values designated for the applicable material described in this code.

3314.7 Outrigger beams. Outrigger beams shall be made of structural metal or equivalent strength material and shall be restrained to prevent movement.

3314.7.1 Overhang. The overhang of outrigger beams shall not exceed that specified by the design and the inboard length of beam shall be at least one and one-half times the outboard length.

3314.7.2 Wire rope suspenders. The wire rope suspenders shall be securely fastened to the outrigger beams by steel shackles or equivalent means. The shackles and outrigger beams shall be placed so that the ropes will hang vertically.

3314.8 Guardrail system and toeboards. Except for scaffold platforms 6 feet (3048 mm) or less above the ground, the open sides and ends of every scaffold platform shall be provided with a guardrail system and toeboard, unless otherwise specified for the particular type of scaffold. The guardrail system shall be installed before the scaffold is released for use by workers other than the workers who are erecting or dismantling the scaffold.

3314.8.1 Mesh installation. Where it is possible for the public to pass under, or next to a scaffold, the space between the top rail and toeboard shall be enclosed with a wire screen composed of not less than no. 18 steel wire gage with a maximum 1/2 inch (13 mm) mesh or equivalent synthetic safety netting. For the purpose of this provision the term "where it is possible for the public to pass under, or next to a scaffold" shall mean when the setback from the scaffold to the area used by the public is a distance equal to or less than half the height of the scaffold.

3314.8.2 Top edge height. The top edge height of the top rails or equivalent member shall be installed between 38 inches and 45 inches (965 and 1143 mm) above the platform surface.

3314.8.3 Midrail installation. When midrails, screens, mesh, intermediate vertical members, solid panels, or equivalent structural members are used, they shall be installed between the top edge of the guardrail system and the scaffold platform.

3314.8.4Midrail height.When mid-rails are used, they shall be installed at a height approximately midway between the top edge of the guardrail system and the scaffold platform.

3314.8.5Screen or mesh height.When screens or mesh are used, they shall extend from the top edge of the guardrail system to the scaffold platform and along the entire opening between supports.

3314.8.6Intermediate support spacing.When intermediate supports such as ballisters or additional rails are used, they shall not be more than 19 inches (483 mm) apart.

3314.8.7Top rail design.Each top rail or equivalent member of a guardrail system shall be capable of withstanding, without failure, a force applied in any downward or horizontal direction at any point along its top edge of at least:

1. 100 pounds (45.4 kg) for any guardrail systems installed on a single-point adjustable suspension scaffold or a two-point adjustable suspension scaffold; or
2. 200 pounds (90.7 kg) for guardrail systems installed on all other scaffolds.

3314.8.8Top rail deflection.When loads specified in Section 3314.8.7 are applied in the downward direction, the top edge shall not drop below the heights above the scaffold platform as prescribed in Section 3314.8.2.

3314.8.9Midrail design.Midrails, screens, mesh intermediate vertical members, solid panels, and equivalent structural members of a guardrail system shall be capable of withstanding, without failure, a force applied in any downward or horizontal direction at any point along the midrail or other member of at least:

1. 75 pounds (34 kg) for any guardrail systems installed on a single-point adjustable suspension scaffold or a two-point adjustable suspension scaffold; or
2. 150 pounds (68 kg) for guardrail systems installed on all other scaffolds.

3314.8.10Toeboards.A toeboard shall be erected along the edge of the platform and shall be solid or with openings of not more than 1 inch (25 mm) along its longest dimension.

3314.8.10.1Toeboard design.Toeboards shall be capable of withstanding, without failure, a force of at least 50 pounds (22.7 kg) applied in any downward or horizontal direction at any point along the toeboard.

3314.8.10.2Toeboard height.The top edge of the toeboard shall be at least 31/2 inches (89 mm) high from the level of the walking/working surface and there shall be not more than a 1/4 inch (6 mm) clearance above the walking/working surface.

3314.9Supported scaffold.Supported scaffolds shall meet the following requirements:

3314.9.1Height-to-base ratio.A supported scaffold with a height-to-base ratio (including outriggers supports, if used) of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing or equivalent means as follows:

1. Guys, ties or braces shall be installed at locations where horizontal members support both inner and outer legs.
2. Guys, ties, or braces shall be installed according to the manufacturer's recommendations, or as designed in accordance with Section 3314.3, or at a minimum, the first guy, tie or brace shall be installed at a horizontal member and not more than a distance 4 times the least plan dimension from the base support and be repeated vertically at locations of horizontal members every 20 feet (6096 mm) or less thereafter for scaffolds 3 feet (914 mm) wide or less and every 26 feet (7925 mm) or less thereafter for scaffolds greater than 3 feet (914 mm) wide. The top guy, tie, or brace shall be placed no further than 4 times the least plan dimension from the top. Such guys, ties, or braces shall be

installed at each end of the scaffold and at horizontal intervals not to exceed 30 feet (9144 mm) measured from one end (not both) towards each other.

3. Guys, ties, braces, or outriggers shall be used to prevent tipping of supported scaffolds in all circumstances where an eccentric load, such as a cantilevered work platform, is applied or is transmitted to the scaffold.

3314.9.2Foundation. Supported scaffold poles, legs, posts, frames and uprights shall bear on base plates and mud sills or other adequate firm foundation.

3314.9.3Plumb. Supported scaffold poles, legs, posts, frames, and uprights shall be plumb and braced to prevent swaying and displacement. The tolerance shall not exceed $L/100$, where L is the distance measured from the ground or grade elevation to the first X-brace or bottom of the first bearer or frame horizontal member.

3314.10Suspended scaffold. Suspended scaffolds shall meet the requirements of Sections 3314.10.1 through 3314.10.10.

3314.10.1Installation and use. Suspended scaffolds shall be erected and operated in such a manner that suspension elements are vertical and in a plane parallel to the wall at all times. The installation or change of position of any suspended scaffold shall be performed under the supervision of a licensed master or special rigger, or a licensed sign hanger, or his designated foreman who shall ensure the safety of such operation.

Suspended scaffolds shall be inspected in accordance with the requirements of Section 3314.4.3.1.

3314.10.2Support. All suspended scaffold support devices, such as outrigger beams, C-hooks, parapet clamps, and similar devices shall rest on surfaces capable of supporting at least 4 times the load imposed on them by the scaffold operating at the rated load of the hoist. The support shall be inspected by a competent person prior to installation.

3314.10.3Outrigger beam location. Outrigger beams shall be placed perpendicular to the face of the building or structure.

Exception: Where a licensed rigger or engineer can demonstrate to the commissioner's satisfaction that it is not possible to place an outrigger beam perpendicular to the face of the building or structure, the outrigger beam may be placed at a different angle, provided opposing angle tiebacks are used.

3314.10.4Outrigger beam stabilization. The inboard ends of the suspended scaffold outrigger beam shall be stabilized by bolts or other direct connections to the floor or roof deck, or they shall have their inboard ends stabilized by counterweights.

Exception: Multi-point adjustable suspended scaffolds shall not be stabilized by counterweights.

3314.10.5Outrigger beam installation. Outrigger beams shall be installed with all bearing supports perpendicular to the beam centerline and shall set and maintain the web in a vertical position. The shackle or clevis with which the rope is attached to the outrigger beam shall be placed directly over the centerline of the stirrup.

3314.10.6Counterweight material. Counterweights shall be made of a non-flowable material. Sand, gravel and similar materials that can be easily dislocated shall not be used.

3314.10.7Counterweight securement. Counterweights shall be secured by mechanical means to the outrigger to prevent accidental dislodgment.

3314.10.8Counterweight removal. Counterweights shall not be removed from an outrigger beam until the scaffold is disassembled.

3314.10.9 Tieback location. Tiebacks shall be installed perpendicular to the face of the building, or opposing angle tiebacks shall be installed. Single tiebacks installed at an angle are prohibited.

3314.10.10 Support devices. Suspended scaffold support devices, such as C-hooks, cornice hooks, roof hooks, roof irons, parapet clamps or other similar devices shall meet the following requirements:

1. Support devices shall be made of steel, wrought iron or materials of equivalent strength.
2. Such devices shall be supported by bearing blocks.

3. Support devices shall be secured against movement by tiebacks installed at right angles to the face of the building or structure or by opposing angle tiebacks installed and secured to a structurally sound point of anchorage as prescribed in Section 3314.6.

4. Tiebacks shall be equivalent in strength to the hoisting rope.

3314.11 Suspension rope. When winding drum hoists are used on a suspended scaffold, they shall contain not fewer than four wraps of the suspension rope at the lowest point of scaffold travel. When other types of hoists are used, the suspension ropes shall be long enough to allow the scaffold to be lowered to the level below without the rope end passing through the hoist, or the rope end shall be configured or provided with means to prevent the end from passing through the hoist.

3314.11.1 Repaired rope. The use of repaired wire rope as suspension rope is prohibited.

3314.11.2 Rope replacement. Ropes shall be replaced or removed if any of the following conditions exist, and as otherwise prescribed by rule of the department:

1. Any physical damage that impairs the function and strength of the rope.
2. Presence of kinks that might impair the tracking or wrapping of the rope around the drum(s) or sheave(s).
3. Presence of abrasion, corrosion, scrubbing, flattening or peening causing the loss of more than one-third of the original diameter of the outside wires.
4. Heat damage caused by a torch or any damage caused by contact with electrical wires.
5. Evidence that the secondary brake has been activated during an overspeed condition and has engaged the suspension rope.

3314.11.3 Shielding. Suspension ropes shall be shielded from heat-producing processes.

3314.11.4 Corrosive substances. When acids or other corrosive substances are used on a scaffold, the ropes shall be shielded, treated to protect against corrosive substances, or made of a material that will not be damaged by the corrosive substance being used.

3314.11.5 Arcing prevention. Precautions shall be taken to prevent the possibility of arcing through the suspension wire rope.

3314.11.5.1 Insulated thimble. An insulated thimble shall be used to attach each suspension wire rope to its hanging support. Excessive suspension wire rope and any additional independent lines from grounding shall be insulated.

3314.11.5.2 Insulating material. The suspension wire rope shall be covered with insulating material extending at least 4 feet (1219 mm) above the hoist. If there is a tail line below the hoist, it shall be insulated to prevent contact with

the platform. The portion of the tail line that hangs free below the scaffold shall be guided or retained or both so that it does not become grounded.

3314.11.5.3 Protective covers. Each hoist shall be covered with insulated protective covers.

3314.11.5.4 Grounding conductor. In addition to a work lead attachment required by the welding process, a grounding conductor shall be connected from the scaffold to the structure. The size of the connector shall be at least the size of the welding process work lead, and this conductor shall not be in series with the welding process or the work piece.

3314.11.5.5 Disconnected grounding lead. If the scaffold grounding lead is disconnected at any time, the welding machine shall be shut off.

3314.11.5.6 Welding rod or lead. An active welding rod or uninsulated welding lead shall not be allowed to make contact with the scaffold or its suspension system.

3314.11.6 Wire rope clips. There shall be a minimum of three wire rope clips installed a minimum of six rope diameters apart. The clips shall be retightened to the manufacturer's specifications after initial loading. U-bolt clips shall not be used at the point of suspension. When U-bolt clips are used, the U-bolt shall be placed over the dead end of the rope and the saddle shall be placed over the live end of the rope.

3314.12 Wood pole scaffolds.

3314.12.1 Standard designs. All wood pole scaffolds 40 feet (12 192 mm) high or less shall be constructed in accordance with the minimum nominal sizes and maximum spacings shown in Tables 3314.12.1 (1) through 3314.12.1 (6). Wood pole scaffolds more than 40 feet (12 192 mm) high shall be designed in accordance with Section 3314.3.

Ledgers (minimum):

[SEE tabular material in printed version]
3]

Planking:

[SEE tabular material in printed version]

Toeboards

[SEE tabular material in printed version]
3]

Max. pole spacing (longitudinal):

[SEE tabular material in printed version]

Note for Table 3314.12.1(4): a[Total base dimension in both directions to be at least 25 percent of height. Note: For SI: 1 inch = 25.4 mm. 3]

Table 3314.12.1(5)

Minimum Size and Maximum Spacing Members
of Independent Wood Pole Medium Duty Scaffolds

[SEE tabular material in printed version]

Note for Table 3314.12.1(5): a[Total base dimension in both directions to be at least 25 percent of height. Note: For SI: 1 inch = 25.4 mm.

[SEE tabular material in printed version]

Note for Table 3314.12.1(6): a[Total base dimension in both directions to be at least 25 percent of height. Note: For SI: 1

inch = 25.4 mm.

3314.12.2Erection and removal. When a new working level is desired, the existing planks shall be left undisturbed until the new working level is framed. As the platform level is abandoned with the progress of the work, all members other than the planking, railing and toeboards shall be left intact. When removing a scaffold, the sequence of removing the members shall be the reverse of that used in erection.

3314.12.3Materials and construction for wood pole scaffolds. Wood pole scaffold materials and construction shall comply with the following requirements:

1. All lumber used in wood pole scaffolds or their supports shall be at least equal in strength and quality to construction grade lumber in accordance with Section 2301.

2. All lumber and timber shall be fastened at the various joints with sufficient nails or bolts of a suitable size to produce a secure joint capable of withstanding the design load. Table 3314.12.3 provides minimum requirements for size and number of nails. All nails shall be driven full length.

3. Any other suitable material, or dimensions other than those indicated, may be used for wood pole scaffold construction provided it is at least equivalent in strength and suitability to the comparable wood scaffold it is designed to replace, and approval of the commissioner has been obtained. Table 3314.12.3 Size and Number of Nails Required for Scaffold Construction

Thickness of Smaller Member (in.)	Trade Size of Nail	Length of Nail (in.)	1	8d	2	1/2	2	20d	4	3	60d	6	4	- 8	Width of Smaller Member (in.)	Minimum Number of Nails Required
4	2	6	3	8	4	10	5	12	5	Note: For SI: 1 inch = 25.4 mm.						

3314.12.4Poles. Wooden scaffold poles shall be plumb and the foot ends shall be secured against lateral movement. Where wood poles are spliced, the squared end of the upper section shall bear uniformly on the squared end of the lower section and the two ends shall be rigidly fastened together with two or more wood splice plates, each at least 4 feet (1219 mm) in length. The plates shall be placed at right angles to each other, shall overlap the abutting ends of the pole equally, and shall have a combined sectional area not less than 50 percent of the cross sectional area of the pole. Splicing of adjacent poles shall be staggered. Splices shall be close to ledgers, but so located as not to interfere with the fastenings.

3314.12.5Bracing. Wood pole scaffolds shall be braced and stayed to prevent movement away from the building. Diagonal or equivalent bracing shall be provided to prevent the poles from moving in a direction parallel to the building face and shall be so installed that every spliced section of every pole is braced to adjacent poles.

3314.12.6Planking. Where planks are butted end to end, parallel putlogs or bearers shall be provided not more than 8 inches (203 mm) apart so that the butted ends rest on separate putlogs or bearers. Ends shall be nailed or cleated.

Where platform planks are used with overlapping ends, the ends of both the upper and lower planks shall overlap the putlog or bearer by at least 6 inches (152 mm).

Planks shall be laid close together and shall be of sufficient length to extend over three bearers.

3314.12.7Connections. Ledgers shall not be spliced between poles but shall overlap the poles at each end by at least 4 inches (102 mm). Where ledgers lap each other, bearing-blocks attached to the pole shall be provided to support the ledger.

The ends of all wooden braces shall overlap the nailed fastenings by an amount sufficient to prevent the ends of the braces from splitting.

3314.12.8Putlogs for single pole scaffolds. All putlogs shall be set with the greater dimension vertical and shall be

long enough to project beyond the outer edge of the poles by at least 12 inches (305 mm). Putlogs shall be supported on the ledger and located against the side of the poles and fastened to either the pole or the ledger. The other end of the putlog shall rest in the wall of the building, with at least a 4 inch (102 mm) bearing, and shall not be notched or cut down, except for light duty scaffolds, which may be notched or cut down to fit into a space made by the removal of a brick. In such cases, the notch shall be made on the top of the putlog just deep enough to permit it to be inserted in the hole in the wall.

3314.12.9Bearers for independent pole scaffolds.Bearers shall be set with their greater dimensions vertical, and shall be long enough to project over the ledgers beyond the outer row of poles by at least 12 inches (305 mm) and beyond the inner row of poles by at least 2 inches (51 mm). Bearers shall be supported on the ledgers, located against the sides of the poles and fastened to the ledgers.

3314.13Fabricated frame scaffolds.

3314.13.1Bracing.Frames and panels shall be braced by cross, horizontal or diagonal braces or a combination thereof, which secure vertical members together laterally.

3314.13.2Vertical joining.Frames and panels shall be joined together vertically by coupling or stacking pins or equivalent means. Where uplift can occur, the frames or panels shall be locked together vertically by pins or equivalent means.

3314.13.3Frame scaffold brackets.Brackets used to support cantilevered loads shall be seated with side-brackets parallel to the frame and end-brackets at 90 degrees to the frames, shall not be bent or twisted from these positions and shall be used only to support light duty loads as defined in Section 3314.3.3, unless the design provisions of Section 3314.3 have been met.

3314.14Outrigger scaffolds (thrust out).Outrigger scaffolds (thrust out) shall not be used for loading in excess of 50 pounds per square foot (244.1 kg/m²) (medium duty).

3314.14.1Outrigger beams.The fulcrum point of the beam shall rest on a secure bearing at least 6 inches (152 mm) in each horizontal dimension. The beam shall be secured against movement and shall be securely braced against tipping at both the fulcrum point and the inboard end.

3314.14.2Inboard supports.The inboard ends of outrigger beams shall be securely fixed to resist all vertical, horizontal, and torsional forces. Pull-out tests for adhesive and expansions anchors, if used, shall be approved by the commissioner.

3314.15Two-point adjustable suspension scaffolds.

3314.15.1Width and support.Two-point suspension platforms shall be at least 20 inches (508 mm) but not more than 36 inches (914 mm) in width unless designed by an engineer. Each end of the platform shall be supported by a stirrup or hanger that meets the requirements of Section 3315.15.2, and the platform shall be securely fastened thereto. Not more than two hangers or stirrups shall be used to support one scaffold.

3314.15.2Hangers or stirrups.Hangers or stirrups shall be of steel or wrought iron. Each such hanger shall be formed to properly fit the platform and the hoist mechanism. The hanger or stirrup shall be placed at least 6 inches (152 mm) but not more than 18 inches (457 mm) from the end of the platform unless the manufacturer specifies otherwise.

3314.15.3Fiber suspension rope.The use of fiber rope shall be limited to light duty two-point suspension scaffolds. Fiber rope shall be at least equivalent in strength and suitability to 3/4-inch (19 mm) grade 1 unspliced manila rope.

Fiber rope susceptible to damage from corrosive substances shall not be permitted for or near any work involving

the use of corrosive substances

Fiber rope shall not be used where the upper block is more than 100 feet (30 480 mm) or ten stories above the ground or roof setback.

All blocks shall fit the size of rope they carry, and shall be constructed so as not to chafe the rope.

3314.15.4Combination.Two or more two-point suspension scaffolds shall not be combined into one by bridging the distance between them or by any other form of connection.

3314.15.5Number of workers.Not more than two workers shall be permitted to work on one scaffold at one time except where the scaffold is designed to hold more. Written permission from the commissioner shall be required for more than two workers on the scaffold.

3314.15.6Device to raise, lower, and hold the scaffold.Every two-point suspension scaffold shall be equipped with an approved device to raise, lower or hold the scaffold in position.

3314.15.7Platforms.The platforms of every two-point suspension scaffold shall be ladder-type, plank-type, beam-type, light-metal type, or another type acceptable to the commissioner.

3314.16Corner and angle scaffolds.Corner and angle scaffolds shall comply with the following:

3314.16.1Motors.As many motors as needed shall be provided to maintain the stability of the platform under all operating conditions.

3314.16.2Maximum number of people.The number of people allowed on a corner or angle scaffold shall not be more than the number of motors required to keep the scaffold stable, unless otherwise designed by an engineer.

3314.16.3Permit application.The following equipment information shall be submitted by an engineer with the permit application for corner and angle scaffolds:

1. Plans and details of the equipment;
2. Load capacity and distribution charts;
3. Certification from the engineer that he/she has reviewed the manufacturer's design calculations and testing or prepared sufficient calculations of his/her own and found them to conform to this code; and
4. Any supporting data, drawings, or calculations.

3314.16.4Inspection.The equipment setting for corner and angle scaffolds shall be inspected by the department prior to its use. Additional inspection by the department shall be required each time the equipment is moved to a different position.

3314.17Multiple-point adjustable suspension scaffolds.Multiple-point suspension scaffolds shall comply with the following:

1. All multiple-point suspension scaffolds shall be supported by wire ropes. The use of fiber ropes is not permitted;
2. Provision shall be made to prevent supports from slipping off the ends of outrigger beams;
3. Platform bearers shall be of metal; and
4. During raising or lowering, the levels of the various sections of the scaffolds shall be kept uniform and the

differential height between sections shall be minimized.

3314.18Manually-propelled, free-standing scaffolds.All manually-propelled free-standing scaffolds shall meet the following requirements:

1. Work platforms shall be tightly planked for the full width of the scaffold, except for necessary entrance openings. Planks shall be secured in place;
2. Platforms shall have a guardrail system;
3. Where a ladder is used to approach a platform, the ladder shall be secured to the scaffold;
4. Handholds shall be provided for safe passage from the ladder to the platform;
5. Unless temporarily braced to an adjacent structure, the ratio of the platform height to the least base dimension shall be such as to assure stability, but in no case shall such height be more than four times the least base dimension;
6. Provisions shall be made to prevent the scaffold from falling during movement from one location to another;
7. While the scaffold is in use, it shall rest upon a stable footing and shall stand plumb. The casters or wheels shall be locked in position; and
8. While the scaffold is being moved, no person shall be permitted to ride on it, and all tools, equipment and material shall be removed.

3314.19Mast-climbing work platform.Mast-climbing work platforms, including all supports, fastenings, connections, and details shall not be erected or installed unless and until a written permit has been issued by the commissioner on the basis of construction documents, drawings, and specifications. Copies of the written permit application shall be kept at the site and made available to the commissioner upon request. Such permit shall be issued in accordance with rules promulgated by the commissioner.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

3314.1.1 added L.L. 8/2008 § 169, eff. July 1, 2008.

3314.1.2 renumbered (former 3314.1.1) L.L. 8/2008 § 169, eff. July 1, 2008.

3314.2 Exceptions item 1 amended L.L. 8/2008 § 170, eff. July 1, 2008.

3314.4.5 amended L.L. 24/2008 § 7, eff. July 1, 2008. [Note: This

amendment omitted the amendment by L.L. 8/2008 which is included

here]

3314.4.5 amended L.L. 8/2008 § 171, eff. July 1, 2008.

3314.4.6 amended L.L. 24/2008 § 7, eff. July 1, 2008. [Note: This

amendment omitted the amendment by L.L. 8/2008 which is included

here]

3314.4.6 amended L.L. 8/2008 § 171, eff. July 1, 2008.

3314.4.7 added L.L. 24/2008 § 8, eff. July 1, 2008.

3314.4.8 renumbered (former 3314.4.7) L.L. 24/2008 § 8, eff. July 1,

2008.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3315: STRUCTURAL RAMPS, RUNWAYS, AND PLATFORMS

NYC Administrative Code § 28-BC 3315

3315.1 Ramps and runways.

Ramps and runways (including elevated walkways) shall comply with the requirements of Section 3315.1.1 through 3315.1.5.

3315.1.1 Construction. All runways and ramps shall be constructed, braced and supported to resist lateral displacement and all vertical loads, including impact.

3315.1.2 For motor vehicle use. Runways and ramps for the use of motor vehicles may consist of an earthfill or may be structurally supported. Such runways and ramps shall have a clear width of not less than 12 feet (3658 mm) with timber curbs at least 8 inches by 8 inches (203 mm by 203 mm) placed parallel to, and secured to, the sides of the runway or ramp. The flooring of structurally supported ramps shall consist of no smaller than 3 inch (76 mm) planking full size, undressed, or equivalent material, with spans designed for the loads to be imposed.

3315.1.3 For use of workers. Runways and ramps for the use of workers shall be at least 1 foot 6 inches (457 mm) in clear width. Where used for wheelbarrows, handcarts, or hand-trucks, runways and ramps shall be at least 3 feet (914 mm) in clear width. Flooring shall consist of at least 2 inch (51 mm) planking spanning as permitted by Table 3314.5.2, laid close, butt-joined, and securely fastened.

3315.1.4 Slope limitations. Ramps shall have a slope not steeper than one in four. If the slope is steeper than one in eight, the ramp shall be provided with cleats spaced not more than 14 inches (356 mm) apart and securely fastened to the planking to afford a foothold. Spaces in the cleats may be provided for the passage of the wheels of vehicles. The total rise of a continuous ramp used by workers carrying material or using wheelbarrows, hand-carts, or hand-trucks shall not exceed 12 feet (3658 mm) unless broken by horizontal landings at least 4 feet (1219 mm) in length.

3315.1.5 Guardrail required. All runways and ramps located more than 5 feet (1524 mm) above the ground or floor shall be provided with a standard guardrail and standard toeboard that meets the requirements of Section 3307.8 on

open sides.

Where it is possible for the public to pass under, or next to, runways or ramps, the space between the top rail and the standard toeboard shall be enclosed with a wire screen composed of not less than no. 18 steel wire gage with a maximum 1/2 inch (12.7 mm) mesh.

3315.2 Platforms. Platforms shall comply with the requirements of Sections 3315.2.1 through 3315.2.2.

3315.2.1 Planking. Platforms used as working areas, or for the unloading of wheelbarrows, hand-trucks, or carts shall have a floor consisting of at least 2 inch (51 mm) planking spanning as permitted by Table 3314.5.2. Platforms for the use of motor trucks shall have a floor of at least 3 inch (76 mm) planking, full size, undressed or equivalent materials with spans designed for the loads to be imposed. Planking shall be laid close and shall be butt-joined and securely fastened.

3315.2.2 Guardrail required. Every platform more than 5 feet (1524 mm) above the ground or above a floor shall be provided with a standard guardrail and standard toeboard that meets the requirements of Section 3307.8, except that the side of the platform used for the loading or unloading of vehicles may be protected by a timber curb at least 8 inches by 8 inches (203 mm by 203 mm) for motor trucks or 4 inches by 4 inches (102 mm by 102 mm) for wheelbarrows and hand-trucks in lieu of the standard guardrail and standard toeboard.

Where it is possible for the public to pass under, or next to, platforms, the space between the top rail and the standard toeboard shall be enclosed with a wire screen composed of not less than no. 18 steel wire gage with a maximum 1/2 inch (12.7 mm) mesh.

3315.3 Special requirements where power buggies are used. Runways, ramps, platforms, and other surfaces upon which power buggies are operated shall meet the following minimum requirements:

1. They shall be designed by a qualified person.
2. They shall be able to sustain, without failure, at least four times the maximum live load for which they are intended.
3. The minimum width, inside of curbs, for any ramp, runway, or platform shall be 2 feet (610 mm) wider than the outside width of any power buggy operated thereon without passing, and 3 feet (914 mm) wider than twice such buggy width in the places where passing occurs.
4. All runways shall be essentially level transversely.
5. Curbs shall be furnished along all buggy traffic paths that are nearer than 10 feet (3048 mm) horizontally to any unenclosed area, shaft, or other open space into which or through which a fall of more than 12 inches (305 mm) from such surface is possible, except as set forth in numbered item seven.
6. Where curbs are not required because the buggy is operated on a surface not over 12 inches (305 mm) above another surface, the lower surface shall be strong enough to sustain the loaded vehicle in the event of a fall thereon.
7. Curbs may be omitted at actual dumping points more than 12 inches (305 mm) above other surfaces if the edge over which dumping occurs is provided with bumpers or other means that will effectively stop the buggy from running over the edge while dumping.
8. Curbs must be at least 7 inches (178 mm) high, securely fastened, and capable of resisting side impact, and shall be equivalent to at least 2 inch by 8 inch (51 mm by 203 mm) plank set on edge against uprights securely fastened and braced at not more than 4 foot (1219 mm) intervals.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3316: HOISTING EQUIPMENT

NYC Administrative Code § 28-BC 3316

3316.1 Scope.

Hoisting equipment shall meet and be used in accordance with the requirements of this section. Material hoists and bucket hoists shall also meet the requirements of Section 3317, personnel hoists shall also meet the requirements of Section 3318, and cranes and derricks shall also meet the requirements of Section 3319.

3316.2Requirements.Hoisting equipment, its supports and runback structures shall be installed, operated, and maintained to eliminate hazard to the public or to property. It shall be unlawful to operate any such equipment that is not provided with a positive means for preventing the unauthorized operation of such machine. The means whereby such machines may be made inoperative shall be accepted by the department.

3316.3Notification of hoisting accidents.The owner or person directly in charge of any hoisting equipment shall immediately notify the commissioner following any accident involving hoisting equipment. Following an incident, no person shall permit either of the following, without the permission of the commissioner:

1. Use of such hoisting equipment; or
2. Removal of the hoisting equipment or any part thereof from the area of the job site.

3316.4Permit.Permits for hoisting equipment shall comply with the requirements of Sections 3316.4.1 through 3316.4.5.

3316.4.1Acceptance of equipment.Hoists and all pre-manufactured runback structures shall be approved for use by the commissioner or other agency acceptable to the commissioner

Exception: Cranes and derricks shall meet the requirements of Section 3319.3.

3316.4.2Posting of permits.Permits, or duplicates of the permits, shall be posted in a conspicuous location in the car

or on the equipment.

3316.4.3 Construction documents. Copies of the written permit application and approved construction documents shall be kept at the site and made available to the commissioner upon request.

3316.4.4 Permit signage. Following the receipt of a permit to install a hoist, the permit holder shall post a sign that meets the requirements of Section 3301.9.6. Such sign shall be clearly visible from the street.

3316.4.5 Other temporary signage. Other than as specified in Section 3301.10, there shall be no information, pictorial representation, or any business or advertising messages posted on the hoisting equipment or runback structure.

3316.5 Design, construction and inspection. Hoisting equipment, its supports and runback structures shall be designed, constructed and inspected in accordance with rules promulgated by the commissioner.

3316.6 Rope inspection and replacement. All ropes used in hoisting equipment shall meet the inspection and replacement requirements specified in rules promulgated by the commissioner.

3316.7 Operation. Only operators designated by the person causing such hoisting equipment to be used shall operate such hoisting machinery. Operators and signalmen/signalwomen shall be qualified for the operation they perform. The operator shall be responsible for making the machine inoperative before he or she leaves the machine.

3316.7.1 Use. Hoisting equipment, its supports and runback structures shall be operated in compliance with the manufacturing specifications, the requirements of this code, and rules promulgated by the commissioner. If there is a discrepancy, the stricter requirement shall be met.

3316.7.2 Use during installation, jumping, dismantling, or alteration. Personnel and building materials connected with or related to the building project shall not be moved by the hoist while it is being installed, jumped, dismantled or altered.

3316.8 Maintenance. Hoisting equipment, its supports and runback structures shall be maintained in compliance with the manufacturing specifications and rules promulgated by the commissioner. If there is a discrepancy, the stricter requirement shall be met.



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SECTION BC 3317: MATERIAL HOISTS AND BUCKET HOISTS

NYC Administrative Code § 28-BC 3317

3317.1 Scope.

Material hoists and bucket hoists shall meet the requirements of this section and Section 3316.

3317.2Permit.The equipment user or his or her designated representative shall obtain a written permit issued by the commissioner on the basis of construction documents, drawings and specifications prior to erecting or installing all power-operated, material hoists, including any runback structure or supports.

Exception: Power-operated, non-guided material hoists with a maximum capacity of one ton or less and installed on new construction, or on alterations where the operation of the hoist is confined within the property and the site is protected in accordance with Section 3307.

3317.3Design, inspection, and operation.Material hoists, bucket hoists and their components shall be designed, inspected, and operated in accordance with rules promulgated by the commissioner.

3317.4Construction.Material hoists, bucket hoists and their components shall be constructed in compliance with the manufacturing specifications, the requirements of this code, and rules promulgated by the commissioner. If there is a discrepancy, the stricter requirement shall be met.

Upon completion of the installation of the hoisting equipment and/or its runback structure, an inspection report verifying that the hoist has been installed in accordance with the design drawings, construction documents and specifications shall be prepared by the designer, installer or an approved inspection agency designated by both the designer and installer.

3317.5Operation.Notwithstanding any other provision of law, material hoists with a manufacturer's capacity over one ton shall be operated only by persons holding a Class A or Class B Hoisting Machine Operators License except during installation, jumping, dismantling or alteration operations.



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SECTION BC 3318: PERSONNEL HOISTS

NYC Administrative Code § 28-BC 3318

3318.1 Scope.

Personnel hoists shall meet and be used in accordance with the requirements of this section and Section 3316.

3318.2Permit.The equipment user or his or her designated representative shall obtain a written permit issued by the commissioner on the basis of construction documents, drawings and specifications prior to erecting or installing all power-operated, material hoists, including any runback structure or supports.

3318.3Design and inspection.Personnel hoists and their components shall be designed and inspected in accordance with rules promulgated by the commissioner.

3318.4Construction.Personnel hoists and their components shall be constructed in compliance with the manufacturer's specifications, this code, and rules promulgated by the commissioner. If there is a discrepancy, the stricter requirement shall be met.

Upon completion of the installation of the hoisting equipment and/or its runback structure, an inspection report verifying that the hoist has been installed in accordance with the design drawings, construction documents and specifications shall be prepared by the designer, installer or third party designated by both the designer and installer and acceptable to the commissioner.

3318.5Operation.Personnel hoists and their components shall be operated in accordance with this code and rules promulgated by the commissioner.

When the hoist is equipped with manual controls, the hoist shall be operated by a competent qualified operator. Only the operator authorized by the equipment user shall operate the hoist.

3318.5.1Making safety devices inoperative.No person shall at any time make any requiredsafety device or electrical protective device inoperative except when necessary during tests, inspections and maintenance.

Immediately upon completion of the tests, inspections and maintenance, such devices shall be restored to their normal operating condition in conformance with the applicable requirements of this section.



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SECTION BC 3319: CRANES AND DERRICKS

NYC Administrative Code § 28-BC 3319

3319.1 Scope.

The construction, installation, inspection, maintenance and use of cranes and derricks shall be in conformance with the requirements of this section, Section 3316, and with rules promulgated by the commissioner.

3319.2Operation.Riggers and hoisting machine operators shall be licensed as required by Chapter 4 of Title 28 of the Administrative Code.

3319.3Requirements.No owner or other person shall authorize or permit the operation of any crane or derrick without a certificate of approval, a certificate of operation and a certificate of on-site inspection.

Exceptions:

1. The requirements of this section shall not apply to excavating or earth-moving equipment, except cranes used with clamshells.
2. The requirements of this section shall not apply to cranes or derricks performing an emergency use pursuant to the lawful order of the head of any department.
3. The requirements of this section shall not apply to mobile cranes, including jibs and any other extensions to the boom not exceeding 50 feet (15 240 mm) in length and with a manufacturer's rated capacity of 3 tons (2722 kg) or less.
4. The requirements of this section shall not apply to mobile cranes, including jibs and any other extensions, exceeding 50 feet (15 240 mm) but not exceeding 135 feet (41 148 mm) in length, and with a manufacturer's rated capacity of 3 tons (2722 kg) or less, except that a certificate of operation, as provided for in Section 3319.5, shall be required. The requirement for a certificate of operation shall not apply to such a crane used exclusively as a man basket. The commissioner may, by rule, exempt other mobile cranes of limited size from any or all requirements of this section.

5. The requirements of this section shall not apply to hoisting machines permanently mounted on the bed of material delivery trucks that are used exclusively for loading and unloading such trucks, provided that the length of boom does not exceed the length of the truck bed by more than 5 feet (1524 mm) and that any material transported thereon shall not be raised more than 2 feet (610 mm) in the unloading process. Operators of such equipment shall be exempt from licensing requirements described in Chapter 4 of Title 28 of the Administrative Code.

6. The requirements of this section shall not apply to cranes or derricks used in industrial or commercial plants or yards not used for the construction of the facility. Floating cranes, floating derricks, and cranes and derricks used on floating equipment shall also be exempt from the requirements of this section. Operators of such equipment shall be exempt from the licensing requirements described in Chapter 4 of Title 28 of the Administrative Code.

7. The requirements of this section shall not apply to augurs, churn-drills and other drilling equipment not used for hoisting any objects. Operators of such equipment shall be exempt from the licensing requirements described in Chapter 4 of Title 28 of the Administrative Code.

8. The requirements of this section shall not apply to derricks having a maximum rated capacity not exceeding 1 ton (907 kg).

9. The requirements of this section shall not apply to mechanic's truck with a hoisting device when used in activities related to the maintenance and repair of construction-related equipment.

10. The requirements of this section shall not apply to articulating boom cranes that do not have an integral hoisting mechanism, and that are used exclusively for loading and unloading of trucks or trailers, provided that the length of boom does not exceed 135 feet (41 148 mm) and that any material transported thereon shall not be raised more than 100 feet (30 480 mm) in the unloading process. Operators of such equipment shall be exempt from licensing requirements described in Chapter 4 of Title 28 of the Administrative Code.

3319.4 Certificate of approval. Certificates of approval shall comply with the following:

1. The manufacturer, owner, or designated representative of a crane or derrick for which a certificate of approval is sought shall file an application for such certificate of approval and provide such information as set forth in rules promulgated by the commissioner.

2. Upon the department's approval of the application described in item 1 above, the department shall issue a certificate of approval for the equipment and an approval of the submitted load rating chart.

3. A new certificate of approval shall be required when a crane or derrick is modified or altered to increase the boom length, jibs or any extensions to the boom beyond the maximum approval length or when the load ratings are increased.

3319.5 Certificate of operation. Certificates of operation shall comply with the following:

1. The commissioner shall issue the initial certificate of operations for the crane or derrick with certificate of approval upon satisfactory inspection and test indicating that such crane or derrick is in a safe operating condition. The initial certificate of operation shall expire one year from the date of issuance.

2. The owner of a crane or derrick covered by the certificate of operation shall renew the certificate of operation each year.

3. If the owner of the covered crane or derrick applies for renewal of a certificate of operation within not more than 60 nor less than 30 days prior to the date of its expiration, such owner may continue to use the covered crane or derrick until the department grants or denies a new certificate;

4. When a crane or derrick configuration is changed to increase the boom length, jibs or any extensions to the boom beyond the maximum approval length or when the load ratings are increased, a new certificate of operation shall be required. In such a case, the crane or derrick may not be operated until the new certificate of operation is obtained.

5. An application for a new certificate of operation shall be submitted when attachments that affect the stability or structure of the crane or derrick are added. Calculations and load rating charts as required by rules promulgated by the commissioner shall be submitted with the renewal request.

3319.6Certificate of on-site inspection.Certificates of on-site inspection shall comply with the following:

1. The equipment user, or his or her designated representative, shall obtain a certificate of on site inspection for the use of any crane or derrick used for construction or demolition purposes at each job site. Such application for the certificate of on-site inspection shall include information set forth in rules promulgated by the commissioner.

2. Upon approval of the application, a copy of such approval shall be given to the applicant. It shall be unlawful to operate the equipment that is the subject of the approval until it has been inspected and found to be satisfactory by the department as set forth in rules promulgated by the commissioner. Upon inspection and a finding of satisfactory compliance, the approval shall be deemed a certificate of on-site inspection, which shall expire one year from the date of issuance. A certificate of on-site inspection may be renewed in accordance with rules promulgated by the commissioner;

3. The certificate of on-site inspection is y valid only if the conditions and statements contained in the approved application are complied with and the crane or derrick is operated in conformance with the provisions of this section and the rules applicable thereto.

4. A certificate of on-site inspection is not required for cranes or derricks performing work exempted from such requirement by rules promulgated by the commissioner.

3319.7Temporary certificates.The commissioner may issue temporary certificates of approval, operation and on-site inspection for any crane or derrick during the pendency of an application for certificates of approval and operation upon inspection and upon such analysis and testing as the commissioner may deem necessary. The commissioner may revoke such temporary certificates if the application is denied.

3319.8Special provisions for tower and climber cranes.Tower and climber cranes shall comply with the following requirements:

3319.8.1Plan for the erection, jumping, climbing, and dismantling of tower or climber cranes.An erection, jumping, climbing and dismantling plan for tower or climber cranes, other than truck and crawler mounted tower cranes, shall be submitted to the department by a licensed engineer. The plan must be prepared by a licensed engineer in conjunction with a licensed rigger and must be in compliance with the manufacturer's recommendation for erection, jumping, climbing, or dismantling of the specific crane where such manufacturer's recommendations exist. The plan must be filed with the certificate of on-site inspection application as required by section 3319.3. No erection, jumping, climbing, or dismantling of a tower or climber crane shall take place without the prior issuance of a certificate of on-site inspection by the cranes and derricks unit. The plan shall include the following:

1. Identification of the equipment proposed to be used; including all machines proposed to be used in the erection or dismantling;

2. A detailed identification of the assemblies and components required for the erection and dismantling of the equipment;

3. Location of the equipment, sidewalk sheds (or Department of Transportation street closing permits, if

applicable), surrounding buildings, protection for their roofs and the pick-up points, loads, and radius of swing of all loads. In addition, the safe load from the approved load radius chart shall be submitted for lift radius;

4. A weight list of all assemblies and components proposed to be lifted. Components are to be clearly marked with their weight painted on the assembly or stamped on metal tags attached to the assembly. The manufacturer of the climber or tower crane shall certify the weight of assemblies and components. Alternately, in lieu of painted weight markings or metal tags, or when the manufacturer's certification is not available, the licensed engineer applicant shall certify an erection, jumping, climbing or dismantling weight list indicating how such weights were determined;

5. The center of gravity of all asymmetrical components shall be located and shown;

6. A sequence of operation detailing the erection, jumping, climbing, and dismantling, along with the rigging materials to be used in such operations;

7. The certification of the calibration as required in item 6 of section 3319.8.8;

8. Cranes or derricks located either within the lot line or on the street and used to erect, jump, climb, or dismantle a tower or climber crane shall be indicated;

9. The names and contact information of the licensed master, climber or tower crane rigger, rigger foreman, and the crane safety coordinator or designee, along with the name and contact information of the company performing the erection, dismantling, climbing and/or jumping work.

3319.8.2 Safety coordination meeting. The general contractor must hold a safety coordination meeting prior to the initial erection, as well as the dismantling or initial jump down, of a climber or tower crane. No work related to the erection, climbing, jumping or dismantling of the tower or climber crane may be performed without the safety coordination meeting having taken place. The following parties must be present at the safety coordination meeting:

1. General contractor or designee;
2. Professional engineer of record for the crane or designee;
3. Licensed master, tower or climber crane rigger and rigger foreman;
4. Crane safety coordinator;
5. Site safety manager or coordinator, if required for the job by Chapter 33 of the code;
6. Licensed crane operator and oiler; and
7. Any other parties the department deems necessary.

3319.8.3 Pre-jump safety meeting. The general contractor must coordinate a pre-jump safety meeting no more than 24 hours prior to each instance of a tower or climber crane jump or climb. No work related to the jumping or climbing of the tower or climber crane may be performed without the pre-jump safety meeting having taken place. The following parties must be present at the pre-jump safety meeting:

1. General contractor or designee;
2. Licensed master, tower or climber crane rigger and rigger foreman;
3. Crane safety coordinator;
4. Site safety manager or coordinator, if required for the job by Chapter 33 of the building code;

5. Licensed crane operator and oiler;
6. "Jumping" crew and back-up personnel;
7. Flagman/woman where required;
8. Signalman/woman and communications personnel; and
9. Any other parties the department deems necessary.

3319.8.4 Department notification.

3319.8.4.1 Meeting notifications. The general contractor must notify the department at least 48 hours in advance of any safety coordination meeting or pre-jump safety meeting. No work related to the erecting, jumping, climbing, or dismantling of the tower or climber crane is to be performed without prior notice of the meeting having been given to the department.

3319.8.4.2 Time schedule. A time schedule including date and time of day that the erection, jumping, climbing, or dismantling is proposed to take place shall be provided as soon as it is known by the general contractor.

3319.8.5 Safety coordination and pre-jump safety meeting topics. The following topics are to be covered during safety coordination and pre-jump safety meetings:

1. Scope of work;
2. Roles and responsibilities;
3. Rigging to be used and the specific sequence of operations;
4. Inspection of all rigging equipment, materials, and tools prior to work;
5. Review of all equipment, including but not limited to, collars, ties, and bolts;
6. Permit validity;
7. Qualifications and training of personnel;
8. Relevant weather warnings;
9. Compliance with the manufacturer's manual; and
10. Softening mechanisms, if using nylon slings.

3319.8.6 Meeting log. The general contractor, or his or her designee, and/or the company erecting, jumping, climbing, or dismantling the tower or climber crane shall keep a log on site and available to the department at all times that shall include:

1. the dates and times of all safety coordination meetings and pre-jump safety meetings held;
2. the names, titles, and company affiliations of all those present at the meetings;
3. a summary of what was discussed during each meeting, including specific tasks and the name of the person to whom they were assigned;

4. a list of the decisions made at the meeting; and
5. certification of worker training pursuant to Section 3319.10.

3319.8.7 Inspection and certification by the engineer of record. Prior to jumping or climbing a tower or climber crane, the engineer of record for the crane must provide the department with a certified, signed, and sealed report stating that:

1. he or she (or his or her designee) has inspected the crane installation prior to the pre-jump safety meeting, and providing the date of inspection;
2. he or she has found no hazardous conditions during the crane inspection or any other condition within his or her purview that adversely affects the safety of erection, dismantling, climbing, or jumping operations;
3. the crane is installed according to the plans approved by the department as well as in accordance with the manufacturer's specifications to the extent applicable; and
4. the appropriate technical testing records for the crane, including torque, plumb, and magnetic particle or other appropriate reports comply with safety requirements and with the manufacturer's specifications.

3319.8.8 Erection, jumping, climbing, and dismantling operations. The erection, jumping, climbing, and dismantling operations for tower and climber cranes shall be subject to the following requirements:

1. The licensed master, tower or climber crane rigger, the rigger foreman, and the crane safety coordinator or designee, shall be present at the job site during erection, jumping, climbing, and dismantling of the tower or climber crane;
2. Cranes or derricks located either within the lot line or on the street, and used to erect, jump, climb, or dismantle tower or climber cranes, shall be subject to certificate of on-site inspection requirements;
3. A load radius chart approved by department shall be posted in the cabin of the crane;
4. The approved erection, jumping, climbing, or dismantling procedure and sequence, with weights of assemblies and components clearly marked, shall be given by the crane safety coordinator to the licensed operator of the crane or derrick and to the rigger prior to commencement of the work;
5. No tower or climber crane shall be placed, erected or disassembled in any roadway, sidewalk, or street unless a permit is first obtained from the New York City Department of Transportation;
6. All accepted or approved installed safety devices on a crane involved in the erection, jumping, climbing, or dismantling procedure shall have been calibrated within the time period provided by department rules or manufacturer's specifications; and
7. The safety devices of the tower or climber crane shall be inspected by the licensed crane operator as part of the inspection procedure.

3319.9 Slings. Slings shall be used in accordance with the following requirements and any rules promulgated by the commissioner.

3319.9.1 Use of nylon slings in conjunction with climber or tower crane erection, jumping, climbing, and dismantling. Nylon slings shall only be used in conjunction with climber or tower crane erection, jumping, climbing, and dismantling if the manufacturer's manual specifically states or recommends the use of nylon slings. Nylon slings shall not be used unless softening mechanisms have been applied to all sharp edges.

3319.9.2 Discarded rope. Discarded rope shall not be used for slings.

3319.10 Worker training.

3319.10.1 Training Requirements. All workers engaged in the erection, jumping, climbing, rigging, or dismantling of a climber or tower crane, including the licensed rigger and the rigger foreman, shall have satisfactorily completed a department-approved training course of not less than thirty hours. Such course shall, at a minimum, include instruction on fall protection, crane assembly and disassembly, pre-lift planning, weights and materials, the use of slings, lifting/lowering loads, signaling and other proper means of communication with the crane operator, crane and hoist inspections, rigging requirements, and generally how to avoid accidents with cranes and hoists. The commissioner may by rule identify additional types of cranes for which such training is necessary. Any person who, within the three years prior to the effective date of this section, has successfully completed at least a thirty-hour training course need not take a second thirty-hour course, provided such person can provide to the department a dated certificate as set forth in this section evidencing completion of such a training course. Such person shall, however, take a department-approved eight-hour re-certification course within three years of the initial course and every three years thereafter. Successful completion of the training or re-certification course shall be evidenced by a dated certificate issued by the provider of the training or re-certification course. The certificate shall include such information as specified by the department by rule. The certificate, or a valid wallet card version thereof, shall be readily available to the commissioner upon request.

3319.10.1.1 Training providers. Such training or refresher course shall be conducted (i) pursuant to a registered New York state department of labor training program, or (ii) by a provider approved by the department.

3319.10.2 Certification. Prior to erecting, jumping, climbing or dismantling the climber or tower crane, or other crane type the commissioner specifies by rule, the master, climber or tower crane rigger shall certify in the meeting log, described in Section 3319.8.6, that the rigger foreman and all other members of the "jumping crew" and back-up personnel have satisfactorily completed all training requirements.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

3319.8 added L.L. 46/2008 § 2, eff. Dec. 21, 2008.

3319.9 added L.L. 45/2008 § 1, eff. Oct. 22, 2008.

3319.10 added L.L. 44/2008 § 1, eff. Mar. 21, 2009.



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SECTION BC 3320: MATERIAL HANDLING EQUIPMENT

NYC Administrative Code § 28-BC 3320

3320.1 Scope.

Material handling equipment shall meet and be used in accordance with the requirements of this section.

3320.2Requirements. Material handling equipment shall be installed, operated, and maintained to eliminate hazard to the public or to property. It shall be unlawful to operate any such equipment that is not provided with a positive means for preventing the unauthorized operation of such machine. The means whereby such machines may be made inoperative shall be acceptable to the commissioner.

3320.3Operation. Only operators designated by the person causing such machinery to be used shall operate material handling machinery. Operators and signalmen/signalwomen shall be experienced at the operation they perform. The operator shall be responsible for making the machine inoperative before he or she leaves the machine.

3320.3.1Loading. Loading of material handling equipment shall be conducted in accordance with the following requirements:

1. Material handling equipment shall not be loaded in excess of the rated load specified by the manufacturer. When necessary, manufacturer load ratings shall be reduced to take into account effects of wind, ground condition and operating speed.
2. Rated load capacities and required charts shall be conspicuously posted on all material handling equipment or on the job site and shall be available to the commissioner at all times.
3. All loads shall be properly trimmed to prevent the dislodgment of any part during raising, lowering, swinging or transit.
4. Suspended loads shall be securely slung and properly balanced before they are set in motion.

3320.3.2Refueling. Refueling of material handling equipment shall be conducted in accordance with the following requirements:

1. The engine shall be stopped during refueling, except as otherwise provided in rules promulgated by the commissioner.
2. Open lights, flames, or spark-producing devices shall be kept at a safe distance while refueling an internal combustion engine.
3. No person shall smoke or carry lighted smoking material in the immediate vicinity of the refueling area.
4. "No smoking" signs shall be conspicuously posted in all fueling or fuel storage areas.
5. Fuel shall be kept in containers that meet the requirements of the Fire Department.
6. All other requirements of the Fire Department shall be satisfied.

3320.4Notification of accidents involving material handling equipment. The owner or person directly in charge of any material handling equipment shall immediately notify the commissioner following any accident involving material handling equipment. In such a case, no person shall permit either of the following without the permission of the commissioner:

1. Use of such material handling equipment; or
2. Remove of the material handling equipment or any part thereof from the area of the job site.

3320.5Conveyors. Conveyors shall meet the requirements of Sections 3320.5.1 through 3320.5.3.

3320.5.1Walkways. Walkways along belt conveyors or bucket conveyors shall be kept free of materials and, where 5 feet (127 mm) or more above the ground, shall be provided with a standard guardrail and standard toeboard that meets the requirements of Section 3307.8 along the outside of the walkway. The standard guardrail and standard toeboard may be omitted on the side toward the belt if the walkway is located adjacent to the conveyor.

3320.5.2Trippers. Where trippers are used to control discharge, a device for throwing the belt or bucket drive into neutral shall be installed at each end of the runway.

3320.5.3Spillage. Where conveyor belts cross any traveled way, trays shall be installed to catch spillage and overhead protection shall be provided for persons or traffic passing beneath.

3320.6Trucks. Trucks shall meet the requirements of Sections 3320.6.1 and 3320.6.2.

3320.6.1Maintenance. All parts and accessories of trucks shall be kept in repair. Brakes shall be maintained so that the vehicle with full load may be held on any grade that may be encountered on the job. Provision shall be made for the immediate application of wheel blocks to trucks traversing ramps steeper than one in ten.

3320.6.2Loading. Trucks shall not be loaded beyond the manufacturer's rated capacity, nor beyond the legal load limit, where applicable. The loads shall be trimmed before the truck is set in motion to prevent spillage. Loads that project beyond the sides of the truck, or that may be dislodged in transit, shall be removed or securely lashed in place.

3320.7Power buggies. Power buggies shall meet the requirements of Sections 3320.7.1 and 3320.7.2.

3320.7.1Responsibilities of employers and workers. Employers and workers shall have the following responsibilities regarding power buggies:

1. Every person causing a power buggy to be used shall provide trained and competent operators and shall carry out or enforce all provisions of this section pertaining to the use, operation, and maintenance thereof.

2. No person other than the operator assigned by the employer shall operate a power buggy. A power buggy shall be in the charge and custody of the operator assigned, and no other person shall in any way interfere with or handle it, nor shall the operator cause or permit any other person to do so.

3. No power buggy shall be operated unless it is in good operating condition and is so constructed that it is stable under conditions of normal use.

3320.7.2 Operation and construction. Power buggies shall be operated and constructed in accordance with the requirements of Section 3320.7.2.1 through 3320.7.2.4.

3320.7.2.1 Brakes. Every power buggy shall be provided with brakes and tire surfaces capable of bringing it to a full stop within 25 feet (635 mm) on a level surface that is similar to the one on which it will be used and at full rated load and maximum design speed. Brakes shall be capable of being fixed in engagement to hold the full load stationary on a 25 percent grade.

3320.7.2.2 Accidental starting. All movement controls of every power buggy shall be so arranged or shielded that they cannot be inadvertently engaged or the buggy accidentally set in motion.

3320.7.2.3 Parking on grades. No power buggy shall be left unattended on any grade sufficiently steep to cause it to coast if free of engine and brake resistance.

3320.7.2.4 Use on ramps, runways and platforms. Power buggies shall not be used on ramps, runways, or platforms that do not meet the requirements of Section 3315

3320.8 Lift and fork trucks. Lift and fork trucks shall meet the requirements of Sections 3320.8.1 through 3320.8.4.

3320.8.1 Load capacity. A metal plate with readily legible etched or stamped figures giving the capacity rating in pounds shall be attached to every lift or fork truck.

3320.8.2 Maintenance. All parts and accessories of lift or fork trucks shall be kept in repair and with brakes adequate to maintain the fully loaded vehicle on any grade that may be encountered on the job.

3320.8.3 Loading. No lift or fork truck shall be loaded beyond its capacity rating. No hand-operated pallet truck loaded so that any point on the load is at a greater height than 4 feet 6 inches (114 mm) above the floor shall be moved by pushing unless handled by two persons.

3320.8.4 Prohibited use. No lift or fork truck shall be in motion when the loaded forks are elevated higher than necessary to clear obstructions, except as may be required for positioning, picking up, or depositing the load.

3320.9 Hand propelled vehicles. Hand propelled vehicles shall be constructed and braked to withstand the loads to be carried and shall be maintained in repair. Vehicles with loose parts shall not be used.

3320.10 Mixing machines. Where the public may have access to the working area near charging skips, standard guardrails that meet the requirements of Section 3307.8 shall be erected to enclose the area under the raised skip and the mixing machine. Each time before raising or lowering the charging skip, the operator shall ascertain that no one is in the danger zone.

3320.11 Jacks. Jacks shall meet the requirements of Sections 3320.11.1 through 3320.11.5.

3320.11.1 Marking. The rated capacity of every jack shall be legibly marked in a prominent location on the jack by

casting or stamping. The manufacturer shall designate the intended supporting point of the load and the maximum permissible length of lever and force applied.

3320.11.2Overtravel to be limited. Every jack shall, where practicable, be provided with a positive stop to prevent overtravel; otherwise an indicator to clearly show overtravel shall be provided on the jack.

3320.11.3Maintenance. Lubrication and operation of jacks shall be in accordance with the recommendations of the manufacturer.

3320.11.4Foundations. Jacks shall rest on a firm, level foundation adequate to support the load.

3320.11.5Blocking required. When the object has been lifted to the desired height, blocking or cribbing shall be immediately placed under it if the jack does not have built-in safety devices such as stop-rings, locknuts, or place-in cylinder sleeves.

3320.12Cableways. The construction, installation, inspection, maintenance and use of cableways shall be in conformance with rules promulgated by the commissioner.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 35: REFERENCED STANDARDS
SECTION BC 3501: GENERAL

NYC Administrative Code § 28-BC 3501

3501.1 General.

This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title and the section or sections of this document that reference the standard.

3501.2 Subsequent additions, modifications, or deletions. Refer to the rules of the department for any subsequent additions, modifications or deletions that may have been made to these standards in accordance with Section 28-103.19 of the Administrative Code.

3501.3 Applicability. The application of the referenced standards shall be as specified in Section 102.4.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE

Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY

SECTION BC 401: SCOPE

NYC Administrative Code § 28-BC 401

401.1 Detailed use and occupancy requirements.

In addition to the occupancy and construction requirements in this code, the provisions of this chapter apply to the special uses and occupancies described herein.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 402: COVERED MALL BUILDINGS

NYC Administrative Code § 28-BC 402

402.1 Scope.

The provisions of this section shall apply to buildings or structures defined herein as covered mall buildings not exceeding three floor levels at any point nor more than three stories above grade. Except as specifically required by this section, covered mall buildings shall meet applicable provisions of this code.

Exceptions:

1. Foyers and lobbies of Groups B, R-1 and R-2 are not required to comply with this section.
2. Buildings need not comply with the provisions of this section where they fully comply with other applicable provisions of this code.

402.1.1Occupancy classification.A mall in compliance with the provisions of this section shall be classified as occupancy group M.

402.2Definitions.The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

ANCHOR BUILDING. An exterior perimeter building of a group other than H having direct access to a covered mall building but having required means of egress independent of the mall.

COVERED MALL BUILDING. A single building enclosing a number of tenants and occupants such as retail stores, drinking and dining establishments, entertainment and amusement facilities, passenger transportation terminals, offices, and other similar uses wherein two or more tenants have a main entrance into one or more malls. For the purpose of this chapter, anchor buildings shall not be considered as a part of the covered mall building.

FOOD COURT. A Public seating area located in the mall that serves adjacent food preparation tenant spaces.

GROSS LEASABLE AREA. The total floor area designed for tenant occupancy and exclusive use. The area of tenant occupancy is measured from the centerlines of joint partitions to the outside of the tenant walls. All tenant areas, including areas used for storage, shall be included in calculating gross leasable area.

MALL. A roofed or covered common pedestrian area within a covered mall building that serves as access for two or more tenants and not to exceed three levels that are open to each other.

402.3Lease plan.Each covered mall building owner shall provide the department and the Fire Department with a lease plan showing the location of each occupancy and its exits after the certificate of occupancy has been issued. No modifications or changes in occupancy or use shall be made from that shown on the lease plan without prior approval of the commissioner.

402.4Means of egress.The covered mall building shall be provided with means of egress as required by this code. Where there is a conflict between the requirements of this code and the requirements of this section, the requirements of this section shall apply.

402.4.1Occupant load.The calculated occupant load used to determine the required number of means of egress shall be in accordance with this section.

402.4.1.1Occupant load of tenant spaces.The occupant load permitted in any individual tenant space in a covered mall building shall be determined in accordance with Chapter 10. Means of egress requirements for individual tenant spaces shall be based on the occupant load thus determined.

402.4.1.2Occupant load of mall.In determining required means of egress of the mall, the total occupant load in the mall shall include the occupant load attributed to the mall as determined by Equation 4-1, plus the occupant load of the food court if any, plus the occupant load discharged into the mall from individual tenant spaces.

402.4.1.2.1Occupant load formula.To determine the occupant load attributed to the mall, the number of square feet of floor area of the mall, excluding any food court, shall be divided by the occupant load factor (OLF) value determined by Equation 4-1.

(Equation 4-1)

$$OLF = (0.00007) (GLA) ; pl 25$$

where:

OLF = The occupant load factor (square feet per person).

GLA = The gross leasable area (square feet).

402.4.1.2.2OLF range.The occupant load factor (OLF) is not required to be less than 30 and shall not exceed 50.

402.4.1.2.3Food courts.The occupant load of a food court shall be determined in accordance with Section 1004 and shall be added to the occupant load of the mall.

402.4.1.3Anchor buildings.The occupant load of anchor buildings opening into the mall shall not be included in computing the total number of occupants for the covered mall building.

402.4.2Number of means of egress.The required number of means of egress shall be determined in accordance with this section.

402.4.2.1Number of means of egress within tenant spaces.Wherever the distance of travel to the mall from any

location within a tenant space used by persons other than employees exceeds 75 feet (22 860 mm) or the tenant space exceeds an occupant load of 50, no fewer than two means of egress shall be provided.

402.4.2.2Number of means of egress from the mall.The number of means of egress from the mall shall be determined in accordance with Chapter 10 and shall be based upon an occupant load calculated in accordance with Section 402.4.1.2.

402.4.3Arrangements of means of egress.Means of egress shall be arranged in accordance with this section.

402.4.3.1Anchor building means of egress.Required means of egress for anchor buildings shall be provided independently from the mall means of egress system. The occupant load of anchor buildings opening into the mall shall not be included in determining means of egress requirements for the mall. The path of egress travel of malls shall not exit through anchor buildings. Malls terminating at an anchor building where no other means of egress has been provided shall be considered as a dead-end mall.

402.4.3.2Tenant spaces requiring more than one means of egress.Where more than one means of egress is required from an individual tenant space as determined by Chapter 10, not more than 50 percent of the occupant load shall discharge into the mall.

402.4.3.3Large assembly occupancy.Assembly occupancies with an occupant load of 500 or more shall be so located in the covered mall building such that their entrance will be immediately adjacent to a principal entrance to the mall and shall have not less than one-half of their required means of egress opening directly to the exterior of the covered mall building.

402.4.4Distance to exits.The maximum permitted travel distance to exits in covered mall buildings shall be in accordance with this section.

402.4.4.1Distance to exits within tenant spaces.The maximum travel distance from any point within an individual tenant space to its entrance to the mall or to an exit shall not exceed 200 feet (60 960 mm).

402.4.4.2Distance to exits within the mall.The maximum distance of travel from any point within a mall to an exit shall not exceed 200 feet (60 960 mm).

402.4.5Access to exits.Where more than one exit is required, they shall be so arranged that it is possible to travel in either direction from any point in a mall to separate exits. However, in dead ends not exceeding a length equal to twice the width of the mall measured at the narrowest location within the dead end portion of the mall, one direction of travel shall be permitted. The minimum width of an exit passageway or corridor from a mall shall be 66 inches (1676 mm).

402.4.5.1Exit passageway enclosures.Where exit passageway enclosures provide a secondary means of egress from a tenant space, doors to the exit passageway enclosures shall be minimum 1-hour fire doors with panic hardware. Such doors shall be self-closing and be so maintained or shall be automatic closing by smoke detection.

402.4.6Service areas fronting on exit passageways.Mechanical rooms, electrical rooms, building service areas and service elevators are permitted to open directly into exit passageways provided that the exit passageway is separated from such rooms by fire barriers providing the same fire-resistance rating as required for the exit passageway. Door swings from these rooms shall not project into the minimum width of such exit passageways.

402.5Mall width.For the purpose of providing required egress, malls are permitted to be considered as corridors but need not comply with the requirements of Section 1005.1 of this code where the width of the mall is as specified in this section.

402.5.1Minimum width.The minimum width of the mall shall be 20 feet (6096 mm). The mall width shall be

sufficient to accommodate the occupant load served. There shall be a minimum of 10 feet (3048 mm) clear width to a height of 8 feet (2438 mm) between any projection of a tenant space bordering the mall and the nearest kiosk, vending machine, bench, display opening, food court or other obstruction to means of egress travel.

402.6Types of construction.Covered mall buildings, including anchor buildings, shall be only of Type I, II, and IV construction. Their areas shall not be limited provided that the covered mall building and attached anchor buildings and parking garages are surrounded on all sides by a permanent open space of not less than 60 feet (18 288 mm) and the anchor buildings do not exceed three stories in height. The height of covered mall buildings, including anchor buildings, of Type IIB construction shall be limited to one story. The allowable height and area of anchor buildings greater than three stores in height shall comply with Section 503, as modified by Sections 504 and 506. The construction type of open parking garages and enclosed parking garages shall comply with Sections 406.3 and 406.4, respectively.

402.7Fire-resistance-rated separation.Fire-resistance-rated separation is not required between tenant spaces and the mall. Fire-resistance-rated separation is not required between a food court and adjacent tenant spaces or the mall.

402.7.1Attached garage.An attached parking garage for the storage of passenger vehicles having a capacity of not more than nine persons and open parking garages shall be considered as a separate building where it is separated from the covered mall building by a fire barrier having a fire-resistance rating of at least 2 hours. Openings in such barrier shall be 11 hour fire-rated self-closing or shall be automatic closing upon the activation of a smoke detector or fire alarm.

Exception: Where an open parking garage or enclosed parking garage is separated from the covered mall building or anchor building by a distance greater than 10 feet (3048 mm), the provisions of Table 602 shall apply. Pedestrian walkways and tunnels that attach the open parking garage or enclosed parking garage to the covered mall building or anchor building shall be constructed in accordance with Section 3104.

402.7.2Tenant separations.Each tenant space shall be separated from other tenant spaces by a fire partition complying with Section 708. A tenant separation wall is not required between any tenant space and the mall.

402.7.3Anchor building separation.An anchor building shall be separated from the covered mall building by fire walls complying with Section 705.

Exception: Anchor buildings of not more than three stories above grade that have an occupancy classification of the same uses permitted as tenants of the covered mall building shall be separated by 2-hour fire resistive fire barriers complying with Section 706. Openings between such buildings and the mall need not be protected.

402.8Automatic sprinkler system.The covered mall building and buildings connected shall be provided throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, that shall comply with the following:

1. The automatic sprinkler system shall be complete and operative throughout occupied space in the covered mall building prior to occupancy of any of the tenant spaces. Unoccupied tenant spaces shall be similarly protected unless provided with approved alternate protection.

2. Sprinkler protection for the mall shall be independent from that provided for tenant spaces or anchors. Where tenant spaces are supplied by the same system, they shall be independently controlled.

Exception: An automatic sprinkler system shall not be required in spaces or areas of open parking garages constructed in accordance with Section 406.2.

402.8.1Standpipe system.The covered mall building shall be equipped throughout with a standpipe system as required by Section 905.3.3.

402.9Smoke control.A smoke control system shall be provided in accordance with Section 909 for malls greater than one story in height.

402.10Kiosks.Kiosks and similar structures (temporary or permanent) shall meet the following requirements:

1. Combustible kiosks or other structures shall not be located within the mall unless constructed of any of the following materials:

1.1. Fire-retardant-treated wood complying with Section 2303.2.

1.2. Foam plastics having a maximum heat release rate not greater than 100 kW (105 Btu/h) when tested in accordance with the exhibit booth protocol in UL 1975.

1.3. Aluminum composite material (ACM) having a flame spread index of not more than 25 and a smoke-developed index of not more than 450 when tested as an assembly in the maximum thickness intended for use in accordance with ASTM E 84.

2. Kiosks or similar structures located within the mall shall be provided with approved fire suppression and detection devices.

3. The minimum horizontal separation between kiosks or groupings thereof and other structures within the mall shall be 20 feet (6096 mm).

4. Each kiosk or similar structure or groupings thereof shall have a maximum area of 300 square feet (28 m²).

402.11Security grilles and doors.Horizontal sliding or vertical security grilles or doors that are a part of a required means of egress shall conform to the following:

1. They shall remain in the full open position during the period of occupancy by the general public.

2. Doors or grilles shall not be brought to the closed position when there are more than 10 persons occupying spaces served by a single exit or 50 persons occupying spaces served by more than one exit.

3. The doors or grilles shall be openable from within without the use of any special knowledge or effort where the space is occupied.

4. Where two or more exits are required, not more than one-half of the exits shall be permitted to include either a horizontal sliding or vertical rolling grille or doors.

402.12Emergency power.Covered mall buildings exceeding 50,000 square feet (4645 m²) shall be provided with emergency power systems that are capable of operating the emergency voice/alarm communication system.

402.13Emergency voice/alarm communication system.Covered mall buildings exceeding 50,000 square feet (4645 m²) in total floor area shall be provided with an emergency voice/alarm communication system. Emergency voice/alarm communication systems serving a mall, required or otherwise, shall be accessible to the Fire Department. The system shall be provided in accordance with Section 907.2.12.2.

402.14Plastic signs.Within every store or level and from sidewall to sidewall of each tenant space facing the mall, plastic signs shall be limited as specified in Sections 402.14.1 through 402.14.5.

402.14.1Area.Plastic signs shall not exceed 20 percent of the wall area facing the mall.

402.14.2Height and width.Plastic signs shall not exceed a height of 36 inches (914 mm), except if the sign is

vertical, the height shall not exceed 96 inches (2438 mm) and the width shall not exceed 36 inches (914 mm).

402.14.3Location. Plastic signs shall be located a minimum distance of 18 inches (457 mm) from adjacent tenants.

402.14.4Plastics other than foam plastics. Plastics other than foam plastics used in signs shall be light-transmitting plastics complying with Section 2606.4 or shall have a self-ignition temperature of 650(degrees)F (343(degrees)C) or greater when tested in accordance with ASTM D 1929, and a flame spread index not greater than 75 and smoke-developed index not greater than 450 when tested in the manner intended for use in accordance with ASTM E 84 or meet the acceptance criteria of Section 803.2.1 when tested in accordance with NFPA 286.

402.14.4.1Encasement. Edges and backs of plastic signs in the mall shall be fully encased in metal.

402.14.5Foam plastics. Foam plastics used in signs shall have flame-retardant characteristics such that the sign has a maximum heat-release rate of 150 kilowatts when tested in accordance with UL 1975 and the foam plastics shall have the physical characteristics specified in this section. Foam plastics used in signs installed in accordance with Section 402.14 shall not be required to comply with the flame spread and smoke-developed indexes specified in Section 2603.3.

402.14.5.1Density. The minimum density of foam plastics used in signs shall not be less than 20 pounds per cubic foot (pcf) (320 kg/m³).

402.14.5.2Thickness. The thickness of foam plastic signs shall not be greater than 1/2-inch (12.7 mm).

402.15Fire Department access to equipment. Rooms or areas containing controls for air-conditioning systems, automatic fire-extinguishing systems or other detection, suppression or control elements shall be identified for use by the Fire Department.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 403: HIGH-RISE BUILDINGS

NYC Administrative Code § 28-BC 403

403.1 Applicability.

The provisions of this section shall apply to buildings having occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access.

Exception: The provisions of this section shall not apply to the following buildings and structures:

1. Buildings occupied entirely by Group R-3 classification.
2. Open parking garages in accordance with Section 406.3.
3. Buildings with an occupancy in Group A-5 in accordance with Section 303.1.
4. Low-hazard special industrial occupancies in accordance with Section 503.1.2.
5. Buildings with an occupancy in Group H-1, H-2 or H-3 in accordance with Section 415.

403.2 Automatic sprinkler system. Buildings and structures shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. A secondary water supply shall be provided where required by Section 903.3.5.2 and in any building having occupied floors more than 300 feet (91 440 mm) above the lowest level of fire department vehicle access.

403.3 Reserved.

403.4 Emergency escape and rescue. Emergency escape and rescue openings required by Section 1025 are not required.

403.5 Automatic fire detection. Smoke detection shall be provided in accordance with Section 907.2.12.1.

403.6 Emergency voice/alarm communication systems. An emergency voice/alarm communication system shall be provided in accordance with Section 907.2.12.2.

403.7 Fire Department communications system. A two-way fire department communications system shall be provided for Fire Department use in accordance with Section 907.2.12.3.

403.8 Fire command. A fire command center complying with Section 911 shall be provided in a location approved by the Fire Department.

403.9 Elevators. Elevator operation and installation shall be in accordance with Chapter 30.

403.9.1 Elevator lobbies. Elevator lobbies shall be provided in accordance with Sections 403.9.1.1 and 403.9.1.2.

403.9.1.1 Applicability. Elevator lobbies shall be provided at the following locations:

1. Elevators opening onto a fire-resistance-rated corridor. In all occupancy groups, elevator lobbies shall be provided at any location where an elevator opens onto a fire-resistance rated corridor.

2. Elevators serving B occupancies. Notwithstanding item 1, Elevators that serve four or more stories that contain space classified in occupancy Group B, inclusive of any lobby or entrance level, shall provide elevator lobbies at every level served by such elevator.

Exceptions: Elevator lobbies are not required under the following conditions:

1. Street-floor lobbies. Street-floor lobbies provided that the entire street floor is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.

2. Elevators without shafts. Elevators that are not required to be located in a shaft in accordance with Section 707.2.

3. Zero-clearance doors. Elevator openings provided with zero-clearance doors in addition to hoistway doors and elevator car doors. Such zero-clearance doors shall be tested in accordance with UL 1784 without an artificial bottom seal. When serving as an accessible route, such additional doors shall operate automatically and in compliance with Chapter 11.

4. Small floor areas. On floors with less than 2,500 square feet (232 m²), the commissioner may accept an alternative design or construction method that accomplishes the purposes of this section, or if the commissioner determines that compliance with this section is impracticable in whole or in part, the commissioner may authorize an exemption from the requirements of this section.

5. Pressurized elevator shafts. When the elevator is pressurized in accordance with the requirements of the commissioner.

6. Group R-2 occupancy.

403.9.1.2 Construction. Elevators lobbies shall be constructed in accordance with the following:

1. The lobbies shall be constructed as a smoke partition complying with Section 710.

2. The lobbies shall separate the elevator from all other spaces on the story.

3. The lobbies shall have at least one means of egress complying with Chapter 10 and other provisions of this code.

4. Access to an exit on any story through an elevator lobby shall be permitted provided that access to at least one other required exit does not require passing through the elevator lobby.

403.9.2 Impact resistant elevator shafts. Elevator shafts shall be constructed of impact resistant walls. Minimum impact resistance standards shall be established by rules of the department.

403.10 Reserved.

403.11 Emergency power systems. An emergency power system complying with Section 2702 shall be provided for emergency power loads specified in Sections 403.11.1 and 403.11.2.

403.11.1 Emergency power loads in occupancies other than R-2. In buildings of any occupancy group other than Group R-2, the following are classified as emergency power loads:

1. Exit signs and means of egress illumination required by Chapter 10; and
2. Elevator car lighting; and
3. Emergency voice/alarm communications systems; and
4. Automatic fire detection systems; and
5. Fire alarm systems; and
6. Power and lighting for the fire command center required by Section 403.8; and
7. Electrically powered fire pumps; and
8. Ventilation and automatic fire detection equipment for smokeproof enclosures; and
9. Elevators in accordance with Section 3003; and
10. Stair pressurization systems when provided.

403.11.2 Emergency power loads in Group R-2 occupancies. Group R-2 occupancies in buildings greater than 125 feet (38 100 mm) in height shall be required to provide an emergency power system to support the following loads:

1. Exit signs and means of egress illumination required by Chapter 10;
2. At least one elevator serving all floors, or one elevator per bank where different banks serve different portions of the building;
3. Emergency voice communications systems; and
4. Electrically powered fire pumps, unless electrical power to the motor is taken ahead of the main from the street side of the house service switch.

Where a generator is used as the emergency power system, diesel or gas shall be permitted as the fuel source in accordance with Section 2702.1.

403.12 Stairway door operation. Doors opening into interior stair enclosures shall not be locked from either side. However, a door locked from the stair side may be permitted provided that such door is equipped with an automatic fail safe system for opening in the event of the activation of any automatic fire detection system, or when any elevator recall

is activated, or when any signal is received from the fire command center. Such door shall be deemed as openable from the stair side. Stair reentry signs shall be posted throughout the stairway indicating that reentry is provided only during fire emergencies. Such signs shall be in accordance with Section 1026.4.2.

403.12.1 Stairway communications system. A telephone or other two-way communications system connected to an approved constantly attended station shall be provided at not less than every fifth floor in each required stairway where stair side doors are locked.

403.13 Smokeproof exit enclosures. Every required stairway serving occupied floors more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access shall comply with Sections 909.20 and 1019.1.8.

Exception for R-2 occupancies: Smokeproof enclosures are not required in occupancy Group R-2 unless provided pursuant to Exception 2 of Section 912.1.

403.14 Seismic considerations. For seismic considerations, see Chapter 16.

403.15 Impact resistant stair enclosures. Exit stair enclosures shall be constructed of impact resistant walls. Minimum impact resistance standards shall be established by rules of the department.

403.16 Exit path markings. All high-rise buildings shall be provided with photoluminescent exit path markings conforming to Section 1026.

Exception: Exit paths serving Group R-2.

403.17 Outdoor air intakes. For high-rise buildings, outdoor air intakes serving spaces above the second story and serving spaces greater than 10,000 square-feet (929 m²) of floor area shall be located in accordance with Section 401.5 of the New York City Mechanical Code.

Exception: Group R-2 occupancy.

403.18 Open web steel joists. The use of open web steel joists shall be prohibited in high-rise buildings until the commissioner promulgates rules establishing minimum acceptable fireproofing methods.



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SECTION BC 404: ATRIUMS

NYC Administrative Code § 28-BC 404

404.1 General.

In other than Group H occupancies, and where permitted by Exception 5 in Section 707.2, the provisions of this section shall apply to buildings or structures containing vertical openings defined herein as atriums.

404.1.1 Definition. The following word and term shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

ATRIUM. An opening connecting three or more stories other than enclosed stairways, elevators, hoistways, escalators, plumbing, electrical, air-conditioning or any other vertical openings that are not required to be enclosed by other provisions of this code, which is closed at the top and not defined as a mall. Stories, as used in this definition, do not include balconies within assembly groups or mezzanines that comply with Section 505.

404.2 Use. The floor of the atrium shall not be used for other than low fire hazard uses, and only approved materials and decorations in accordance with the New York City Fire Code shall be used in the atrium space.

Exception: The atrium floor area is permitted to be used for any approved use where the individual space is provided with an automatic sprinkler system in accordance with Section 903.3.1.1.

404.3 Automatic sprinkler protection. An approved automatic sprinkler system shall be installed throughout the entire building.

Exceptions:

1. That area of a building adjacent to or above the atrium need not be sprinklered provided that portion of the building is separated from the atrium portion by a 2-hour fire barrier wall or horizontal assembly or both.
2. Where the ceiling of the atrium is more than 55 feet (16 764 mm) above the floor, sprinkler protection at the

ceiling of the atrium is not required.

404.4Smoke control.A smoke control system shall be installed in accordance with Section 909.

Exception: Smoke control is not required for floor openings meeting the requirements of Section 707.2, Exceptions 2 and 8.

404.5Enclosure of atriums.Atrium spaces shall be separated from adjacent spaces by a 2-hour fire barrier wall.

Exceptions:

1. A glass or glass-block wall forming a smoke partition where automatic sprinklers are spaced 6 feet (1829 mm) or less along both sides of the separation wall, or on the room side only if there is not a walkway on the atrium side, and between 4 inches and 12 inches (102 mm and 305 mm) away from the glass and so designed that the entire surface of the glass is wet upon activation of the sprinkler system. The glass shall be installed in a gasketed frame so that the framing system deflects without breaking (loading) the glass before the sprinkler system operates.

2. The adjacent spaces of any three floors of the atrium shall not be required to be separated from the atrium where such spaces are included in computing the atrium volume for the design of the smoke control system.

404.6Emergency power.Equipment required to provide smoke control shall be connected to an emergency power system in accordance with Section 909.11.

404.7Interior finish.The interior finish of walls and ceilings of the atrium shall not be less than Class B with no reduction in class for sprinkler protection.

404.8Travel distance.In other than the lowest level of the atrium, where the required means of egress is through the atrium space, the portion of exit access travel distance within the atrium space shall not exceed 200 feet (60 960 mm).

404.9Types of construction.Buildings containing atriums shall be only of Type I, IIA, and IV construction.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 405: UNDERGROUND BUILDINGS

NYC Administrative Code § 28-BC 405

405.1 General.

The provisions of this section apply to building spaces having a floor level used for human occupancy more than 30 feet (9144 mm) below the lowest level of exit discharge.

Exceptions:

1. One- and two-family dwellings, sprinklered in accordance with Section 903.3.1.3.
2. Parking garages with automatic fire suppression systems in compliance with Section 405.3.
3. Fixed guideway transit systems.
4. Grandstands, bleachers, stadiums, arenas and similar facilities.
5. Where the lowest story is the only story that would qualify the building as an underground building and has an area not exceeding 1,500 square feet (139 m²) and has an occupant load less than 10.

405.2 Construction requirements. The underground portion of the building shall be of Type I construction.

405.3 Automatic sprinkler system. The highest level of exit discharge serving the underground portions of the building and all levels below shall be equipped with an automatic sprinkler system installed in accordance with Section 903.3.1.1. Water-flow switches and control valves shall be supervised in accordance with Section 903.4.

405.4 Compartmentation. Compartmentation shall be in accordance with Sections 405.4.1 through 405.4.3.

405.4.1 Number of compartments. A building having a floor level more than 60 feet (18 288 mm) below the lowest level of exit discharge shall be divided into a minimum of two compartments of approximately equal size. Such

compartmentation shall extend through the highest level of exit discharge serving the underground portions of the building and all levels below.

Exception: The lowest story need not be compartmented where the area does not exceed 1,500 square feet (139 m²) and has an occupant load of less than 10.

405.4.2Smoke barrier penetration.The separation between the two compartments shall be of minimum 2-hour fire barrier wall construction that shall extend from floor slab to floor deck above. Openings between the two compartments shall be limited to plumbing and electrical piping and conduit penetrations firestopped in accordance with Section 712. Doorways shall be protected by door assemblies that are automatic-closing by smoke detection in accordance with Section 715.3 and shall be provided with gasketing and a drop sill to minimize smoke leakage. Where provided, each compartment shall have an air supply and an exhaust system independent of the other compartments.

405.4.3Elevators.Where elevators are provided, each compartment shall have direct access to an elevator. Where an elevator serves more than one compartment, an elevator lobby shall be provided and shall be separated from each compartment by a 2-hour fire barrier wall. Doors shall be gasketed, have a drop sill, and be automatic-closing by smoke detection installed in accordance with Section 907.10.

405.5Smoke control system.A smoke control system shall be provided in accordance with Sections 405.5.1 and 405.5.2.

405.5.1Control system.A smoke control system is required to control the migration of products of combustion in accordance with Section 909 and the provisions of this section. Smoke control shall restrict movement of smoke to the general area of fire origin and maintain means of egress in a usable condition.

405.5.2Smoke exhaust system.Where compartmentation is required, each compartment shall have an independent smoke control system. The system shall be automatically activated and capable of manual operation in accordance with Section 907.2.18.

405.6Fire alarm systems.A fire alarm system shall be provided where required by Section 907.2.19.

405.7Public address.A public address system shall be provided where required by Section 907.2.19.1.

405.8Means of egress.Means of egress shall be in accordance with Sections 405.8.1 and 405.8.2.

405.8.1Number of exits.Each floor level shall be provided with a minimum of two exits. Where compartmentation is required by Section 405.4, each compartment shall have a minimum of one exit and shall also have an exit access doorway into the adjoining compartment.

405.8.2Smokeproof enclosure.Every required stairway serving floor levels more than 30 feet (9144 mm) below its level of exit discharge shall comply with the requirements for a smokeproof enclosure as provided in Section 1019.1.8.

405.9Reserved.

405.10Emergency power.An emergency power system complying with Section 2702 shall be provided for emergency power loads specified in Section 405.10.1.

405.10.1Emergency power loads.The following loads are classified as emergency power loads:

1. Emergency voice/alarm communications systems.
2. Fire alarm systems.

3. Automatic fire detection systems.
4. Elevator car lighting.
5. Means of egress and exit sign illumination as required by Chapter 10.
6. Smoke control system.
7. Ventilation and automatic fire detection equipment for smokeproof enclosures.
8. Fire pumps.
9. Elevators in accordance with Section 3003.
10. Stair pressurization systems when provided.

405.11 Standpipe system. The underground building shall be provided throughout with a standpipe system in accordance with Section 905.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 406: MOTOR VEHICLE-RELATED OCCUPANCIES

NYC Administrative Code § 28-BC 406

406.1 Private garages and carports.

406.1.1 Classification. Private garages and carports, as defined by this section, shall be classified as Group U occupancy.

406.1.2 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

CARPORT. A structure or portion of a structure, accessory to a Group R-2 or R-3 occupancy, open on at least two sides and unenclosed for at least 50 percent of perimeter, used for the parking or storage of passenger motor vehicles. Such facility shall not exceed 650 square feet (60.45 m²) in area and one story in height

PRIVATE GARAGE. An enclosed structure or portion of a structure, accessory to a Group R-2 or R-3 occupancy, used for the parking or storage of passenger motor vehicles. Such facility shall not exceed 650 square feet (60 m²) in area and one story in height.

406.1.3 Floor construction. Private garage and carport floors shall be of concrete or equivalent noncombustible material that will not absorb flammable liquids. The area of floor used for parking of vehicles shall be sloped to facilitate the movement of liquids to a drain. The sills of all door openings connecting a dwelling unit to a private garage shall be raised at least 4 inches (102 mm) above the floor level of the garage.

Exception: Asphalt surfaces shall be permitted at ground level in carports.

406.1.3.1 Ramps. Ramps shall have a gradient not exceeding one in seven, with nonslip surfaces, and shall be located entirely within the property line. However, upon application to the commissioner, steeper gradients may be accepted, but in no event greater than one in three.

406.1.4 Separation. Separations shall comply with the following:

1. The private garage shall be separated from the dwelling unit and its attic area by means of a minimum 1-hour fire-rated construction. Garages beneath habitable rooms shall be separated from all habitable rooms above by not less than 1-hour fire-rated construction. Openings from a private garage directly into a room used for sleeping purposes shall not be permitted.

2. No air used for heating, cooling, or ventilation shall be circulated through private garages to dwelling areas.

3. A separation is not required between a Group R-3 occupancy and a carport, provided the carport does not have any enclosed areas above.

406.2 Parking garages, open or enclosed.

406.2.1 Classification. Parking garages shall be either open, as per Section 406.3, or enclosed, as per Section 406.4. Parking garages shall also comply with the special provisions of Section 509.

406.2.2 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

PARKING GARAGE. A structure or portion of a structure, other than a private garage or carport, used for the parking or storage of motor vehicles.

406.2.3 General requirements. All parking garages, open or enclosed, shall comply with the general provisions of this section.

406.2.3.1 Clear height. The clear height of each floor level in vehicle and pedestrian traffic areas shall not be less than 7 feet (2134 mm). Vehicle and pedestrian areas accommodating van-accessible parking required by Section 1106.5 shall conform to ICC A117.1.

406.2.3.2 Guards. Guards shall be provided in accordance with Section 1012 at exterior and interior vertical openings on floor and roof areas where vehicles are parked or moved and where the vertical distance to the ground or surface directly below exceeds 30 inches (762 mm).

406.2.3.3 Vehicle barriers. Parking areas shall be provided with exterior or interior walls or vehicle barriers, except at pedestrian or vehicular accesses, designed in accordance with Section 1607.7. Vehicle barriers not less than 2 feet (610 mm) high shall be placed at the ends of drive lanes and at the end of parking spaces where the difference in adjacent floor elevation is greater than 1 foot (305 mm).

406.2.3.4 Ramps. Ramps shall have a gradient not exceeding one in seven, with non-slip surfaces. A level landing having a minimum dimension of 20 feet (6096 mm) shall be provided at the discharge point of all ramps at the street level, within the property line. Ramps used for the movement of motor vehicles need not be enclosed when serving tiers above grade. Vehicle ramps may serve as part of a means of egress provided that such ramp complies with the requirements of Sections 1018.1.1 and 1018.1.2.

406.2.3.5 Floor surface. Parking surfaces shall be of concrete or similar noncombustible and nonabsorbent materials. The area of floor used for parking of vehicles shall be sloped to facilitate the movement of liquids to a drain.

Exception: Asphalt parking surfaces are permitted at ground level.

406.2.3.6 Separation. Parking garages shall be separated from other occupancies in accordance with Section 508.

406.2.3.6.1 Openings prohibited. Openings from a parking garage directly into a room used for sleeping purposes shall not be permitted.

406.2.3.6.2 Special hazards. Openings from a parking garage to any room in which there is a fuel-fired appliance shall be by means of a vestibule providing a two-doorway separation. Such vestibule and doorway shall be minimum 1-hour rated construction.

Exception: A single door, in compliance with Table 715.3, shall be permitted, provided the sources of ignition in the appliance are at least 18 inches (457 mm) above the floor.

406.2.3.7 Fire fighter aisles. In any parking garage or lot, one or more aisles, at least 24 inches (610 mm) in width, shall be provided to permit access by fire fighting personnel to all parts of the garage or lot. There shall not be more than three rows of parked motor vehicles between aisles.

406.3 Open parking garages.

406.3.1 Scope. Except where specific provisions are made in the following subsections, other requirements of this code shall apply.

406.3.2 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

MECHANICAL-ACCESS OPEN PARKING GARAGES. Open parking garages employing parking machines, lifts, elevators or other mechanical devices for vehicles moving from and to street level and in which public occupancy is prohibited above the street level.

OPEN PARKING GARAGE. A structure or portion of a structure with the openings as described in Section 406.3.3.1 that is used for the parking or storage of private motor vehicles as described in Section 406.3.4.

RAMP-ACCESS OPEN PARKING GARAGES. Open parking garages employing a series of continuously rising floors or a series of interconnecting ramps between floors permitting the movement of vehicles under their own power from and to the street level.

406.3.3 Construction. Open parking garages shall be of Type I, II or IV construction. Open parking garages shall meet the design requirements of Chapter 16. For vehicle barriers, see Section 406.2.3.3.

406.3.3.1 Openings. For natural ventilation purposes, the exterior side of the structure shall have openings equal to 50 percent of the perimeter walls. The aggregate length of the openings considered to be providing natural ventilation shall constitute a minimum of 40 percent of the perimeter of the tier. Interior walls shall be at least 20 percent open.

406.3.4 Uses. Mixed uses shall be allowed in the same building as an open parking garage subject to the provisions of Sections 508, 402.7.1, 406.3.13, 509.3, 509.4 and 509.7.

406.3.5 Area and height. Area and height of open parking garages shall be limited as set forth in Chapter 5 for Group S-2 occupancies.

406.3.5.1 Single use. When the open parking garage is used exclusively for the parking or storage of private motor vehicles, with no other uses in the building, the area and height shall be permitted to comply with Table 406.3.5.

Exception: The grade-level tier is permitted to contain an office, waiting and toilet rooms having a total combined area of not more than 1,000 square feet (93 m²). Such area need not be separated from the open parking garage. In open parking garages having a spiral or sloping floor, the horizontal projection of the structure at any cross section shall not

exceed the allowable area per parking tier. In the case of an open parking garage having a continuous spiral floor, each 9 feet 6 inches (2896 mm) of height, or portion thereof, shall be considered a tier. The clear height of a parking tier shall not be less than 7 feet (2134 mm), except that a lower clear height is permitted in mechanical-access open parking garages where approved by the commissioner.

Table 406.3.5 Open Parking Garages Area and Height Type of Construction Area Per Tier (square feet) Height (in tiers) Ramp Access Mechanical Access Automatic Sprinkler System

No	Yes	1A	Unlimited	Unlimited	Unlimited	Unlimited	IB	Unlimited	12 tiers	12 tiers	18 tiers	IIA	50,000	10 tiers	10 tiers
15 tiers	IIB	50,000	8 tiers	8 tiers	12 tiers	IV	50,000	4 tiers	4 tiers	4 tiers	For SI:	1 square foot = 0.0929 m ² .			

406.3.6Reserved.

406.3.7Exterior walls.Exterior walls and openings in exterior walls shall comply with Tables 601 and 602. The distance from an adjacent property line shall be determined in accordance with Table 602 and Section 704.

406.3.8Means of egress.Open parking garages shall meet the means of egress requirements of Chapter 10. However, where no persons other than parking attendants are permitted, required exit stairways shall not be less than 36 inches (914 mm) wide.

406.3.9Standpipes.Standpipes shall be installed where required by the provisions of Section 905.

406.3.10Sprinkler systems.Automatic sprinkler systems and standpipes shall be installed in accordance with the provisions of Section 903. An automatic dry sprinkler system may be installed in unheated garages.

406.3.11Enclosure of vertical openings.Enclosure shall not be required for vertical openings.

406.3.12Ventilation.Openings specified in Section 406.3.3.1 shall satisfy natural ventilation requirements. Additional mechanical ventilation shall not be required.

406.3.13Prohibitions.The following uses and alterations are not permitted:

1. Vehicle repair work.
2. Parking of commercial vehicles, buses, trucks and similar vehicles.
3. Partial or complete closing of required openings in exterior walls by tarpaulins or any other means.

406.4Enclosed parking garages.Parking garages and portions thereof that do not meet the definition of open parking garages shall be classified as an enclosed parking garage and shall meet the requirements of this section.

406.4.1Heights and areas.Enclosed parking garages shall be limited to the allowable heights and areas specified in Table 503. Permitted roof parking shall not be considered as a separate story.

406.4.2Ventilation.A mechanical ventilation system shall be provided in accordance with the New York City Mechanical Code.

406.5Motor fuel-dispensing facilities.

406.5.1Construction.Motor fuel-dispensing facilities shall be designed and constructed in accordance with the New York City Fire Code and this section.

406.5.2Canopies.Canopies under which fuels are dispensed shall have a clear, unobstructed height of not less than 14 feet (4267 mm) to the lowest projecting element in the vehicle drive-through area. Canopies and their supports over pumps shall be of noncombustible materials. However, panels constructed of light-transmitting plastic materials shall be

permitted to be installed in canopies erected over motor vehicle fuel-dispensing station fuel dispensers, provided the panels are located at least 10 feet (3048 mm) from any building on the same property and face yards or streets not less than 40 feet (12 192 mm) in width on the other sides. The aggregate areas of plastics shall not exceed 1,000 square feet (93 m²). The maximum area of any individual panel shall not exceed 100 square feet (9.3 m²).

406.5.3Storage tanks.Motor fuel storage tanks shall be installed below ground, except as authorized by the rules of the Fire Department. The installation and venting of storage tanks shall be in accordance with the rules of the Fire Department and the requirements of the New York City Fire Code. Storage tanks installed below ground shall comply with the following:

1. The top of the storage tanks shall be at least 24 inches (below finished grade and at least 24 inches (610 mm) below the level of any cellar or basement floor within 10 feet (3048 mm) of the tanks.

2. Storage tanks shall be located so that the forces from any building foundation and support loads are not transmitted to the tanks. The distance from any part of a storage tank to the nearest wall of any basement, pit or cellar, or from any property line that may be built upon, shall not be less than 36 inches (914 mm).

3. Storage tanks shall be covered with a structurally supported reinforced concrete slab at least 8 inches (203 mm) thick, extending at least 12 inches (305 mm) beyond the horizontal outlines of the storage tanks, and placed over a cover of suitable clean backfill material. Such slab shall be designed and reinforced in accordance with ACI 318. All concrete shall have a minimum compressive strength of 4,000 pounds per square inch (27 580 kPa) at 28 days.

4. Storage tanks shall be placed on a 12-inch (305 mm) thick concrete base slab or installed in such other manner, secured against flotation, and approved by the department.

406.6Repair garages.

406.6.1General.Repair garages shall be constructed in accordance with the New York City Fire Code and this section. This occupancy shall not include motor fuel-dispensing facilities, as regulated in Section 406.5.

406.6.2Mixed uses.Mixed uses shall be allowed in the same building as a repair garage subject to the provisions of Section 508.

406.6.3Ventilation.Repair garages shall be mechanically ventilated in accordance with the New York City Mechanical Code. The ventilation system shall be controlled at the entrance to the garage.

406.6.4Floor surface.Repair garage floors shall be of concrete or similar noncombustible and nonabsorbent materials.

Exception: Slip-resistant, nonabsorbent, interior floor finishes having a critical radiant flux not more than 0.45 W/cm², as determined by NFPA 253, shall be permitted.

406.6.5Heating equipment.Heating equipment shall be installed in accordance with the New York City Mechanical Code.

406.6.6Gas detection system.Repair garages used for repair of vehicles fueled by CNG, LNG, or hydrogen, shall be provided with an approved flammable gas-detection system.

406.6.6.1System design.The flammable gas-detection system shall be calibrated to the types of fuels or gases used by vehicles to be repaired. The gas detection system shall be designed to activate when the level of flammable gas exceeds 25 percent of the lower explosive limit. Gas detection shall also be provided in lubrication or chassis repair pits of garages used for repairing nonodorized LNG-fueled vehicles.

406.6.6.2Operation. Activation of the gas detection system shall result in all of the following:

1. Initiation of distinct audible and visual alarm signals in the repair garage.
2. Deactivation of all heating systems located in the repair garage.
3. Activation of the mechanical ventilation and exhaust system, where the system is interlocked with gas detection.

406.6.6.3Failure of the gas detection system. Failure of the gas detection system shall result in the deactivation of the heating system, activation of the mechanical ventilation system when the system is inter-locked with the gas detection system and cause a trouble signal to sound in an approved location.

406.7Open Parking Lots.

406.7.1General. The provisions of this section shall govern the construction of open parking lots and to all such existing premises hereafter enlarged or changed in location.

406.7.2Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

OPEN PARKING LOT. An exterior space with surfacing at grade used for the storage or sale of more than four motor vehicles, including but not limited to parking lots, motor vehicles sales lots, and accessory open parking spaces.

406.7.3Permit required. Any premise intended to be occupied for the storage or sale of motor vehicles on an open parking lot shall require an application to be filed with the department in order to obtain a Certificate of Occupancy. Such Certificate of Occupancy shall indicate the maximum number of vehicles to be accommodated and the type of vehicle, whether private passenger or commercial, to be stored. An application for or including an open parking lot shall be accompanied by a plan exhibiting the following:

1. Dimensions of the lot and its location in relation to adjoining streets; and
2. Any structure(s) existing or to be erected on the plot; and
3. The relative elevations of the parking area, curbs and adjoining yards or courts; and
4. Structures, retaining walls, and open spaces on adjoining premises; and
5. Retaining walls to be built; and
6. Location and dimensions of curb cuts, driveways, and enclosures; and
7. Drainage diagram; and
8. Specification of surfacing material; and
9. Parking stall layout with dimensions; and
10. Analysis exhibiting compliance with the New York City Zoning Resolution; and
11. Other information as may be requested by the commissioner.

A copy of the plan or diagram approved by the department shall be kept on the premises. Certified, reduced size, legible copies may be used for this purpose. When an attendant's shelter is provided on the parking lot, the Certificate of

Occupancy issued shall be posted and maintained under glass in the shelter.

406.7.4Locations prohibited.All vehicular activities associated with the operation of open parking lots shall be entirely within the property lines of the premises. Vehicles shall not be permitted to encroach upon the sidewalks. No motor vehicle may be stored or parked in any location where it would obstruct a required window or required exit of any adjacent building.

406.7.5Surfacing.All driveways, parking stalls, and open spaces used for the parking or storage of motor vehicles shall be surfaced with concrete asphalt, or equivalent durable, dustless material.

406.7.5.1Drainage.Open parking lots shall be graded and maintained such that no drainage will flow onto abutting sidewalks and adjoining properties.

406.7.5.2Non-porous surfaces.Where the surface paving of an open parking lot is non-porous, such lot shall be drained as required by the New York City Plumbing Code.

406.7.5.3Resurfacing.Resurfacing of existing open parking lots shall comply with this section.

406.7.6Curb cuts.For the purpose of this section, a curb cut shall include all splays when determining the total length of cut curb. Unless otherwise required by the New York City Zoning Resolution, all curb cuts shall comply with the following requirements:

1. The aggregate length of curb cuts shall not exceed 60 percent of any street frontage 100 feet (30 480 mm) or less in length. No single curb cut shall exceed 30 feet (9144 mm) in length, and there shall not be more than two curb cuts on any street frontage 100 feet (30 480 mm) or less in length. The minimum distance between two curb cuts shall be 5 feet (1524 mm).
2. For each 50 feet (15 240 mm) of street frontage length over 100 feet (30 480 mm), an additional curb cut no greater than 30 feet (9144 mm) in length may be permitted.
3. No curb cut shall commence within 8 feet (2438 mm) of a side lot line, except that on corner lots and lots with street frontage length of 50 feet (15 240 mm) or less, the curb cut may commence 30 inches (762 mm) from the side lot line.
4. No curb cut, including splays, shall be less than 10 feet (3048 mm) in length.

406.7.7Driveways.Driveways serving passenger vehicles shall be a minimum of 8 feet (2438 mm) in width and shall not exceed the length of the curb cut, not including the lengths of the splays. For all other motor vehicles, the minimum width of driveways shall be 10 feet (3048 mm). Portions of the driveway located between the curb line and the lot line shall be paved in accordance with the requirements of the Department of Transportation for the construction of sidewalks.

406.7.8Curbs and bumpers.Open parking lots shall be completely separated from adjoining premises and public sidewalks by curbs or bumpers of concrete, masonry, steel, heavy timber, or other similar and equally substantial materials, and shall be securely anchored so as to stop motor vehicles. Curbs and bumpers shall be at least 8 inches (203 mm) high and 8 inches (203 mm) wide.

406.7.8.1Openings.Openings in required perimeter curbs and bumpers shall be permitted only for drainage, for motor vehicle entrances and exits, and for pedestrian entrances and exits. The width of an opening for motor vehicle access shall not exceed the length of the curb cut, not including the lengths of the splays. When an opening for pedestrian access is adjacent to a motor vehicle access opening, the two openings shall be separated by a permanent and substantial post. In no case shall any pedestrian entrance or exit exceed 5 feet (1524 mm) in width.

406.7.9 Accessory uses and occupancies. Parking lot offices, attendant shelters, storage facilities, and similar structures used in conjunction with open parking lots may be provided as an accessory use and shall comply with the applicable code provisions. Such accessory structures may be constructed of combustible materials subject to the limitations of Section D105.1 of Appendix D.

406.7.9.1 Motor fuel-dispensing facilities. Motor fuel-dispensing facilities, accessory to open parking lots, shall comply with the requirements of Section 406.5 of this code and the New York City Fire Code. Motor fuel pumps shall be located at least 30 feet (9144 mm) from any parking space or interior lot line.

406.7.10 Special provisions applicable to large open parking lots. Open parking lots storing ten or more motor vehicles shall also be subject to the special provisions of this section.

406.7.10.1 Curbs and bumpers. Bumpers shall be situated not less than 1 foot (305 mm) from the perimeter edge of the open parking lot where vehicles are parked parallel to such perimeter edge, and not less than 4 feet (1219 mm) from the perimeter edge where vehicles are parked perpendicular to such perimeter edge. Openings shall be limited as provided for in Section 406.7.8.1.

Exception: A steel guardrail or other substantial barrier designed in accordance with the provisions of Section 1607.7.3, that will prevent any part of a vehicle from extending across a property line, may be accepted in lieu of bumpers.

406.7.10.2 Screen enclosures. Open parking lots shall provide a perimeter screen enclosure as per this section unless otherwise required by the New York City Zoning Resolution. Such screen enclosure may be constructed as a masonry wall, woven wire fence, iron picket fence, or uniformly painted fence of fire-resistant material at least 4 feet (1219 mm) high, but not more than 8 feet (2438 mm) above finished grade, subject to the limitations of Section 3111. Such enclosures shall completely separate the lot from adjoining premises and public sidewalks. Openings shall be limited as provided for in Section 406.7.8.1.

Exception: Screening shall not be required for any portion of the lot adjacent to an existing wall located at the lot line.

406.7.10.3 Illumination. Open parking lots operating between 6 p.m. and 6 a.m. shall be adequately illuminated to a minimum of 1 foot-candle measured at grade level, distributed over the entire area. Illumination provided with reflectors or floodlights shall be arranged such that the illumination is directed downward and away from adjacent premises.

406.7.10.4 Fire fighter aisles. In any open parking lot, one or more aisles, at least 24 inches (610 mm) in width, shall be provided to permit access by fire fighting personnel to all parts of the garage or lot. There shall not be more than three rows of parked motor vehicles between aisles.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

406.2.1 amended L.L. 8/2008 § 76, eff. July 1, 2008.

406.2.3.6 amended L.L. 8/2008 § 76, eff. July 1, 2008.

406.3.4 amended L.L. 8/2008 § 76, eff. July 1, 2008.

406.3.5 amended L.L. 8/2008 § 76, eff. July 1, 2008.

406.6.2 amended L.L. 8/2008 § 76, eff. July 1, 2008.



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SECTION BC 407: GROUP I-2

NYC Administrative Code § 28-BC 407

407.1 General.

Occupancies in Group I-2 shall comply with the provisions of this section and other applicable provisions of this code.

407.2 Corridors. Corridors in occupancies in Group I-2 shall be continuous to the exits and separated from other areas in accordance with Section 407.3 except spaces conforming to Sections 407.2.1 through 407.2.4.

407.2.1 Spaces of unlimited area. Waiting areas and similar spaces constructed as required for corridors shall be permitted to be open to a corridor, only where all of the following criteria are met:

1. The spaces are not occupied for patient sleeping units, treatment rooms, hazardous or incidental use areas as defined in Section 508.2.
2. The open space is protected by an automatic fire detection system installed in accordance with Section 907.
3. The corridors onto which the spaces open, in the same smoke compartment, are protected by an automatic fire detection system installed in accordance with Section 907, or the smoke compartment in which the spaces are located is equipped throughout with quick-response sprinklers in accordance with Section 903.3.2.
4. The space is arranged so as not to obstruct access to the required exits.

407.2.2 Nurses' stations. Spaces for doctors' and nurses' charting, communications and related clerical areas shall be permitted to be open to the corridor, when such spaces are constructed as required for corridors.

407.2.3 Mental health treatment areas. Areas wherein mental health patients who are not capable of self-preservation are housed, or group meeting or multipurpose therapeutic spaces other than incidental use areas as defined in Section 508.2, under continuous supervision by facility staff, shall be permitted to be open to the corridor, where the following criteria are met:

1. Each area does not exceed 1,500 square feet (140 m²).
2. The area is located to permit supervision by the facility staff.
3. The area is arranged so as not to obstruct any access to the required exits.
4. The area is equipped with an automatic fire detection system installed in accordance with Section 907.2.
5. Not more than one such space is permitted in any one smoke compartment.
6. The walls and ceilings of the space are constructed as required for corridors.

407.2.4 Gift shops. Gift shops less than 500 square feet (46 m²) in area shall be permitted to be open to the corridor provided the gift shop and storage areas are fully sprinklered and storage areas are protected in accordance with Section 508.2.

407.3 Corridor walls. Corridor walls shall be constructed as smoke partitions.

407.3.1 Corridor doors. Corridor doors, other than those in a wall required to be rated by Section 508.2 or for the enclosure of a vertical opening or an exit, shall not have a required fire protection rating and shall not be required to be equipped with self-closing or automatic-closing devices, but shall provide an effective barrier to limit the transfer of smoke and shall be equipped with positive latching. Roller latches are not permitted. Other doors shall conform to Section 715.3.

407.3.2 Locking devices. Locking devices that restrict access to the patient room from the corridor, and that are operable only by staff from the corridor side, shall not restrict the means of egress from the patient room except for patient rooms in mental health facilities.

407.4 Smoke barriers. Smoke barriers shall be provided to subdivide every story used by patients for sleeping or treatment and to divide other stories with an occupant load of 50 or more persons, into at least two smoke compartments. Such stories shall be divided into smoke compartments with an area of not more than 22,500 square feet (2090 m²) and the travel distance from any point in a smoke compartment to a smoke barrier door shall not exceed 200 feet (60 960 mm). The smoke barrier shall be in accordance with Section 709.

407.4.1 Refuge area. At least 30 net square feet (2.8 m²) per patient shall be provided within the aggregate area of corridors, patient rooms, treatment rooms, lounge or dining areas and other low-hazard areas on each side of each smoke barrier. On floors not housing patients confined to a bed or litter, at least 6 net square feet (0.56 m²) per occupant shall be provided on each side of each smoke barrier for the total number of occupants in adjoining smoke compartments.

407.4.2 Independent egress. A means of egress shall be provided from each smoke compartment created by smoke barriers without having to return through the smoke compartment from which means of egress originated.

407.5 Automatic sprinkler system. Smoke compartments containing patient sleeping units shall be equipped throughout with an automatic fire sprinkler system in accordance with Section 903.3.1.1. The smoke compartments shall be equipped with approved quick-response or residential sprinklers in accordance with Section 903.3.2.

407.6 Automatic fire detection. Corridors in nursing homes (both intermediate-care and skilled nursing facilities), detoxification facilities and spaces permitted to be open to corridors by Section 407.2 shall be protected by an automatic fire detection system installed in accordance with Section 907.

Exceptions:

1. Corridor smoke detection is not required where patient sleeping units are provided with smoke detectors that comply with UL 268. Such detectors shall provide a visual display on the corridor side of each patient sleeping unit and an audible and visual alarm at the nursing station attending each unit.

2. Corridor smoke detection is not required where patient sleeping unit doors are equipped with automatic door-closing devices with integral smoke detectors on the unit sides installed in accordance with their listing, provided that the integral detectors perform the required alerting function.

407.7Secured yards.Grounds are permitted to be fenced and gates therein are permitted to be equipped with locks, provided that safe dispersal areas having 30 net square feet (2.8 m²) for bed and litter patients and 6 net square feet (0.56 m²) for ambulatory patients and other occupants are located between the building and the fence. Such provided safe dispersal areas shall notbe located less than 50 feet (15 240 mm) from the building they serve.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

407.2.1 amended L.L. 8/2008 § 77, eff. July 1, 2008.

407.2.3 amended L.L. 8/2008 § 77, eff. July 1, 2008.

407.2.4 amended L.L. 8/2008 § 77, eff. July 1, 2008.

407.3.1 amended L.L. 8/2008 § 77, eff. July 1, 2008.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 408: GROUP I-3

NYC Administrative Code § 28-BC 408

408.1 General.

Occupancies in Group I-3 shall comply with the provisions of this section and other applicable provisions of this code (see Section 308.4).

408.1.1Occupancy conditions.Buildings of Group I-3 shall be classified as one of the occupancy conditions indicated in Sections 408.1.1.1 through 408.1.1.5.

408.1.1.1Condition 1.This occupancy condition shall include buildings in which free movement is allowed from sleeping areas, and other spaces where access or occupancy is permitted, to the exterior via means of egress without restraint. A Condition 1 facility is permitted to be constructed as Group R.

408.1.1.2Condition 2.This occupancy condition shall include buildings in which free movement is allowed from sleeping areas and any other occupied smoke compartment to one or more other smoke compartments. Egress to the exterior is impeded by locked exits and exit is not under an occupant's control.

408.1.1.3Condition 3.This occupancy condition shall include buildings in which free movement is allowed within individual smoke compartments, such as within a residential unit comprised of individual sleeping unit(s) and/or group activity spaces, where egress is impeded by remote-controlled door release, leading by means of egress from such a smoke compartment to another smoke compartment.

408.1.1.4Condition 4.This occupancy condition shall include buildings in which free movement is restricted from an occupied space. Remote-controlled release is provided to permit movement from sleeping units, activity spaces and other occupied areas within the smoke compartment to other smoke compartments and egress to the outside is impeded by locked exit and remote door release.

408.1.1.5Condition 5.This occupancy condition shall include buildings in which free movement is restricted from

an occupied space. Staff-controlled manual release is provided to permit movement from sleeping units, activity spaces and other occupied areas within the smoke compartment to other smoke compartments.

408.2Mixed occupancies.Poritions of buildings with an occupancy in Group I-3 that are classified as a different occupancy shall meet the applicable requirements of this code for such occupancies. Where security operations necessitate the locking of required means of egress, provisions shall be made for the release of occupants at all times. Means of egress from detention and correctional occupancies that traverse other use areas shall, as a minimum, conform to requirements for detention and correctional occupancies.

Exception: It is permissible to exit through a horizontal exit into other contiguous occupancies that do not conform to detention and correctional occupancy egress provisions but that do comply with requirements set forth in the appropriate occupancy, as long as the occupancy is not a high-hazard use.

408.3Means of egress.Except as modified or as provided for in this section, the provisions of Chapter 10 shall apply.

408.3.1Door width.Doors to resident sleeping units shall have a clear width of not less than 28 inches (711 mm).

408.3.2Sliding doors.Where doors in a means of egress are of the horizontal-sliding type, the force to slide the door to its fully open position shall not exceed 50 pounds (220 N) with a perpendicular force against the door of 50 pounds (220 N).

408.3.3Spiral stairs.Spiral stairs that conform to the requirements of Section 1009.9 are permitted for access to and between staff locations.

408.3.4Exit discharge.Exits are permitted to discharge into a fenced or walled courtyard. Enclosed yards or courts shall be of a size to accommodate all occupants, a minimum of 50 feet (15 240 mm) from the building with a net area of 15 square feet (1.4 m²) per person.

408.3.5Sallyports.A sallyport shall be permitted in a means of egress where there are provisions for continuous and unobstructed passage through the sallyport during an emergency egress condition.

408.3.6Vertical exit enclosures.One of the required vertical exit enclosures in each building shall be permitted to have glazing installed in doors and interior walls at each landing level providing access to the enclosure, provided that the following conditions are met:

1. The vertical exit enclosure shall not serve more than four floor levels.
2. Vertical exit enclosure doors shall not be less than 3/4-hour fire doors complying with Section 715.3
3. The total area of glazing at each floor level shall not exceed 5,000 square inches (3.23 m²) and individual panels of glazing shall not exceed 1,296 square inches (0.84 m²).
4. The glazing shall be protected on both sides by an automatic fire sprinkler system. The sprinkler system shall be designed to wet completely the entire surface of any glazing affected by fire when actuated.
5. The glazing shall be in a gasketed frame and installed in such a manner that the framing system will deflect without breaking (loading) the glass before the sprinkler system operates.
6. Obstructions, such as curtain rods, drapery traverse rods, curtains, drapes or similar materials shall not be installed between the automatic sprinklers and the glazing.

408.4Locks.Egress doors are permitted to be locked in accordance with the applicable use condition. Doors from an

area of refuge to the exterior are permitted to be locked with a key in lieu of locking methods described in Section 408.4.1. The keys to unlock the exterior doors shall be available at all times and the locks shall be operable from both sides of the door.

408.4.1 Remote release. Remote release of locks on doors in a means of egress shall be provided with reliable means of operation, remote from the resident living areas, to release locks on all required doors. In Occupancy Conditions 3 or 4, the arrangement, accessibility and security of the release mechanism(s) required for egress shall be such that with the minimum available staff at any time, the lock mechanisms are capable of being released within 2 minutes.

Exception: Provisions for remote locking and unlocking of occupied rooms in Occupancy Condition 4 are not required provided that not more than 10 locks are necessary to be unlocked in order to move occupants from one smoke compartment to a refuge area within 3 minutes. The opening of necessary locks shall be accomplished with not more than two separate keys.

408.4.2 Power-operated doors and locks. Power-operated sliding doors or power-operated locks for swinging doors shall be operable by a manual release mechanism at the door, and either emergency power or a remote mechanical operating release shall be provided.

Exception: Emergency power is not required in facilities with 10 locks or less complying with the exception to Section 408.4.1.

408.4.3 Redundant operation. Remote release, mechanically operated sliding doors or remote release, mechanically operated locks shall be provided with a mechanically operated release mechanism at each door, or shall be provided with a redundant remote release control.

408.4.4 Relock capability. Doors remotely unlocked under emergency conditions shall not automatically relock when closed unless specific action is taken at the remote location to enable doors to relock.

408.5 Vertical openings. Vertical openings shall be enclosed in accordance with Section 707.

Exception: A floor opening between floor levels of residential housing areas is permitted without enclosure protection between the levels, provided that both of the following conditions are met:

1. The entire normally occupied areas so interconnected are open and unobstructed so as to enable observation of the areas by supervisory personnel.
2. Means of egress capacity is sufficient to provide simultaneous egress for all occupants from all interconnected levels and areas.

The height difference between the highest and lowest finished floor levels shall not exceed 23 feet (7010 mm). Each story, considered separately, has at least one-half of its individual required means of egress capacity provided by exits leading directly out of that story without traversing to another story within the interconnected area.

408.6 Smoke barrier. Occupancies in Group I-3 shall have smoke barriers complying with Section 709 to divide every story occupied by residents for sleeping, or any other story having an occupant load of 50 or more persons, into at least two smoke compartments.

Exception: Spaces having direct exit to one of the following, provided that the locking arrangement of the doors involved complies with the requirements for doors at the compartment barrier for the use condition involved:

1. A public way.
2. A building separated from the resident housing area by a 2-hour fire-resistance-rated assembly or 50 feet (15 240

mm) of open space.

3. A secured yard or court having a holding space 50 feet (15 240 mm) from the housing area that provides 6 square feet (0.56 m²) or more of refuge area per occupant, including residents, staff and visitors.

408.6.1Smoke compartments.The maximum number of residents in any smoke compartment shall be 200. The travel distance to a door in a smoke barrier from any room door required as exit access shall not exceed 150 feet (45 720 mm). The travel distance to a door in a smoke barrier from any point in a room shall not exceed 200 feet (60 960 mm).

408.6.2Refuge area.At least 6 net square feet (0.56 m²) per occupant shall be provided on each side of each smoke barrier for the total number of occupants in adjoining smoke compartments. This space shall be readily available wherever the occupants are moved across the smoke barrier in a fire emergency.

408.6.3Independent egress.A means of egress shall be provided from each smoke compartment created by smoke barriers without having to return through the smoke compartment from which means of egress originates.

408.7Subdivision of resident housing areas.Sleeping areas and any contiguous day room, group activity space or other common spaces where residents are housed shall be separated from other spaces in accordance with Sections 408.7.1 through 408.7.4.

408.7.1Occupancy Conditions 3 and 4.Each sleeping area in Occupancy Conditions 3 and 4 shall be separated from the adjacent common spaces by a smoke-tight partition where the travel distance from the sleeping area through the common space to the exit access corridor exceeds 50 feet (15 240 mm).

408.7.2Occupancy Condition 5.Each sleeping area in Occupancy Condition 5 shall be separated from adjacent sleeping areas, corridors and common spaces by a smoke-tight partition. Additionally, common spaces shall be separated from the exit access corridor by a smoke-tight partition.

408.7.3Openings in room face.The aggregate area of openings in a solid sleeping room face in Occupancy Conditions 2, 3, 4 and 5 shall not exceed 120 square inches (77 419 mm²). The aggregate area shall include all openings including door undercuts, food passes and grilles. Openings shall be not more than 36 inches (914 mm) above the floor. In Occupancy Condition 5, the openings shall be closeable from the room side.

408.7.4Smoke-tight doors.Doors in openings in partitions required to be smoke tight by Section 408.7 shall be substantial doors, of construction that will resist the passage of smoke. Latches and door closures are not required on cell doors.

408.8Windowless buildings.For the purposes of this section, a windowless building or portion of a building is one with nonopenable windows, windows not readily breakable or without windows. Windowless buildings shall be provided with an engineered smoke control system to provide ventilation (mechanical or natural) in accordance with Section 909 for each windowless smoke compartment.



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SECTION BC 409: MOTION PICTURE PROJECTION ROOMS

NYC Administrative Code § 28-BC 409

409.1 General.

The provisions of this section shall apply to rooms in which ribbon-type cellulose acetate or other safety film is utilized in conjunction with electric arc, xenon or other light-source projection equipment that develops hazardous gases, dust or radiation. The projection, use or storage of film having a nitrocellulose base (commonly known as nitrate film) shall not be permitted except under conditions specified in special permits when issued by the Fire Department. Safety film meeting the specification and test standards of NFPA 40 may be projected, used or stored.

409.1.1 Projection room required. Every motion picture machine projecting film as mentioned within the scope of this section shall be enclosed in a projection room. Appurtenant electrical equipment, such as rheostats, transformers and generators, shall be within the projection room or in an adjacent room of equivalent construction.

409.2 Construction of projection rooms. Every projection room shall be of permanent construction consistent with the construction requirements for the type of building in which the projection room is located. Openings are not required to be protected. The room shall have a floor area of not less than 80 square feet (7.44 m²) for a single machine and at least 40 square feet (3.7 m²) for each additional machine. Each motion picture projector, floodlight, spotlight or similar piece of equipment shall have a clear working space of not less than 30 inches by 30 inches (762 mm by 762 mm) on each side and at the rear thereof, but only one such space shall be required between two adjacent projectors. The projection room and the rooms appurtenant thereto shall have a ceiling height of not less than 7 feet 6 inches (2286 mm). The aggregate of openings for projection equipment shall not exceed 25 percent of the area of the wall between the projection room and the auditorium. Openings shall be provided with glass or other approved material, so as to close completely the opening.

409.3 Projection room and equipment ventilation. Ventilation shall be provided in accordance with the New York City Mechanical Code.

409.3.1 Projection room.

409.3.1.1Supply air.Each projection room shall be provided with adequate air supply inlets so arranged as to provide well-distributed air throughout the room. Air inlet ducts shall provide an amount of air equivalent to the amount of air being exhausted by projection equipment. Air is permitted to be taken from the outside; from adjacent spaces within the building, provided the volume and infiltration rate is sufficient; or from the building air-conditioning system, provided it is so arranged as to provide sufficient air when other systems are not in operation.

409.3.1.2Exhaust air.Projection rooms are permitted to be exhausted through the lamp exhaust system. The lamp exhaust system shall be positively interconnected with the lamp so that the lamp will not operate unless there is the required airflow. Exhaust air ducts shall terminate at the exterior of the building in such a location that the exhaust air cannot be readily recirculated into any air supply system. The projection room ventilation system is permitted to also serve appurtenant rooms, such as the generator and rewind rooms.

Each projection machine shall be provided with an exhaust duct that will draw air from each lamp and exhaust it directly to the outside of the building. The lamp exhaust is permitted to serve to exhaust air from the projection room to provide room air circulation. Such ducts shall be of rigid materials, except for a flexible connector approved for the purpose. The projection lamp or projection room exhaust system, or both, is permitted to be combined but shall not be interconnected with any other exhaust or return system, or both, within the building.

409.4Lighting control.Provisions shall be made for control of the auditorium lighting and the means of egress lighting systems of theaters from inside the projection room and from at least one other convenient point in the building.

409.5Miscellaneous equipment.Each projection room shall be provided with rewind and film storage facilities.



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Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 410: STAGES AND PLATFORMS

NYC Administrative Code § 28-BC 410

410.1 Applicability.

The provisions of this section shall apply to all parts of buildings and structures that contain stages or platforms and similar appurtenances as herein defined.

410.2 Definitions. The following words and terms shall, for the purposes of this section and as used elsewhere in this code, have the meanings shown herein.

FLY GALLERY. A raised floor area above a stage from which the movement of scenery and operation of other stage effects are controlled.

GRIDIRON. The structural framing over a stage supporting equipment for hanging or flying scenery and other stage effects.

PINRAIL. A rail on or above a stage through which belaying pins are inserted and to which lines are fastened.

PLATFORM. A raised area within a building used for worship, the presentation of music, plays or other entertainment; the head table for special guests; the raised area for lecturers and speakers; boxing and wrestling rings; theater- in-the-round stages; and similar purposes wherein there are no overhead hanging curtains, drops, scenery or stage effects other than lighting and sound. A temporary platform is one installed for not more than 30 days.

PROSCENIUM WALL. The wall that separates the stage from the auditorium or assembly seating area.

STAGE. A space within a building utilized for entertainment or presentations, which includes overhead hanging curtains, drops, scenery or stage effects other than lighting and sound. Stage area shall be measured to include the entire performance area and adjacent backstage and support areas not separated from the performance area by fire-resistance-rated construction. Stage height shall be measured from the lowest point on the stage floor to the highest point of the roof or floor deck above the stage.

410.3Stages.Stage construction shall comply with Sections 410.3.1 through 410.3.7.

410.3.1Stage construction.Stage floors shall be constructed of materials as required for floors for the type of construction of the building in which such stages are located. Where areas below the stage are used for other occupancies, such stage floor shall be constructed in accordance with the requirements for separated occupancies as per Chapter 5.

Exceptions:

1. Stages of Type IIB or IV construction with a nominal 2-inch (51 mm) wood deck, provided that the stage is separated from other areas in accordance with Section 410.3.4.

2. In all types of construction, the finished floor shall be constructed of wood or approved noncombustible materials. Openings through stage floors shall be equipped with tight-fitting, solid wood trap doors with approved safety locks. The room or space below the stage into which the traps or lifts open shall be completely enclosed by construction having at least the fire-resistance rating required for the stage floor, and such room or space shall not be used as a workshop or storage area. Storage shall not be deemed to include the location in this area of scenery or scenic elements used during a performance. However, no combustible material that has a flame spread rating greater than 25 or that has not been rendered flameproof in accordance with the rules of the Fire Commissioner may be stored in this location at any time.

410.3.1.1Stage height and area.Stage areas shall be measured to include the entire performance area and adjacent backstage and support areas not separated from the performance area by fire-resistance-rated construction. Stage height shall be measured from the lowest point on the stage floor to the highest point of the roof or floor deck above the stage.

410.3.2Galleries, gridirons, catwalks and pinrails.Beams designed only for the attachment of portable or fixed theater equipment, gridirons, galleries and catwalks shall be constructed of noncombustible materials. Floors of fly galleries and catwalks shall be constructed of noncombustible material. These areas shall not be considered to be floors, stories, mezzanines or levels in applying this code.

410.3.3Exterior stage doors.Where protection of openings is required, exterior exit doors shall be protected with fire doors that comply with Section 715. Exterior openings that are located on the stage for means of egress or loading and unloading purposes, and that are likely to be open during occupancy of the theater, shall be constructed with vestibules to prevent air drafts into the auditorium.

410.3.4Proscenium wall.Where the stage height is greater than 50 feet (15 240 mm), all portions of the stage shall be completely separated from the seating area by a proscenium wall with not less than a 2-hour fire-resistance rating extending continuously from the foundation to the roof.

410.3.5Proscenium curtain.The proscenium opening of every stage with a height greater than 50 feet (15 240 mm) shall be provided with a curtain of approved material or an approved water curtain complying with Section 903.3.1.1. The curtain shall be designed and installed to intercept hot gases, flames and smoke, and to prevent a glow from a severe fire on the stage from showing on the auditorium side for a period of 20 minutes. The closing of the curtain from the full open position shall be affected in less than 30 seconds, but the last 8 feet (2438 mm) of travel shall require not less than 5 seconds.

410.3.5.1Activation.The curtain shall be activated by rate-of-rise heat detection installed in accordance with Section 907.10 operating at a rate of temperature rise of 15 to 20(degrees)F per minute (8 to 11(degrees)C per minute), and by an auxiliary manual control.

410.3.5.2Fire test.A sample curtain with a minimum of two vertical seams shall be subjected to the standard fire test specified in ASTM E 119 for a period of 30 minutes. The curtain shall overlap the furnace edges by an amount that

is appropriate to seal the top and sides. The curtain shall have a bottom pocket containing a minimum of 4 pounds per linear foot (58 N/m) of batten. The exposed surface of the curtain shall not glow, and flame or smoke shall not penetrate the curtain during the test period. Unexposed surface temperature and hose stream test requirements are not applicable to the proscenium fire safety curtain test.

410.3.5.3Smoke test.Curtain fabrics shall have a smoke-developed rating of 25 or less when tested in accordance with ASTM E 84.

410.3.5.4Tests.The completed proscenium curtain shall be subjected to operating tests prior to the issuance of a certificate of occupancy.

410.3.6Scenery.All scenery or scenic elements shall be of noncombustible materials, or of materials having a flame-spread rating not exceeding 25, or of materials that have been rendered flameproof in compliance with the rules of the Fire Commissioner. Scenery and scenic elements not complying with the above requirements may be used only when expressly permitted by the Fire Department.

410.3.7Stage ventilation.Emergency ventilation shall be provided for stages larger than 1,000 square feet (93 m²) in floor area, or with a stage height greater than 50 feet (15 240 mm). Such ventilation shall comply with Section 410.3.7.1 or 410.3.7.2.

410.3.7.1Roof vents.Two or more vents constructed to open automatically by approved heat-activated devices and with an aggregate clear opening area of not less than 5 percent of the area of the stage shall be located near the center and above the highest part of the stage area. Supplemental means shall be provided for manual operation of the ventilator. Curbs shall be provided as required for skylights in Section 2610.2. Vents shall be labeled.

410.3.7.2Smoke control.Smoke control in accordance with Section 909 shall be provided to maintain the smoke layer interface not less than 6 feet (1829 mm) above the highest level of the assembly seating or above the top of the proscenium opening where a proscenium wall is provided in compliance with Section 410.3.4.

410.4Platform construction.Permanent platforms shall be constructed of materials as required for the type of construction of the building in which the permanent platform is located. Permanent platforms are permitted to be constructed in accordance with the following:

1. The area below the platform shall be enclosed on all sides with solid construction.
2. Platforms constructed of untreated wood shall not exceed an area of 400 square feet (37 m²). Platforms constructed of fire retardant treated wood shall not exceed an area of 1,200 square feet (111 m²). Platforms constructed of noncombustible materials shall not be limited in area.
3. Where wood is used, the floor of the platform shall be a least 1 inch (25 mm) nominal thickness. Such floor shall be laid on a solid, noncombustible backing, or shall have all spaces between supporting members fire blocked with noncombustible material.

Where the space beneath the permanent platform is used for storage or any other purpose other than equipment, wiring or plumbing, the floor construction shall not be less than 1-hour fire-resistant construction. Where the space beneath the permanent platform is used only for equipment, wiring or plumbing, the underside of the permanent platform need not be protected.

410.4.1Temporary platforms.Platforms installed for a period of not more than 30 days are permitted to be constructed of any materials permitted by the code. The space between the floor and the platform above shall only be used for plumbing and electrical wiring to platform equipment.

410.5Dressing and appurtenant rooms.Dressing and appurtenant rooms shall comply with Sections 410.5.1 through 410.5.4.

410.5.1Separation from stage.Where the stage height is greater than 50 feet (15 240 mm), the stage shall be separated from dressing rooms, scene docks, property rooms, workshops, storerooms and compartments appurtenant to the stage and other parts of the building by a fire barrier wall and horizontal assemblies, or both, with not less than a 2-hour fire-resistance rating with approved opening protectives. For stage heights of 50 feet (15 240 mm) or less, the required stage separation shall be a fire barrier wall and horizontal assemblies, or both, with not less a 1-hour fire-resistance rating with approved opening protectives.

410.5.2Separation from each other.Dressing rooms, scene docks, property rooms, workshops, storerooms and compartments appurtenant to the stage shall be separated from each other by fire barrier wall and horizontal assemblies, or both, with not less than a 1-hour fire-resistance rating with approved opening protectives.

410.5.3Opening protectives.Openings other than to trunk rooms and the necessary doorways at stage level shall not connect such rooms with the stage, and such openings shall be protected with fire door assemblies that comply with Section 715.

410.5.4Stage exits.At least one approved means of egress shall be provided from each side of the stage; and from each side of the space under the stage. At least one means of escape shall be provided from each fly gallery and from the gridiron. A steel ladder, alternating tread stairway or spiral stairway is permitted to be provided from the gridiron to a scuttle in the stage roof.

410.6Automatic sprinkler system.Stages shall be equipped with an automatic fire-extinguishing system in accordance with Chapter 9. The system shall be installed under the roof and gridiron, in the tie and fly galleries and in places behind the proscenium wall of the stage and in dressing rooms, lounges, workshops and storerooms accessory to such stages:

1. Automatic sprinklers shall be placed above all rigging lofts; and above all stage areas, other than those portions of stage areas specifically designated on approved plans as performing areas that do not have rigging lofts above and that are not at any time used for storage purposes. Sprinklers above rigging lofts shall be located so that no gridiron or other obstruction intervenes between the sprinkler heads and the scenery or scenic elements.

2. When any part of a stage is sprinklered in accordance with the provisions of Item 1 of this section, or when rigging lofts are provided, such stage areas and rigging lofts shall be completely separated from audience areas by a deluge sprinkler system designed to form a vertical water curtain, with heads spaced to provide a water density of at least 3 gallons per minute per linear foot. A deluge valve actuated by a "rate of rise system "and" fixed temperature system shall control the water curtain system. The heat actuating devices shall be located on not more than 10 foot (3048 mm) centers around the perimeter of the sprinklered area or as otherwise required for the type of device used to assure operation of the system. In addition to the automatic controls, manual-operating devices shall be located at the voice/alarm communication system required by Section 410.8, and adjacent to at least one exit from the stage. Such exit shall be remote from the voice/alarm communication system.

3. When openings are provided in the stage floor for stage lifts, trap doors or stairs, sprinklers spaced 5 feet (1524 mm) on centers shall be provided around the opening at the ceiling below the stage, and baffles at least 12 inches (305 mm) in depth shall be installed around the perimeter of the opening.

4. All valves controlling sprinkler supplies shall be provided with tamper switches wired to an annunciator panel located at the voice/alarm communication system required by Section 410.8.

5. The operation of any section of the sprinkler system and the deluge system shall activate the emergency ventilating equipment required in Section 410.3.7 and shall be provided with central station supervision in addition to

the required local alarm.

6. The water flow alarm, tamper switches and deluge system equipment shall be provided with central station supervision in addition to the required local alarm.

Exception: Sprinklers are not required under stage areas less than 4 feet (1219 mm) in clear height utilized exclusively for storage of tables and chairs, provided the concealed space is separated from the adjacent spaces by not less than 5/8-inch (15.9 mm) Type X gypsum board.

410.7 Standpipes. Standpipe systems shall be provided in accordance with Section 905.

410.8 Voice/alarm communication system. Stages shall be provided with a voice/alarm communication system in accordance with Section 907.2.1.1.

410.9 Construction in seating areas.

410.9.1 Scenery and scenic elements in seating areas. Scenery or scenic elements may be placed in seating sections if such elements:

1. Are noncombustible, or of materials that have been rendered flameproof in accordance with the rules of the Fire Commissioner, or have a flame spread rating of 25 or less.

2. Are adequately braced or secured.

3. Do not obstruct the required visibility of, or paths of travel to, exit openings.

410.9.2 Platforms or runways in seating areas. Platforms or runways for performances, to accommodate the operation of cameras, electronic equipment, or motion picture projection machines not using carbon-arc or other light source that emits a gaseous discharge may be constructed in seating sections, provided such platforms or runways comply with the requirements of Section 410.4, except Item 1 and Section 410.8.

410.10 Stage lighting. Stage lights shall be placed such that they will not develop temperatures on the surface of any material that will cause that material to ignite, or smoke, or cause its flame proofing to deteriorate.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

410.3.1 amended L.L. 8/2008 § 78, eff. July 1, 2008.



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SECTION BC 411: SPECIAL AMUSEMENT BUILDINGS

NYC Administrative Code § 28-BC 411

411.1 General.

Special amusement buildings having an occupant load of 75 or more shall comply with the requirements for the appropriate Group A occupancy and this section. Amusement buildings having an occupant load of less than 75 shall comply with the requirements for a Group B occupancy and this section.

Exception: Amusement buildings or portions thereof that are without walls or a roof and constructed to prevent the accumulation of smoke. All decorative material shall be non-combustible or composed of flame retardant fabric.

411.2Special amusement building.A special amusement building is any temporary or permanent building or portion thereof that is occupied for amusement, entertainment or educational purposes and that contains a device or system that conveys passengers or provides a walkway along, around or over a course in any direction so arranged that the means of egress path is not readily apparent due to visual or audio distractions or is intentionally confounded or is not readily available because of the nature of the attraction or mode of conveyance through the building or structure.

411.3Automatic fire detection.Special amusement buildings shall be equipped with an automatic fire detection system, in accordance with Section 907.

411.4Automatic sprinkler system.Special amusement buildings shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. Where the special amusement building is temporary, the sprinkler water supply shall be of an approved temporary means.

Exception: Automatic fire sprinklers are not required where the total floor area of a temporary special amusement building is less than 1,000 square feet (93 m²) and the travel distance from any point to an exit is less than 50 feet (15 240 mm).

411.5Alarm.Actuation of a single smoke detector, the automatic sprinkler system or other automatic fire detection

device shall immediately sound an alarm at the building at a constantly attended location from which emergency action can be initiated including the capability of manual initiation of requirements in Section 907.2.11.2.

411.6Emergency voice/alarm communications system.An emergency voice/alarm communications system shall be provided in accordance with Sections 907.2.11 and 907.2.12.2, which is also permitted to serve as a public address system and shall be audible throughout the entire special amusement building.

411.7Exit marking.Exit signs shall be installed at the required exit or exit access doorways of amusement buildings. Approved directional exit markings shall also be provided. Where mirrors, mazes or other designs are utilized that disguise the path of egress travel such that they are not apparent, approved low-level exit signs and directional path markings shall be provided and located not more than 8 inches (203 mm) above the walking surface and on or near the path of egress travel. Such markings shall become visible in an emergency. The directional exit marking shall be activated by the automatic fire detection system and the automatic sprinkler system in accordance with Section 907.2.11.2.

411.8Interior finish.The interior finish shall be Class A in accordance with Section 803.1.



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SECTION BC 412: AIRCRAFT-RELATED OCCUPANCIES

NYC Administrative Code § 28-BC 412

412.1 Reserved.

412.2 Reserved.

412.3 Reserved.

412.4 Reserved.

412.5 Heliports and helistops.

412.5.1 General. Heliports and helistops may be erected on buildings or other locations where they are constructed in accordance with this section.

412.5.2 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

HELIPORT. An area of land or water or a structural surface that is designed or used for the landing and taking off of helicopters, and any appurtenant areas that are designed or used for heliport facilities and operations.

HELISTOP. An area of land or water or a structural surface that is designed or used for the landing or takeoff of helicopters, and any appurtenant areas, but that is not designed or used for fueling, defueling, maintenance, repairs or storage of helicopters.

412.5.3Size. The touchdown or landing area for helicopters of less than 3,500 pounds (1588 kg) shall be a minimum of 20 feet (6096 mm) in length and width. The touchdown area shall be surrounded on all sides by a clear area having a minimum average width at roof level of 15 feet (4572 mm) but with no width less than 5 feet (1524 mm).

412.5.4Design. Helicopter landing areas and the supports thereof on the roof of a building shall be noncombustible construction. Landing areas shall be designed to confine any flammable liquid spillage to the landing area itself and provisions shall be made to drain such spillage away from any exit or stairway serving the helicopter landing area or from a structure housing such exit or stairway. For structural design requirements, see Section 1605.5.

412.5.5Means of egress. The means of egress from heliports and helistops shall comply with the provisions of Chapter 10. Landing areas located on buildings or structures shall have two or more means of egress. For landing platforms or roof areas less than 60 feet (18 288 mm) in length, or less than 2,000 square feet (186 m²) in area, the second means of egress may be a fire escape or ladder leading to the floor below.

412.5.6Rooftop heliports and helistops. Rooftop heliports and helistops shall comply with NFPA 418 and the New York City Fire Code.



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SECTION BC 413: COMBUSTIBLE STORAGE

NYC Administrative Code § 28-BC 413

413.1 General.

Storage of combustible materials in attics, under-floor spaces, concealed spaces, and below-grade storage rooms shall comply with this section.

413.2 Attic, under-floor and concealed spaces. Attic, under-floor and concealed spaces used for storage of combustible materials shall be protected on the storage side as required for 1-hour fire-resistant construction. Openings shall be protected by assemblies that are self-closing and are of noncombustible construction or solid wood core not less than 13 inch (45 mm) in thickness.

Exceptions:

1. Areas protected by approved automatic sprinkler systems.
2. Group R-3 and U occupancies.
3. Groups S-1 and S-2 occupancies.

413.3 High-piled stock or rack storage. High-piled stock or rack storage in any occupancy group shall comply with the New York City Fire Code.



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SECTION BC 414: HAZARDOUS MATERIALS

NYC Administrative Code § 28-BC 414

414.1 General.

The provisions of this section shall apply to buildings and structures occupied for the manufacturing, processing, dispensing, use or storage of hazardous materials.

414.1.1 Other provisions. Buildings and structures with an occupancy in Group H shall also comply with the applicable provisions of Section 415 and the New York City Fire Code, including, but not limited to, location, installation, and mechanical provisions.

414.1.2 Materials. The safe design of hazardous material occupancies is material dependent. Individual material requirements are also found in Sections 307 and 415, and in the New York City Mechanical Code and the New York City Fire Code.

414.1.2.1 Aerosols. Level 2 and 3 aerosol products shall be stored and displayed in accordance with the New York City Fire Code.

414.1.3 Information required. Separate floor plans shall be submitted for buildings and structures with an occupancy in Group H, identifying the locations of anticipated contents and processes so as to reflect the nature of each occupied portion of every building and structure. A report identifying hazardous materials including, but not limited to, materials representing hazards that are classified in Group H to be stored or used, shall be submitted and the methods of protection from such hazards shall be indicated on the construction documents. The opinion and report shall be prepared by a qualified person, firm or corporation approved by the commissioner and shall be provided without charge to the department.

414.2 Control areas. Control areas shall be those spaces within a building where quantities of hazardous materials not exceeding the maximum quantities allowed by this code are stored, dispensed, used or handled.

414.2.1 Construction requirements. Control areas shall be separated from each other by not less than a 1-hour fire barrier constructed in accordance with Chapter 7.

414.2.2 Number. The maximum number of control areas within a building shall be in accordance with Table 414.2.2. Table 414.2.2 Design and Number of Control Areas

Floor Level Percentage of the Maximum Allowable Quantity Per Control Area^a Number of Control Areas Per Floor^b Fire-Resistance Rating for Fire Barriers in Hours^c Above grade Higher than 9 7-9 6 5 4 3 2 1 5 5 12.5 12.5 12.5 50 75 100 1 2 2 2 2 3 4 2 2 2 2 1 1 1 Below grade 1 2 Lower than 2 75 50 Not Allowed 3 2 Not Allowed 1 1 Not Allowed a. Percentages shall be of the maximum allowable quantity per control area shown in Tables III 307.7(1) and 307.7(2), with all increases allowed in the notes to those tables. b. There shall be a maximum of two control areas per floor in Group M occupancies and in buildings or portions of buildings having Group S occupancies with storage conditions and quantities in accordance with Section 414.2.4.c. Fire barriers shall include walls and floors as necessary to provide separation from other portions of the building.

414.2.3 Separation. The required fire-resistance rating for fire barrier assemblies shall be in accordance with Table 414.2.2. The floor construction of the control area, and the construction supporting the floor of the control area, shall have a minimum 2-hour fire-resistance rating and shall comply with the additional requirements of the New York City Fire Code.

414.2.4 Hazardous material in Group M display and storage areas and in Group S storage areas. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials permitted within a single control area of a Group M or S occupancy or an outdoor control area is permitted to exceed the maximum allowable quantities per control area specified in Tables 307.7(1) and 307.7(2) without classifying the building or use as a Group H occupancy, provided that the materials are displayed and stored in accordance with the New York City Fire Code and quantities do not exceed the maximum allowable specified in Table 414.2.4.

414.2.4.1 Below-grade storage of flammable or combustible mixtures accessory to Group M establishments. Class I liquids shall not be stored in below-grade locations. Storage of Class II and Class III liquids, accessory to retail stores, and partly or completely below grade shall be permitted, provided that such below-grade area is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 and enclosed by fire barriers having a fire-resistance rating of at least 2 hours, constructed in accordance with the construction type of the building. Openings shall be protected by self-closing assemblies having a fire-resistance rating of at least 1 1/2 hours.

Exception: Class IIIB liquids may be stored in below-grade locations that are not provided throughout with an automatic sprinkler system when such liquids are stored in a room that is separated, vertically and horizontally, from surrounding spaces by fire barriers of not less than 2-hour fire-resistance rating and such room is provided with an automatic sprinkler system.

414.3 Ventilation. Rooms, areas or spaces of Group H in which explosive, corrosive, combustible, flammable or highly toxic dusts, mists, fumes, vapors or gases are or may be emitted due to the processing, use, handling or storage of materials shall be mechanically ventilated as required by the New York City Fire Code and the New York City Mechanical Code. Ducts conveying explosives or flammable vapors, fumes or dusts shall extend directly to the exterior of the building without entering other spaces. Exhaust ducts shall not extend into or through ducts and plenums.

Exception: Ducts conveying vapor or fumes having flammable constituents less than 25 percent of their lower flammable limit (LFL) are permitted to pass through other spaces.

Emissions generated at workstations shall be confined to the area in which they are generated as specified in the New York City Fire Code and the New York City Mechanical Code.

The location of supply and exhaust openings shall be in accordance with the New York City Mechanical Code. Exhaust air contaminated by highly toxic material shall be treated in accordance with the New York City Fire Code.

A manual shutoff control for ventilation equipment required by this section shall be provided outside the room adjacent to the principal access door to the room. The switch shall be of the break-glass type and shall be labeled: VENTILATION SYSTEM EMERGENCY SHUTOFF.

414.4Hazardous material systems.Systems involving hazardous materials shall be suitable for the intended application. Controls shall be designed to prevent materials from entering or leaving process or reaction systems at other than the intended time, rate or path. Automatic controls, where provided, shall be designed to be fail safe.

414.5Inside storage, dispensing and use.The inside storage, dispensing and use of hazardous materials in excess of the maximum allowable quantities per control area of Tables 307.7(1) and 307.7(2) shall be in accordance with Sections 414.5.1 through 414.5.5 of this code and the New York City Fire Code.

414.5.1Explosion control.Explosion control shall be provided in accordance with the New York City Fire Code as required by Table 414.5.1 where quantities of hazardous materials specified in that table exceed the maximum allowable quantities in Table 307.7(1) or where a structure, room or space is occupied for purposes involving explosion hazards as required by Section 415 or the New York City Fire Code.

414.5.2Monitor control equipment.Monitor control equipment shall be provided where required by the New York City Fire Code.

414.5.3Automatic fire detection systems.Group H occupancies shall be provided with an automatic fire detection system in accordance with Section 907.2.

414.5.4Emergency power.Where mechanical ventilation, treatment systems, temperature control, alarm, detection or other electrically operated systems are required, such systems shall be provided with an emergency power system in accordance with the New York City Electrical Code.

Exceptions:

1. Storage areas for Class I and II oxidizers.
2. Storage areas for Class III, IV and V organic peroxides.
3. Emergency power for mechanical ventilation, treatment systems and temperature control systems shall not be required where an approved fail-safe engineered system is installed.

414.5.5Spill control, drainage and containment.Rooms, buildings or areas occupied for the storage of solid and liquid hazardous materials shall be provided with a means to control spillage and to contain or drain off spillage and fire protection water discharged in the storage area where required in the New York City Fire Code. The methods of spill control shall be in accordance with the New York City Fire Code.

414.5.6Storage of medical gases.When required by the New York City Fire Code, a one-hour room shall be provided for the storage of medical gases inside of buildings, with the protected openings and ventilation provisions as required by the New York City Fire Code.

414.6Outdoor storage, dispensing and use.The outdoor storage, dispensing and use of hazardous materials shall be in accordance with the New York City Fire Code.

414.6.1Weather protection.Where weather protection is provided for sheltering outdoor hazardous material storage or use areas, such storage or use shall be considered outdoor storage or use, provided that all of the following conditions

are met:

1. Structure supports and walls shall not obstruct more than one side nor more than 25 percent of the perimeter of the storage or use area.

2. The distance from the structure and the structure supports to buildings, lot lines, public ways or means of egress to a public way shall not be less than the distance required for an outside hazardous material storage or use area without weather protection.

3. The overhead structure shall be of approved noncombustible construction with a maximum area of 1,500 square feet (140 m²).

Exception: The increases permitted by Section 506 apply.

414.7Emergency alarms. Emergency alarms for the detection and notification of an emergency condition in Group H occupancies shall be provided as set forth herein.

414.7.1Storage. An approved manual emergency alarm system shall be provided in buildings, rooms or areas used for storage of hazardous materials. Emergency alarm-initiating devices shall be installed outside of each interior exit or exit access door of storage buildings, rooms or areas. Activation of an emergency alarm-initiating device shall sound a local alarm to alert occupants of an emergency situation involving hazardous materials.

414.7.2Dispensing, use and handling. Where hazardous materials having a hazard ranking of 3 or 4 in accordance with NFPA 704 are transported through corridors or exit enclosures, there shall be an emergency telephone system, a local manual alarm station or an approved alarm-initiating device at not more than 150-foot (45 720 mm) intervals and at each exit and exit access doorway throughout the transport route. The signal shall be relayed to an approved central station, or remote supervising station service or constantly attended on-site location and shall also initiate a local audible alarm.

414.7.3Supervision. Emergency alarm systems shall be supervised by an approved central, proprietary or remote station service or shall initiate an audible and visual signal at a constantly attended on-site location.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

Table 414.2.4 Col. head "Maximum . . . area" amended L.L. 8/2008

§ 79, eff. July 1, 2008.



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SECTION BC 415: GROUPS H-1, H-2, H-3, H-4 AND H-5

NYC Administrative Code § 28-BC 415

415.1 Scope.

The provisions of this section shall apply to the storage and use of hazardous materials in excess of the maximum allowable quantities per control area listed in Section 307.9. Buildings and structures with an occupancy in Group H shall also comply with the applicable provisions of Section 414 and the New York City Fire Code, including, but not limited to, location and installation provisions.

415.2Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in the code, have the meanings shown herein.

CONTINUOUS GAS-DETECTION SYSTEM. A gas detection system where the analytical instrument is maintained in continuous operation and sampling is performed without interruption. Analysis is allowed to be performed on a cyclical basis at intervals not to exceed 30 minutes.

EMERGENCY CONTROL STATION. An approved location on the premises of a semiconductor fabrication facility staffed by trained personnel that monitor the operation of equipment and systems including alert and alarm signals.

EXHAUSTED ENCLOSURE. A device, typically consisting of a hood equipped with a fan, that serves to capture and exhaust fumes, mist, vapors and gases generated at a workstation or other local environment. An exhausted enclosure does not include a room provided with general ventilation.

FABRICATION AREA. An area within a semiconductor fabrication facility in which processes using hazardous production materials are conducted.

FLAMMABLE VAPORS OR FUMES. The concentration of flammable constituents in air that exceed 25 percent of their lower flammable limit (LFL).

GAS CABINET. A fully enclosed, noncombustible enclosure used to provide an isolated environment for compressed gas containers in storage or use, including any doors and access ports for exchanging containers and accessing pressure-regulating controls.

GAS ROOM. A separately ventilated, fully enclosed room in which only compressed gases and associated equipment and supplies are stored or used.

HAZARDOUS PRODUCTION MATERIAL (HPM). A solid, liquid or gas associated with semiconductor manufacturing that has a degree-of-hazard rating in health, flammability or reactivity of Class 3 or 4 as ranked by NFPA 704 and that is used directly in research, laboratory or production processes that have as their end product materials that are not hazardous.

HPM FLAMMABLE LIQUID. An HPM liquid that is defined as either a Class I flammable liquid or a Class II or Class IIIA combustible liquid.

HPM ROOM. A room used in conjunction with or serving a Group H-5 occupancy, where HPM is stored or used and that is classified as a Group H-2, H-3 or H-4 occupancy.

IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH). The concentration of air-borne contaminants that poses a threat of death, immediate or delayed permanent adverse health effects, or effects that could prevent escape from such an environment as established by the National Institute of Occupational Safety and Health (NIOSH) based on both toxicity and flammability. It generally is expressed in parts per million by volume (ppm v/v) or milligrams per cubic meter (mg/m³). If adequate data do not exist for precise establishment of IDLH concentrations, an independent certified industrial hygienist, industrial toxicologist, appropriate regulatory agency or other source approved by the Fire Commissioner shall make such determination.

LIQUID. A material that has a melting point that is equal to or less than 68(degrees)F (20(degrees)C) and a boiling point that is greater than 68(degrees)F (20(degrees)C) at 14.7 pounds per square inch absolute (psia) (101 kPa). When not otherwise identified, the term "liquid" includes both flammable and combustible liquids.

LIQUID STORAGE ROOM. A room classified as a Group H-3 occupancy used for the storage of flammable or combustible liquids in an unopened condition.

LIQUID USE, DISPENSING AND MIXING ROOMS. Rooms in which Class I, II and IIIA flammable or combustible liquids are used, dispensed or mixed in open containers.

LOWER FLAMMABLE LIMIT (LFL). The minimum concentration of vapor in air at which propagation of flame will occur in the presence of an ignition source. The LFL is sometimes referred to as "LEL" or "lower explosive limit."

NORMAL TEMPERATURE AND PRESSURE (NTP). A temperature of 70(degrees)F (21(degrees)C) and a pressure of 1 atmosphere [14.7 psia (101 kPa)].

SERVICE CORRIDOR. A fully enclosed passage used for transporting HPM and other purposes, but not as a required means of egress.

SOLID. A material that has a melting point, decomposes or sublimates at a temperature greater than 68(degrees)F (20(degrees)C).

WORKSTATION. A defined space within a fabrication area in which a specific function, laboratory procedure or research activity relating to semiconductor manufacture is conducted. A workstation may include equipment using HPM, hazardous materials storage cabinets, flammable liquid storage cabinets or gas cabinets, ventilation equipment, fire protection devices, detection devices, and electrical devices.

415.3 Location on property. Group H shall be located on property in accordance with the other provisions of this chapter. In Group H-2 or H-3, not less than 25 percent of the perimeter wall of the occupancy shall be an exterior wall.

Exceptions:

1. Liquid use, dispensing and mixing rooms having a floor area of not more than 500 square feet (47 m²) need not be located on the outer perimeter of the building where they are in accordance with the New York City Fire Code and NFPA 30.

2. Liquid storage rooms having a floor area of not more than 1,000 square feet (93 m²) need not be located on the outer perimeter where they are in accordance with the New York City Fire Code and NFPA 30.

3. Spray paint booths that comply with the New York City Fire Code need not be located on the outer perimeter.

415.3.1 Group H minimum distance to lot lines. Regardless of any other provisions, buildings containing Group H occupancies shall be set back a minimum distance from lot lines as set forth in Items 1 through 4 below. Distances shall be measured from the walls enclosing the occupancy to lot lines, including those on a public way. Distances to assumed property lines drawn for the purposes of determination of exterior wall and opening protection are not to be used to establish the minimum distance for separation of buildings on sites where explosives are manufactured or used when separation is provided in accordance with the quantity distance tables specified for explosive materials in the New York City Fire Code.

1. Group H-1. Not less than 75 feet (22 860 mm) and not less than required by the New York City Fire Code.

Exceptions:

1. Fireworks manufacturing buildings separated in accordance with NFPA 1124.

2. Buildings containing the following materials when separated in accordance with Table 415.3.1:

2.1. Organic peroxides, unclassified detonable.

2.2. Unstable reactive materials Class 4.

2.3. Unstable reactive materials, Class 3 detonable.

2.4. Detonable pyrophoric materials.

2. Group H-2. Not less than 30 feet (9144 mm) where the area of the occupancy exceeds 1,000 square feet (93 m²), and it is not required to be located in a detached building.

3. Groups H-2 and H-3. Not less than 50 feet (15 240 mm) where a detached building is required (see Table 415.3.2).

4. Groups H-2 and H-3. Occupancies containing materials with explosive characteristics shall be separated as required by the New York City Fire Code. Where separations are not specified, the distances required shall not be less than the distances required by Table 415.3.1.

415.3.2 Group H-1 and H-2 or H-3 detached buildings. Where a detached building is required by Table 415.3.2, there are no requirements for wall and opening protection based on location on property.

415.4 Special provisions for Group H-1 occupancies. Group H-1 occupancies shall be in buildings used for no other purpose, shall not exceed one story in height and be without basement, crawl spaces or other under-floor spaces. Roofs

shall be of lightweight construction with suitable thermal insulation to prevent sensitive material from reaching its decomposition temperature. Group H-1 occupancies containing materials that are in themselves both physical and health hazards in quantities exceeding the maximum allowable quantities per control area in Table 307.7(2) shall comply with requirements for both Group H-1 and H-4 occupancies.

415.4.1 Floors in storage rooms. Floors in storage areas for organic peroxides, pyrophoric materials and unstable (reactive) materials shall be of liquid-tight, noncombustible construction.

415.5 Special provisions for Group H-2 and H-3 occupancies. Group H-2 and H-3 occupancies containing quantities of hazardous materials in excess of those set forth in Table 415.3.2 shall be in buildings used for no other purpose, shall not exceed one story in height and shall be without basements, crawl spaces or other under-floor spaces. Group H-2 and H-3 occupancies containing water-reactive materials shall be resistant to water penetration. Piping for conveying liquids shall not be over or through areas containing water reactives, unless isolated by approved liquid-tight construction.

Exception: Fire protection piping.

415.5.1 Floors in storage rooms. Floors in storage areas for organic peroxides, oxidizers, pyrophoric materials, unstable (reactive) materials and water-reactive solids and liquids shall be of liquid-tight, noncombustible construction.

415.5.2 Waterproof room. Rooms or areas used for the storage of water-reactive solids and liquids shall be constructed in a manner that resists the penetration of water through the use of waterproof materials. Piping carrying water for other than approved automatic fire sprinkler systems shall not be within such rooms or areas.

415.6 Smoke and heat venting. Smoke and heat vents complying with Section 910 shall be installed in the following locations:

1. In occupancies classified as Group H-2 or H-3, any of which are over 15,000 square feet (1394 m²) in a single floor area.

Exception: Buildings of noncombustible construction containing only noncombustible materials.

2. In areas of buildings in Group H used for storing Class 2, 3 and 4 liquid and solid oxidizers, Class 1 and unclassified detonable organic peroxides, unstable (reactive) materials, or Class 2 or 3 water-reactive materials as required for a high hazard commodity classification as defined in the New York City Fire Code.

415.7 Group H-2. Occupancies in Group H-2 shall be constructed in accordance with Sections 415.7.1 through 415.7.4 and the New York City Fire Code.

415.7.1 Combustible dusts, grain processing and storage. The provisions of Sections 415.7.1.1 through 415.7.1.5 shall apply to buildings in which materials that produce combustible dusts are stored or handled. Buildings that store or handle combustible dusts shall comply with the applicable provisions of NFPA 61, NFPA 69, NFPA 120, NFPA 484, NFPA 651, NFPA 654, NFPA 655, NFPA 664 and NFPA 85, and the New York City Fire Code.

415.7.1.1 Type of construction and height exceptions. Buildings shall be constructed in compliance with the height and area limitations of Table 503 for Group H-2; except that where erected of Type I or II construction, the heights and areas of grain elevators and similar structures shall be unlimited, and where of Type IV construction, the maximum height shall be 65 feet (19 812 mm) and except further that, in isolated areas, the maximum height of Type IV structures shall be increased to 85 feet (25 908 mm).

415.7.1.2 Grinding rooms. Every room or space occupied for grinding or other operations that produce combustible dusts shall be enclosed with fire barriers and horizontal assemblies or both that have not less than a 2-hour fire-resistance rating where the area is not more than 3,000 square feet (279 m²), and not less than a 4-hour

fire-resistance rating where the area is greater than 3,000 square feet (279 m²).

415.7.1.3Conveyors.Conveyors, chutes, piping and similar equipment passing through the enclosures of rooms or spaces shall be constructed dirt tight and vapor tight, and be of approved noncombustible materials complying with Chapter 30.

415.7.1.4Explosion control.Explosion control shall be provided as specified in the New York City Fire Code, or spaces shall be equipped with the equivalent mechanical ventilation complying with the New York City Mechanical Code.

415.7.1.5Grain elevators.Grain elevators, malt houses and buildings for similar occupancies shall not be located within 30 feet (9144 mm) of interior lot lines or structures on the same lot, except where erected along a railroad right-of-way.

415.7.1.6Coal pockets.Coal pockets located less than 30 feet (9144 mm) from interior lot lines or from structures on the same lot shall be constructed of not less than Type IB construction. Where more than 30 feet (9144 mm) from interior lot lines, or where erected along a railroad right-of-way, the minimum type of construction of such structures not more than 65 feet (19 812 mm) in height shall be Type IV.

415.7.2Flammable and combustible liquids.The storage, handling, processing and transporting of flammable and combustible liquids shall be in accordance with this section, the New York City Mechanical Code and the New York City Fire Code.

415.7.2.1Mixed occupancies.Where the storage tank area is located in a building of two or more occupancies, and the quantity of liquid exceeds the maximum allowable quantity for one control area, the use shall be completely separated from adjacent fire areas in accordance with the requirements of Section 508.3.3.

415.7.2.1.1Height exception.Where storage tanks are located within only a single-story building, the height limitation of Section 503 shall not apply for Group H.

415.7.2.2Tank protection.Storage tanks shall be noncombustible and protected from physical damage. A fire barrier wall or horizontal assemblies or both around the storage tank(s) shall be permitted as the method of protection from physical damage.

415.7.2.3Tanks.Storage tanks shall be approved tanks conforming to the requirements of the New York City Fire Code.

415.7.2.4Suppression.Group H shall be equipped throughout with an approved automatic sprinkler system, installed in accordance with Section 903.

415.7.2.5Leakage containment.A liquid-tight containment area compatible with the stored liquid shall be provided. The method of spill control, drainage control and secondary containment shall be in accordance with the New York City Fire Code.

Exception: Rooms where only double-wall storage tanks conforming to Section 415.7.2.3 are used to store Class I, II and IIIA flammable and combustible liquids shall not be required to have a leakage containment area.

415.7.2.6Leakage alarm.An approved automatic alarm shall be provided to indicate a leak in a storage tank and room. The alarm shall sound an audible signal, 15 dBa above the ambient sound level, at every point of entry into the room in which the leaking storage tank is located. An approved sign shall be posted on every entry door to the tank storage room indicating the potential hazard of the interior room environment, or the sign shall state: WARNING, WHEN ALARM SOUNDS, THE ENVIRONMENT WITHIN THE ROOM MAY BE HAZARDOUS. The leakage

alarm shall also be supervised in accordance with Chapter 9 to transmit a trouble signal.

415.7.2.7 Tank vent. Storage tank vents for Class I, II or IIIA liquids shall terminate to the outdoor air in accordance with the New York City Fire Code.

415.7.2.8 Room ventilation. Storage tank areas storing Class I, II or IIIA liquids shall be provided with mechanical ventilation. The mechanical ventilation system shall be in accordance with the New York City Mechanical Code and the New York City Fire Code.

415.7.2.9 Explosion venting. Where Class I liquids are being stored, explosion venting shall be provided in accordance with the New York City Fire Code.

415.7.2.10 Tank openings other than vents. Tank openings other than vents from tanks inside buildings shall be designed to ensure that liquids or vapor concentrations are not released inside the building.

415.7.3 Liquefied petroleum gas-distribution facilities. Propane, butane, propylene, butylene and other liquefied petroleum gas-distribution facilities shall conform to the provisions of the New York City Fire Code.

415.7.4 Dry cleaning plants. The construction and installation of dry cleaning plants shall be in accordance with the requirements of this code, the New York City Mechanical Code, the New York City Plumbing Code and NFPA 32. Dry cleaning solvents and systems shall be classified in accordance with the New York City Fire Code.

415.8 Groups H-3 and H-4. Groups H-3 and H-4 shall be constructed in accordance with the applicable provisions of this code and the New York City Fire Code.

415.8.1 Gas rooms. When gas rooms are provided, such rooms shall be separated from other areas by not less than a 1-hour fire barrier.

415.8.2 Floors in storage rooms. Floors in storage areas for corrosive liquids and highly toxic or toxic materials shall be of liquid-tight, noncombustible construction.

415.8.3 Separation-highly toxic solids and liquids. Highly toxic solids and liquids not stored in approved hazardous materials storage cabinets shall be isolated from other hazardous materials storage by construction having a 1-hour fire-resistance rating.

415.9 Group H-5.

415.9.1 General. In addition to the requirements set forth elsewhere in this code, Group H-5 shall comply with the provisions of Section 415.9 and the New York City Fire Code, including, but not limited to, automatic sprinkler protection for workstations, gas cabinets, exhausted enclosures, pass-throughs in exit access corridors, and exhaust ducts.

415.9.2 Fabrication areas.

415.9.2.1 Hazardous materials in fabrication areas.

415.9.2.1.1 Aggregate quantities. The aggregate quantities of hazardous materials stored and used in a single fabrication area shall not exceed the quantities set forth in Table 415.9.2.1.1.

Exception: The quantity limitations for any hazard category in Table 415.9.2.1.1 shall not apply where the fabrication area contains quantities of hazardous materials not exceeding the maximum allowable quantities per control

area established by Tables 307.7(1) and 307.7(2).

415.9.2.1.2 Hazardous production materials. The maximum quantities of hazardous production materials stored in a single fabrication area shall not exceed the maximum allowable quantities per control area established by Tables 307.7(1) and 307.7(2).

415.9.2.2 Separation. Fabrication areas, whose sizes are limited by the quantity of hazardous materials allowed by Table 415.9.2.1.1, shall be separated from each other, from exit access corridors, and from other parts of the building by not less than 1-hour fire barriers.

Exceptions:

1. Doors within such fire barrier walls, including doors to corridors, shall be only self-closing fire assemblies having a fire-protection rating of not less than 3/4 hour.

2. Windows between fabrication areas and exit access corridors are permitted to be fixed glazing listed and labeled for a fire protection rating of at least 3/4 hour in accordance with Section 715.

415.9.2.3 Location of occupied levels. Occupied levels of fabrication areas shall be located at or above the first story above grade plane.

415.9.2.4 Floors. Except for surfacing, floors within fabrication areas shall be of noncombustible construction. Openings through floors of fabrication areas are permitted to be unprotected where the interconnected levels are used solely for mechanical equipment directly related to such fabrication areas (see also Section 415.9.2.5). Floors forming a part of an occupancy separation shall be liquid tight.

415.9.2.5 Shafts and openings through floors. Elevator shafts, vent shafts and other openings through floors shall be enclosed when required by Section 707. Mechanical, duct and piping penetrations within a fabrication area shall not extend through more than two floors. The annular space around penetrations for cables, cable trays, tubing, piping, conduit or ducts shall be sealed at the floor level to restrict the movement of air. The fabrication area, including the areas through which the ductwork and piping extend, shall be considered a single conditioned environment.

415.9.2.6 Ventilation. Mechanical exhaust ventilation shall be provided throughout the fabrication area at the rate of not less than 1 cubic foot per minute per square foot (0.044 L/S/m²) of floor area. The exhaust air duct system of one fabrication area shall not connect to another duct system outside that fabrication area within the building.

A ventilation system shall be provided to capture and exhaust fumes and vapors at workstations.

Two or more operations at a workstation shall not be connected to the same exhaust system where either one or the combination of the substances removed could constitute a fire, explosion or hazardous chemical reaction within the exhaust duct system.

Exhaust ducts penetrating occupancy separations shall be contained in a shaft of equivalent fire-resistance construction. Exhaust ducts shall not penetrate firewalls.

Fire dampers shall not be installed in exhaust ducts.

415.9.2.7 Transporting hazardous production materials to fabrication areas. Hazardous production materials shall be transported to fabrication areas through enclosed piping or tubing systems that comply with Section 415.9.6.1, through service corridors complying with Section 415.9.4, or in exit access corridors as permitted in the exception to Section 415.9.3. The handling or transporting of hazardous production materials within service corridors shall comply with the New York City Fire Code.

415.9.2.8Electrical.

415.9.2.8.1General.Electrical equipment and devices within the fabrication area shall comply with the New York City Electrical Code. The requirements for hazardous locations need not be applied where the average air change is at least four times that set forth in Section 415.9.2.6 and where the number of air changes at any location is not less than three times that required by Section 415.9.2.6. The use of recirculated air shall be permitted.

415.9.2.8.2Workstations.Workstations shall not be energized without adequate exhaust ventilation. See Section 415.9.2.6 for workstation exhaust ventilation requirements.

415.9.3Exit access corridors.Exit access corridors shall comply with Chapter 10 and shall be separated from fabrication areas as specified in Section 415.9.2.2. Exit access corridors shall not contain HPM and shall not be used for transporting such materials, except through closed piping systems as provided in Section 415.9.6.3.

Exception: Where existing fabrication areas are altered or modified, HPM is allowed to be transported in existing exit access corridors, subject to the following conditions:

1. Corridors. Exit access corridors adjacent to the fabrication area where the alteration work is to be done shall comply with Section 1016 for a length determined as follows:

1.1. The length of the common wall of the corridor and the fabrication area; and

1.2. For the distance along the exit access corridor to the point of entry of HPM into the exit access corridor serving that fabrication area.

2. Emergency alarm system. There shall be an emergency telephone system, a local manual alarm station or other approved alarm-initiating device within exit access corridors at not more than 150-foot (45 720 mm) intervals and at each exit and exit access doorway. The signal shall be relayed to an approved central, proprietary or remote station service or the emergency control station and shall also initiate a local audible alarm.

3. Pass-throughs. Self-closing doors having a fire-protection rating of not less than 1 hour shall separate pass-throughs from existing exit access corridors. Pass-throughs shall be constructed as required for the exit access corridors, and protected by an approved automatic fire-extinguishing system.

415.9.4Service corridors.

415.9.4.1Occupancy.Service corridors shall be classified as Group H-5.

415.9.4.2Use conditions.Service corridors shall be separated from exit access corridors as required by Section 415.9.2.2. Service corridors shall not be used as a required exit access corridor.

415.9.4.3Mechanical ventilation.Service corridors shall be mechanically ventilated as required by Section 415.9.2.6 or at not less than six air changes per hour, whichever is greater.

415.9.4.4Means of egress.The maximum distance of travel from any point in a service corridor to an exit, exit access corridor or door into a fabrication area shall not exceed 75 feet (22 860 mm). Dead ends shall not exceed 4 feet (1219 mm) in length. There shall be not less than two exits, and not more than one-half of the required means of egress shall require travel into a fabrication area. Doors from service corridors shall swing in the direction of egress travel and shall be self-closing.

415.9.4.5Minimum width.The minimum clear width of a service corridor shall be 5 feet (1524 mm), or 33 inches

(838 mm) wider than the widest cart or truck used in the service corridor, whichever is greater.

415.9.4.6Emergency alarm system. Emergency alarm systems shall be provided in accordance with this section and Sections 414.7.1 and 414.7.2. The maximum allowable quantity per control area provisions shall not apply to emergency alarm systems required for HPM.

415.9.4.6.1Service corridors. An emergency alarm system shall be provided in service corridors, with at least one alarm device in each service corridor.

415.9.4.6.2Exit access corridors and exit enclosures. Emergency alarms for exit access corridors and exit enclosures shall comply with Section 414.7.2.

415.9.4.6.3Liquid storage rooms, HPM rooms and gas rooms. Emergency alarms for liquid storage rooms, HPM rooms and gas rooms shall comply with Section 414.7.1.

415.9.4.6.4Alarm-initiating devices. An approved emergency telephone system, local alarm manual pull stations, or other approved alarm-initiating devices are allowed to be used as emergency alarm-initiating devices.

415.9.4.6.5Alarm signals. Activation of the emergency alarm system shall sound a local alarm and transmit a signal to the emergency control station.

415.9.5Storage of hazardous production materials.

415.9.5.1General. Storage of HPM in fabrication areas shall be within approved or listed storage cabinets or gas cabinets, or within a workstation. The storage of hazardous production materials in quantities greater than those listed in Tables 307.7(1) or 307.7(2) shall be in liquid storage rooms, HPM rooms or gas rooms as appropriate for the materials stored. The storage of other hazardous materials shall be in accordance with other applicable provisions of this code and the New York City Fire Code.

415.9.5.2Construction.

415.9.5.2.1HPM rooms and gas rooms. HPM rooms and gas rooms shall be separated from other areas by not less than a 2-hour fire barrier where the area is 300 square feet (27.9 m²) or more and not less than a 1-hour fire barrier where the area is less than 300 square feet (27.9 m²).

415.9.5.2.2Liquid storage rooms. Liquid storage rooms shall be constructed in accordance with the following requirements:

1. Rooms in excess of 500 square feet (46.5 m²) shall have at least one exterior door approved for Fire Department access.

2. Rooms shall be separated from other areas by fire barriers having a fire-resistance rating of not less than 1-hour for rooms up to 150 square feet (13.9 m²) in area and not less than 2 hours where the room is more than 150 square feet (13.9 m²) in area.

3. Shelving, racks and wainscoting in such areas shall be of noncombustible construction or wood of not less than 1-inch (25 mm) nominal thickness.

4. Rooms used for the storage of Class I flammable liquids shall not be located in a basement.

415.9.5.2.3Floors. Except for surfacing, floors of HPM rooms and liquid storage rooms shall be of noncombustible

liquid-tight construction. Raised grating over floors shall be of noncombustible materials.

415.9.5.3Location. Where HPM rooms, liquid storage rooms and gas rooms are provided, they shall have at least one exterior wall and such wall shall be not less than 30 feet (9144 mm) from property lines, including property lines adjacent to public ways.

415.9.5.4Explosion control. Explosion control shall be provided where required by Section 414.5.1.

415.9.5.5Exits. Where two exits are required from HPM rooms, liquid storage rooms and gas rooms, one shall be directly to the outside of the building.

415.9.5.6Doors. Doors in a fire barrier wall, including doors to corridors, shall be self-closing fire assemblies having a fire-protection rating of not less than 3/4 hour.

415.9.5.7Ventilation. Mechanical exhaust ventilation shall be provided in liquid storage rooms, HPM rooms and gas rooms at the rate of not less than 1 cubic foot per minute per square foot (0.044 L/S/m²) of floor area or six air changes per hour, whichever is greater, for categories of material.

Exhaust ventilation for gas rooms shall be designed to operate at a negative pressure in relation to the surrounding areas and direct the exhaust ventilation to an exhaust system.

415.9.5.8Emergency alarm system. An approved emergency alarm system shall be provided for HPM rooms, liquid storage rooms and gas rooms.

Emergency alarm-initiating devices shall be installed outside of each interior exit door of such rooms.

Activation of an emergency alarm-initiating device shall sound a local alarm and transmit a signal to the emergency control station.

An approved emergency telephone system, local alarm manual pull stations or other approved alarm-initiating devices are allowed to be used as emergency alarm-initiating devices.

415.9.6Piping and tubing.

415.9.6.1General. Hazardous production materials piping and tubing shall comply with this section and ANSI B31.3.

415.9.6.2Supply piping and tubing.

415.9.6.2.1HPM having a health-hazard ranking of 3 or 4. Systems supplying HPM liquids or gases having a health-hazard ranking of 3 or 4 shall be welded throughout, except for connections, to the systems that are within a ventilated enclosure if the material is a gas, or an approved method of drainage or containment is provided for the connections if the material is a liquid.

415.9.6.2.2Location in service corridors. Hazardous production materials supply piping or tubing in service corridors shall be exposed to view.

415.9.6.2.3Excess flow control. Where HPM gases or liquids are carried in pressurized piping above 15 pounds per square inch gauge (psig) (103.4 kPa), excess flow control shall be provided. Where the piping originates from within a liquid storage room, HPM room or gas room, the excess flow control shall be located within the liquid storage room, HPM room or gas room. Where the piping originates from a bulk source, the excess flow control shall be located as

close to the bulk source as practical.

415.9.6.3 Installations in exit access corridors and above other occupancies. The installation of hazardous production material piping and tubing within the space defined by the walls of exit access corridors and the floor or roof above or in concealed spaces above other occupancies shall be in accordance with Section 415.9.6.2 and the following conditions:

1. Automatic sprinklers shall be installed within the space unless the space is less than 6 inches (152 mm) in the least dimension.

2. Ventilation not less than six air changes per hour shall be provided. The space shall not be used to convey air from any other area.

3. Where the piping or tubing is used to transport HPM liquids, a receptor shall be installed below such piping or tubing. The receptor shall be designed to collect any discharge or leakage and drain it to an approved location. The 1-hour enclosure shall not be used as part of the receptor.

4. HPM supply piping and tubing and HPM nonmetallic waste lines shall be separated from the exit access corridor and from occupancies other than Group H-5 by construction as required for walls or partitions that have a fire protection rating of not less than 1 hour. Where gypsum wallboard is used, joints on the piping side of the enclosure are not required to be taped, provided the joints occur over framing members. Access openings into the enclosure shall be protected by approved fire-resistance- rated assemblies.

5. Readily accessible manual or automatic remotely activated fail-safe emergency shutoff valves shall be installed on piping and tubing other than waste lines at the following locations:

- 5.1. At branch connections into the fabrication area.

- 5.2. At entries into exit access corridors.

Exception: Transverse crossings of the corridors by supply piping that is enclosed within a ferrous pipe or tube for the width of corridor need not comply with Items 1 through 5.

415.9.6.4 Identification. Piping, tubing and HPM waste lines shall be identified in accordance with ANSI A13.1 to indicate the material being transported.

415.9.7 Continuous gas-detection systems. A continuous gas-detection system shall be provided for HPM gases when the physiological warning properties of the gas are at a higher level than the accepted permissible exposure limit (PEL) for the gas and for flammable gases in accordance with this section.

415.9.7.1 Where required. A continuous gas-detection system shall be provided in the areas identified in Sections 415.9.7.1.1 through 415.9.7.1.4.

415.9.7.1.1 Fabrication areas. A continuous gas-detection system shall be provided in fabrication areas when gas is used in the fabrication area.

415.9.7.1.2 HPM rooms. A continuous gas-detection system shall be provided in HPM rooms when gas is used in the room.

415.9.7.1.3 Gas cabinets, exhausted enclosures and gas rooms. A continuous gas-detection system shall be provided in gas cabinets and exhausted enclosures. A continuous gas-detection system shall be provided in gas rooms when gases are not located in gas cabinets or exhausted enclosures.

415.9.7.1.4 Exit access corridors. When gases are transported in piping placed within the space defined by the walls of an exit access corridor, and the floor or roof above the exit access corridor, a continuous gas-detection system shall be provided where piping is located and in the exit access corridor.

Exception: A continuous gas-detection system is not required for occasional transverse crossings of the corridors by supply piping that is enclosed in a ferrous pipe or tube for the width of the corridor.

415.9.7.2 Gas-detection system operation. The continuous gas-detection system shall be capable of monitoring the room, area or equipment in which the gas is located at or below the PEL or ceiling limit of the gas for which detection is provided. For flammable gases, the monitoring detection threshold level shall be vapor concentrations in excess of 20 percent of the lower explosive limit (LEL). Monitoring for highly toxic and toxic gases shall also comply with the requirements for such material in the New York City Fire Code.

415.9.7.2.1 Alarms. The gas detection system shall initiate a local alarm and transmit a signal to the emergency control station when a short-term hazard condition is detected. The alarm shall be both visual and audible and shall provide warning both inside and outside the area where the gas is detected.

415.9.7.2.2 Shutoff of gas supply. The gas detection system shall automatically close the shutoff valve at the source on gas supply piping and tubing related to the system being monitored for which gas is detected when a short-term hazard condition is detected. Automatic closure of shutoff valves shall comply with the following:

1. Where the gas-detection sampling point initiating the gas detection system alarm is within a gas cabinet or exhausted enclosure, the shutoff valve in the gas cabinet or exhausted enclosure for the specific gas detected shall automatically close.
2. Where the gas-detection sampling point initiating the gas detection system alarm is within a room and compressed gas containers are not in gas cabinets or an exhausted enclosure, the shutoff valves on all gas lines for the specific gas detected shall automatically close.
3. Where the gas-detection sampling point initiating the gas detection system alarm is within a piping distribution manifold enclosure, the shutoff valve supplying the manifold for the compressed gas container of the specific gas detected shall automatically close.

Exception: Where the gas-detection sampling point initiating the gas detection system alarm is at the use location or within a gas valve enclosure of a branch line downstream of a piping distribution manifold, the shutoff valve for the branch line located in the piping distribution manifold enclosure shall automatically close.

415.9.8 Manual fire alarm system. An approved manual fire alarm system shall be provided throughout buildings containing Group H-5. Activation of the alarm system shall initiate a local alarm and transmit a signal to the emergency control station. The fire alarm system shall be designed and installed in accordance with Section 907.

415.9.9 Emergency control station. An emergency control station shall be provided on the premises at an approved location, outside of the fabrication area and shall be continuously staffed by trained personnel. The emergency control station shall receive signals from emergency equipment and alarm and detection systems. Such emergency equipment and alarm and detection systems shall include, but not necessarily be limited to, the following where such equipment or systems are required to be provided either in Section 415.9 or elsewhere in this code:

1. Automatic fire sprinkler system alarm and monitoring systems.
2. Manual fire alarm systems.
3. Emergency alarm systems.

4. Continuous gas-detection systems.

5. Smoke detection systems.

6. Emergency power system.

415.9.10Emergency power system. An emergency power system shall be provided in Group H-5 occupancies where required in Section 415.9.10.1. The emergency power system shall be designed to supply power automatically to required electrical systems when the normal electrical supply system is interrupted.

415.9.10.1Where required. Emergency power shall be provided for electrically operated equipment and connected control circuits for the following systems:

1. HPM exhaust ventilation systems.

2. HPM gas cabinet ventilation systems.

3. HPM exhausted enclosure ventilation systems.

4. HPM gas room ventilation systems.

5. HPM gas detection systems.

6. Emergency alarm systems.

7. Manual fire alarm systems.

8. Automatic sprinkler system monitoring and alarm systems.

9. Electrically operated systems required elsewhere in this code applicable to the use, storage or handling of HPM.

415.9.10.2Exhaust ventilation systems. Exhaust ventilation systems are allowed to be designed to operate at not less than one-half the normal fan speed on the emergency power system where it is demonstrated that the level of exhaust will maintain a safe atmosphere.

415.9.11Fire sprinkler system protection in exhaust ducts for HPM.

415.9.11.1General. Automatic fire sprinkler system protection shall be provided in exhaust ducts conveying vapors, fumes, mists or dusts generated from HPM in accordance with this section and the New York City Mechanical Code.

415.9.11.2Metallic and noncombustible, nonmetallic exhaust ducts. Automatic fire sprinkler system protection shall be provided in metallic and noncombustible, nonmetallic exhaust ducts where all of the following conditions apply:

1. Where the largest cross-sectional diameter is equal to or greater than 10 inches (254 mm).

2. The ducts are within the building.

3. The ducts are conveying flammable vapors or fumes.

415.9.11.3Combustible nonmetallic exhaust ducts. Automatic fire sprinkler system protection shall be provided in combustible nonmetallic exhaust ducts where the largest cross-sectional diameter of the duct is equal to or greater than 10 inches (254 mm).

Exceptions:

1. Ducts listed or approved for applications without automatic fire sprinkler system protection.
2. Ducts not more than 12 feet (3658 mm) in length installed below ceiling level.

415.9.11.4 Automatic sprinkler locations. Sprinkler systems shall be installed at 12-foot (3658 mm) intervals in horizontal ducts and at changes in direction. In vertical ducts, sprinklers shall be installed at the top and at alternate floor levels.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

415.7.2.1 amended L.L. 8/2008 § 80, eff. July 1, 2008.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 416: APPLICATION OF FLAMMABLE FINISHES

NYC Administrative Code § 28-BC 416

416.1 General.

The provisions of this section shall apply to the construction, installation and use of buildings and structures, or parts thereof, for the spraying of flammable paints, varnishes and lacquers or other flammable materials or mixtures or compounds used for painting, varnishing, staining or similar purposes. Such construction and equipment shall comply with the New York City Fire Code.

416.2 Spray rooms. Spray rooms shall be enclosed with fire barrier walls and horizontal assemblies or both with not less than a 2-hour fire-resistance rating. Floors shall be waterproofed and drained in an approved manner.

416.2.1 Surfaces. The interior surfaces of spray rooms shall be smooth and shall be so constructed to permit the free passage of exhaust air from all parts of the interior and to facilitate washing and cleaning, and shall be so designed to confine residues within the room. Aluminum shall not be used.

416.3 Spraying spaces. Spraying spaces shall be ventilated with an exhaust system capable of at least 6 air changes per hour to prevent the accumulation of flammable mist or vapors in accordance with the New York City Mechanical Code. Where such spaces are not separately enclosed, noncombustible spray curtains shall be provided to restrict the spread of flammable vapors.

416.3.1 Surfaces. The interior surfaces of spraying spaces shall be smooth and continuous without edges, and shall be so constructed to permit the free passage of exhaust air from all parts of the interior and to facilitate washing and cleaning, and shall be so designed to confine residues within the spraying space. Aluminum shall not be used.

416.4 Fire protection. An automatic fire-extinguishing system shall be provided in all spray, dip and immersing spaces and storage rooms, and shall be installed in accordance with Chapter 9.



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SECTION BC 417: DRYING ROOMS

NYC Administrative Code § 28-BC 417

417.1 General.

A drying room or dry kiln installed within a building shall be constructed entirely of approved noncombustible materials or assemblies of such materials regulated by the approved rules or as required in the general and specific sections of Chapter 4 for special occupancies, where applicable to the general requirements of Chapter 28, and in accordance with the New York City Fire Code.

417.2 Piping clearance. Overhead heating pipes shall have a clearance of not less than 2 inches (51 mm) from combustible contents in the dryer.

417.3 Insulation. Where the operating temperature of the dryer is 175(degrees)F (79(degrees)C) or more, metal enclosures shall be insulated from adjacent combustible materials by not less than 12 inches (305 mm) of airspace, or the metal walls shall be lined with 1/4-inch (6.4 mm) insulating mill board or other approved equivalent insulation.

417.4 Fire Protection. Drying rooms designed for high-hazard materials and processes, including special occupancies as provided for in Chapter 4, shall be protected by an approved automatic sprinkler or fire-extinguishing system conforming to the provisions of Chapter 9.



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Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY

SECTION BC 418: ORGANIC COATINGS

NYC Administrative Code § 28-BC 418

418.1 Building features.

Manufacturing of organic coatings shall be done only in buildings that do not have pits or basements and shall comply with the New York City Fire Code. Such buildings shall be protected by an approved automatic sprinkler system in accordance with Chapter 9.

418.2 Location. Organic coating manufacturing operations and operations incidental to or connected therewith shall not be located in buildings having other occupancies.

418.3 Process mills. Mills operating with close clearances and that process flammable and heat-sensitive materials, such as nitrocellulose, shall be classified as Group H1 occupancy.

418.4 Tank storage. Storage areas for flammable and combustible liquid tanks inside of structures shall be located at or above grade and shall be separated from the processing area by not less than 2-hour fire-resistance-rated fire barriers.

418.5 Nitrocellulose storage. Nitrocellulose storage shall be located on a detached pad or in a separate structure or a room enclosed with no less than 2-hour fire-resistance-rated fire barriers.

418.6 Finished products. Storage rooms for finished products that are flammable or combustible liquids shall be separated from the processing area by fire barriers having a fire-resistance rating of at least 2 hours, and openings in the walls shall be protected with approved opening protectives.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 419: NON-PRODUCTION CHEMICAL LABORATORIES

NYC Administrative Code § 28-BC 419

419.1 General.

The provisions of this section shall govern the design, construction and chemical quantity limitations of buildings and portions thereof occupied or designed to be occupied as a non-production laboratory. Non-production laboratories shall be classified into occupancy groups in accordance with Section 419.5. The provisions of this section shall not apply to production laboratories classified in occupancy groups F or H.

419.2Standards.Except as otherwise provided in this section, non-production laboratories shall meet the design, construction and chemical quantity limitation requirements for laboratory unit fire hazard class D, as set forth in NFPA 45, and the New York City Mechanical Code. The storage arrangement, handling and use of chemicals within non-production laboratories and accessory storage rooms, and the operation and maintenance of non-production laboratories shall comply with the requirements of the New York City Fire Code, and the rules of the Fire Commissioner.

419.3Prohibitions.It shall be unlawful in any non-production laboratory to:

1. Store or use any explosive.
2. Store or use any unclassified detonable organic peroxide, detonable pyrophoric material, detonable unstable (reactive) material or detonable water-reactive material.
3. Store or use any Class 4 unstable (reactive) material.
4. Store or use any Class 4 oxidizing material.
5. Store or use any flammable gas below-grade.

419.4Definitions.The following words and terms shall, for the purposes of this section, and as used elsewhere in

this code, have the meanings shown herein.

LABORATORY BUILDING. A structure consisting wholly or principally of one or more laboratory units.

LABORATORY CHEMICAL. A material with a health, flammability, or instability hazard rating of 2, 3, or 4 as defined in NFPA 704.

LABORATORY, NON-PRODUCTION. A building or portion thereof wherein chemicals or gases are used or synthesized on a non-production basis for testing, research, experimental, instructional or educational purposes.

LABORATORY UNIT. An enclosed space of a minimum 1-hour fire-rated construction, designed or used as a non-production laboratory. Laboratory units may include one or more separate laboratory work areas, and accessory storage rooms or spaces within or contiguous with the laboratory unit, such as offices and lavatories.

STORAGE CABINET. A cabinet designed and constructed in accordance with UL 1275, Flammable Liquid Storage Cabinets, and used for the storage of not more than 60 gallons (227 L) of flammable and combustible liquids.

STORAGE ROOM. A room where laboratory chemicals or gases are stored and not otherwise used or synthesized.

419.5 Classification. Buildings or portions thereof occupied as a non-production laboratory may be classified as Group B occupancy provided they comply with the provisions of Section 419. Non-production laboratories not in compliance with the provisions of Section 419.7 for laboratory chemical quantity limitations shall be classified as Group H occupancy.

419.5.1 Accessory use non-production laboratories. Accessory non-production laboratories occupying an area not more than 10 percent of the area of the story in which such laboratories are located and not exceeding the tabular values in Table 503 for the allowable height or area for such use shall be classified according to the main occupancy. Such accessory non-production laboratories shall comply with the provisions of Section 419.

419.6 Fire protection.

419.6.1 Sprinkler system. Laboratory units shall be provided throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. The entire building shall be provided throughout with an automatic sprinkler system when the aggregate floor area of all laboratory units within any building exceeds 20,000 square feet (1858 m²).

419.6.2 Standpipe and hose system. In all non-production laboratory buildings that are two or more stories above or below the grade level (level of exit discharge), standpipes shall be installed in accordance with Section 905.2.

419.6.3 Fire alarm system. A manual fire alarm system shall be installed in accordance with Section 907.2.2, Section 907.2.3, or Section 907.2.6, as applicable.

419.7 Quantity limitations.

419.7.1 Flammable and combustible liquids. The density and total quantity of flammable and combustible liquids allowed within a laboratory unit, outside of storage rooms, shall comply with Table 10.1.1 of NFPA 45 for laboratory unit fire hazard class D.

Exceptions: The following exceptions apply to other than educational or instructional laboratories:

1. The density of flammable and combustible liquids allowed within a laboratory unit may be increased to those set forth in Table 10.1.1 of NFPA 45 for laboratory unit fire hazard class B provided the total quantity of flammable and

combustible liquid, including any in storage cabinets or safety cans, does not exceed 25 gallons (95 L).

2. The density of flammable and combustible liquids allowed within a laboratory unit may be increased to those set forth in Table 10.1.1 of NFPA 45 for laboratory unit fire hazard class B provided the total quantity of flammable and combustible liquid, including any in storage cabinets or safety cans, does not exceed 30 gallons (114 L) and the walls, floors and ceilings of the laboratory unit are separated from all adjoining areas by 2-hour fire rated construction.

3. Based on a density of 1 gallon per 100 square feet (3.785 L per 9.3 m²) of area, the quantity of flammable and combustible liquid allowed within a laboratory unit, excluding quantities in storage cabinets or safety cans, may be increased to 100 gallons (379 L), and the total quantities of flammable and combustible liquids, including quantities in storage cabinets or safety cans, may be increased to 200 gallons (775 L) provided the walls, floors and ceilings of the laboratory unit are separated from all adjoining areas by 2-hour fire rated construction.

419.7.2 Flammable solids. The total quantity of flammable solids allowed within a laboratory unit, excluding any quantities in a storage room, shall not exceed 10 pounds (4.5 kg).

Exception: The total quantity of flammable solids allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire rated construction shall not exceed 15 pounds (6.8 kg).

419.7.3 Oxidizers and organic peroxides. The total quantity of solid and liquid oxidizers and organic peroxides combined allowed within a laboratory unit, excluding any quantities in a storage room, shall not exceed 40 pounds (18 kg), provided not more than 2 pounds (0.908 kg) of which are Class 3 oxidizers and 1 pound (0.454 kg) of which are Class I organic peroxides.

Exception: The total quantity of solid and liquid oxidizers and organic peroxides combined allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire rated construction shall not exceed 50 pounds (23 kg), provided not more than 2 pounds (0.908 kg) of which are Class 3 oxidizers and 1 pound (0.454 kg) of which are Class I organic peroxides.

419.7.4 Unstable (reactive). The total quantity of unstable (reactive) material allowed within a laboratory unit, excluding any quantities in a storage room, shall not exceed 6 pounds (2.7 kg), provided not more than 1 pound (0.454 kg) of which are Class 3 unstable (reactive).

Exception: The total quantity of unstable (reactive) material allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire rated construction shall not exceed 12 pounds (5.4 kg), provided not more than 1 pound (0.454 kg) of which are Class 3 unstable (reactive).

419.7.5 Water reactive material. The total quantity of water reactive material allowed within a laboratory unit, excluding any quantities in a storage room, shall not exceed 2.5 pounds (1.1 kg).

Exception: The total quantity of water reactive material allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire rated construction shall not exceed 5 pounds (2.3 kg).

419.7.6 Pyrophoric material. The total quantity of solid or liquid pyrophoric material allowed within a laboratory unit, excluding any quantities in a storage room, shall not exceed 0.5 pounds (0.227 kg).

Exception: The total quantity of pyrophoric material allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire rated construction shall not exceed 1 pound (0.454 kg).

419.7.7 Highly toxic material. The total quantity of solid or liquid highly toxic material allowed within a laboratory unit, excluding any quantities in a storage room, shall not exceed 5 pounds (0.227 kg).

419.7.8 Toxic material. The total quantity of solid or liquid toxic material allowed within a laboratory unit, excluding any quantities in a storage room, shall not exceed 250 pounds (946 L).

419.7.9 Corrosive material. The total quantity of solid or liquid corrosive material allowed within a laboratory unit, excluding any quantity in a storage room, shall not exceed 250 gallons (946 L).

419.7.10 Highly toxic and toxic gases. In educational and instructional laboratories, the total quantity of highly toxic and toxic gases combined allowed within a laboratory unit, excluding any quantities in a storage room, shall not exceed 20 standard cubic feet (0.56 standard cubic m).

419.8 Storage room classification. Storage rooms for laboratory chemicals accessory to a laboratory unit shall be classified as occupancy group S-1 provided they comply with the provisions of Section 419.9. Storage rooms not in compliance with the provisions of Section 419.9 for laboratory chemical quantity limitations shall be classified as Group H occupancy.

419.9 Storage rooms. In addition to the quantities allowed within a laboratory unit by Section 419.7, laboratory chemicals that are accessory to a laboratory unit may be stored, whether outside of or entirely within a laboratory unit, in dedicated storage rooms complying with all of the following:

1. Storage room capacity shall be limited to a maximum of 300 gallons (1136 L) of laboratory chemicals, not to exceed 5 gallons per square foot (0.125 L/m²) of floor area.
2. Flammable gas storage rooms shall be limited to 2,500 standard cubic feet (71 standard cubic m) of flammable gas.
3. Storage rooms shall be enclosed by a minimum of 2-hour rated fire barriers.
4. Storage rooms shall be equipped with a continuously operated ventilation system that provides at least 6 changes of air per hour and vents to the outdoors.
5. Each entrance to the storage room shall be provided with a minimum 1-hour rated self-closing fire door.
6. Each entrance to the storage room shall be provided with a sill at the doorway, except that no sill shall be required in storage rooms containing only flammable gases.
7. Storage rooms shall be equipped with an automatic sprinkler system providing at least one sprinkler for each 90 square feet (8.4 m²) or portion thereof.
8. Laboratory chemicals that are incompatible with each other shall not be stored in the same storage room unless in compliance with the New York City Fire Code for separation of incompatible materials.
9. Storage rooms shall not open directly to an exit or any enclosed exit access component.
10. The floor of any storage room storing flammable gases shall be located at or above grade.

419.10 Ventilation. Non-production laboratories shall be ventilated in accordance with Section 407 of the New York City Mechanical Code.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.
419.5.1 amended L.L. 8/2008 § 81, eff. July 1, 2008.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 420: USES AND OCCUPANCIES INVOLVING RADIOACTIVE MATERIALS AND
RADIATION-PRODUCING EQUIPMENT

NYC Administrative Code § 28-BC 420

420.1 Scope.

This section shall apply to the construction, alteration, and use of buildings or spaces for radioactive materials and radiation-producing equipment.

420.2City, state and federal regulations.In addition to the requirements of this section, occupancies involving radioactive materials and radiation-producing equipment shall also comply with applicable requirements of the city health code, and applicable state and federal regulations.

420.3Laboratories.All laboratories utilizing radioactive materials or radiation producing equipment required to register under the requirements of the New York City Health Code shall comply with the requirements of Section 420.3.1 to 420.3.7.

420.3.1Construction.All buildings in which such laboratories occur shall be of group I or II construction.

420.3.2Floors.All floors shall comply with the fire resistance requirements for the class of construction, and provide the degree of radioactive resistance required by applicable city, state, and federal regulations. A finished material shall be applied to provide a continuous nonporous surface, which may be readily removed.

420.3.3Interior finish.All insulation of acoustical treatments and interior partitions shall be of noncombustible material. Walls and ceilings shall have nonporous finishes of class A rating.

420.3.4Sprinkler protection.Automatic sprinkler protection complying with the construction provisions of Chapter 9 of the New York City Building Code shall be provided, and such protection shall be designed for the type of combustible materials wherever such material is used, and for the radioactive material that may be expected to melt, vaporize, or oxidize under fire conditions. Laboratory equipment susceptible to damage from water or other materials

used in the sprinkler system may be shielded by hoods except when the equipment provides a source of combustion. Where sprinkler protection uses water, or small water-spray installations are used to fight small isolated fires, floors shall be provided with drainage so that water may be carried to retention tanks for later disposal as required by the New York City Health Code when contamination of the water is to be anticipated.

420.3.5Electrical controls.Electrical controls and equipment shall be installed in accordance with the requirements of the New York City Electrical Code.

420.3.6Ventilation.Exhaust air from areas in which radioactive materials are used or stored shall be exhausted to the outdoors in such manner as not to create a health hazard, and shall not be re-circulated to other areas of the building. Air pressure in rooms in which radioactive materials are used or stored shall be maintained below the air pressure of adjoining rooms, so that there is no flow of radioactive gases or dusts into adjoining rooms.

420.3.6.1Ducts.Ducts shall be of sheet steel of not less than No. 16 manufacturers' standard gauge or of other equivalent noncombustible material having a melting point above 1800(degrees)F (982(degrees)C). Exhaust ducts within the building, on the discharge side of the fan, shall be welded airtight. Exhaust ducts within the building, on the suction side of the fan shall have laps in the direction of air flow with smoke-tight joints, and shall be subjected to a smoke test in accordance with the requirements for chimneys in the New York City Mechanical Code. Access hatches with tight-closing covers shall be provided for cleaning and for fire-fighting in the exhaust system ducts.

420.3.6.2Fume hoods.Fume hoods shall be exhausted to the outdoors. Controls for hood fans shall be interlocked so that contaminated air cannot be drawn into any space from a hood where the exhaust fan is not in operation.

420.3.6.3Fans.Fan equipment other than the impeller and impeller housing shall be located outside the exhaust stream.

420.3.6.4Exhaust.When the degree of contamination of the exhaust stream exceeds the concentration limits permitted by the health code, the duct system shall be equipped with devices to decontaminate the air to a safe level before discharging to the outdoor air.

420.3.7Plumbing.Drainage lines from sinks used for radioactive wastes shall be without traps, and shall lead to retention tanks when required by the provisions of the New York City Health Code.

420.4Radiation machines.Radiation machines or particle accelerators, linear accelerators, cyclotrons, synchrotrons, betatrons, or bevatrons shall be located only in buildings of group I or II construction; however, this requirement shall not apply to conventional medical, dental, research, or industrial x-ray machines of less than one million volt capacity.

420.5Storage.Radioactive materials shall be stored in sealed containers. When required by the commissioner to avoid too concentrated an exposure within any one space, radioactive materials shall be stored in vaults designed in accordance with the radiation shielding or other requirements for the materials to be stored, and with the requirements of Sections 420.5.1 to 420.5.3.

420.5.1Fire protection.When any materials are subject to melting, vaporization, or oxidation under fire conditions, the storage vaults shall be constructed of walls having a fire-resistance rating of at least four hours, and the vaults shall be equipped with automatic sprinklers complying with the construction requirements of Chapter 9 of the New York City Building Code and shall be vented through devices to decontaminate the air to a safe level.

420.5.2Doors.Doors opening into storage vaults shall meet shielding requirements and have a fire-protection rating of not less than three hours.

420.5.3Bins, shelving, partitions, and pallets.All bins, shelving, partitions, and pallets in storage vaults shall be of noncombustible materials. Other methods of storage permitted by the health department or applicable state and federal

regulations, such as storage under water, may be used.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 5: GENERAL BUILDING HEIGHTS AND AREAS; SEPARATION OF OCCUPANCIES*
SECTION BC 501: GENERAL

NYC Administrative Code § 28-BC 501

501.1 Scope.

The provisions of this chapter control the height and area of structures hereafter erected and additions to existing structures, including separation of occupancies.

501.2 Premises identification. Approved numbers or addresses shall be provided for new buildings and shall be placed in such a position as to be clearly visible and legible from the street or roadway fronting the property. Address numbers shall be Arabic numerals or alphabet letters and shall be a minimum 4 inches (102 mm) in height and stroke of minimum 0.5 inch (12.7 mm) of a contrasting color to the background itself.

501.3 Fire Department access.

501.3.1 Frontage. Every building, exclusive of accessory buildings, shall have at least 8 percent of the total perimeter of the building adjoining a street or frontage space. For the purposes of this section, building perimeter shall be measured at that story having the maximum enclosed floor area; and buildings provided with a front yard or front setback no deeper than 30 feet (9144 mm) in compliance with the Zoning Resolution shall be considered as adjoining the street or frontage space.

501.3.2 Building access. Provisions shall be made for access by the Fire Department to every building in accordance with this section.

Exception: The provisions of Section 501.3.2 shall not apply to any story that is completely protected by an automatic sprinkler system complying with Section 903.3.1. Such exception shall not apply to access to cellars or basements as required by Section 54 of the New York State Multiple Dwelling Law.

501.3.2.1 Above grade. Access shall be provided directly from the outdoors to each story below a height of 100 feet (30 480 mm) except to the first story or ground floor, by at least one window or readily identifiable access panel within

each 50 feet (15 240 mm) or fraction thereof of horizontal length of every wall that fronts on a street or frontage space. All windows shall be openable from the inside or breakable from both the inside and the outside, and shall have a size when open of at least 24 inches by 36 inches (610 mm by 914 mm). Panels shall be openable from both the inside and outside and shall have a height when open of 48 inches (1219 mm) and a width of at least 32 inches (813 mm). The sill of the window or panel shall not be higher than 36 inches (914 mm) above the inside floor.

Exception: Where not all of the windows are openable or breakable, the windows intended to satisfy the requirements of Section 501.3.2.1 shall be readily identifiable.

501.3.2.2Below grade.Access shall be provided directly from the outdoors to the first basement or cellar story below grade, except as provided below, within each 100 feet (30 480 mm) or fraction thereof of horizontal length of every wall that fronts on a street or frontage space. Such access shall be by stairs, doors, windows or other means that provide an opening 48 inches (1219 mm) high and 32 inches (813 mm) wide, the sill of which shall not be higher than 36 inches (914 mm) above the inside floor. If an areaway is used to provide below grade access, the minimum horizontal dimension shall be at least one-third the depth of the areaway or 6 feet (1829 mm) whichever is less.

1. One- and two-family dwellings need not provide direct access.

2. Any building classified in occupancy group R-2 not more than three stories in height and with not more than two dwelling units on any story need not provide direct access when such first basement or cellar story is used for dwelling units or for uses accessory to the residential use in the building.

3. Except as provided in item 2 above, for Group R-1 or R-2 occupancies, only one direct access from the outdoors to the first basement or cellar story consisting of a stair or door shall be required when such story is used for dwelling units or for uses accessory to the residential use in the building.

501.3.2.3Signs obstructing openings.Where wall signs are erected to cover doors or windows of existing buildings, access panels shall be provided as necessary to comply with the requirements of Sections 501.3.2.1 and 501.3.2.2.

501.3.2.4Location.Wherever practicable, one access opening in each story shall provide access to a stairway, or where there is no stairway at the exterior wall, one access opening in each story shall be located as close as practicable to a stairway.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

501.1 amended L.L. 8/2008 § 83, eff. July 1, 2008.

501.3.2.2 item 2 amended L.L. 8/2008 § 84, eff. July 1, 2008.



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Chapter 5: GENERAL BUILDING HEIGHTS AND AREAS; SEPARATION OF OCCUPANCIES*
SECTION BC 502: DEFINITIONS

NYC Administrative Code § 28-BC 502

502.1 Definitions.

The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

AREA, BUILDING. The area included within surrounding exterior walls (or exterior walls and firewalls) exclusive of vent shafts and courts. Areas of the building not provided with surrounding walls shall be included in the building area if such areas are included within the horizontal projection of the roof or floor above.

BASEMENT. A story partly below the grade plane and having less than one-half its clear height (measured from finished floor to finished ceiling) below the grade plane (see "Story", "Story above grade plane" in Section 502.1).

CELLAR. That portion of a building that is partly or wholly underground, and having one-half or more of its clear height (measured from finished floor to finished ceiling) below the grade plane. Cellars shall not be counted as stories in measuring the height of the buildings.

FRONTAGE SPACE. A street; or an open space adjoining a building not less than 30 feet (9144 mm) in any dimension. Such open space shall be accessible from a street by a driveway, lane, private road or alley at least 20 feet (6096 mm) in width. Frontage space including accessways shall be permanently maintained free of all obstructions that might interfere with its use by the Fire Department.

GRADE PLANE. A reference plane representing the level of the curb as established by the city engineer in the Borough President's office, measured at the center of the front of a building. Where a building faces on more than one street, the grade plane shall be the average of the levels of the curbs at the center of each front.

Exception: The grade plane shall not be referenced to the level of the curb, but shall be considered the average elevation of the final grade adjoining all exterior walls of a building, calculated from final grade elevations taken at

intervals of 10 feet (3048 mm) around the perimeter of the building where:

1. No curb elevation has been legally established on the city map; or
2. Every part of the building is set back more than 25 feet (7620 mm) from a street line.

HEIGHT, BUILDING. The vertical distance from the grade plane to the average height of the highest roof surfaces.

HEIGHT, STORY. The vertical distance from top to top of two successive finished floor surfaces; and, for the topmost story, from the top of the floor finish to the top of the ceiling joists or, where there is not a ceiling, to the top of the roof rafters.

INDUSTRIAL EQUIPMENT PLATFORM. An unoccupied, elevated platform in an industrial occupancy used exclusively for mechanical systems or industrial process equipment, including the associated elevated walkways, stairs and ladders necessary to access the platform (see Section 505.5).

MEZZANINE. An intermediate level or levels between the floor and ceiling of any story with an aggregate floor area of not more than one-third of the area of the room or space in which the level or levels are located (see Section 505).

STORY ABOVE GRADE PLANE. Any story having its finished floor surface entirely above grade plane, except that a basement shall also be considered a story above grade plane (also see "Basement" and "Story").

STORY. That portion of a building included between the upper surface of a floor and the upper surface of the floor or roof next above (also see "Basement" and "Mezzanine").



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SECTION BC 503: GENERAL HEIGHT AND AREA LIMITATIONS

NYC Administrative Code § 28-BC 503

503.1 General.

The height and area for buildings of different construction types shall be governed by the intended use and occupancy of the building and shall not exceed the limits in Table 503 except as modified hereafter. Each part of a building included within the exterior walls or the exterior walls and fire walls where provided shall be permitted to be a separate building.

503.1.1 Basements. Basements need not be included in the total allowable area provided:

1. They do not exceed the area permitted for a one-story building; and
2. The finished surface of the floor above the basement does not exceed 6 feet (1829 mm) above grade plane.

503.1.2 Special industrial occupancies. Buildings and structures of Type I and II construction designed to house low-hazard industrial processes that require large areas and unusual heights to accommodate craneways or special machinery and equipment including, among others, rolling mills; structural metal fabrication shops and foundries; or the production and distribution of electric, gas or steam power, shall be exempt from the height and area limitations of Table 503.

503.1.3 Buildings on same tax lot. Two or more buildings on the same tax lot and under the same ownership and control shall be regulated as separate buildings, or shall be considered as portions of one building if the height of each building and the aggregate area of buildings are within the limitations of Table 503 as modified by Sections 504 and 506. The provisions of this code applicable to the aggregate building shall be applicable to each building.

503.1.4 Type I construction. Buildings of Type I construction permitted to be of unlimited tabular heights and areas in accordance with Table 503 are not required to comply with the special requirements that allow unlimited area buildings in Section 507 or unlimited height in Sections 503.1.2 and 504.3 or increased height and areas for other types of construction.

503.2Reserved.



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SECTION BC 504: HEIGHT MODIFICATIONS

NYC Administrative Code § 28-BC 504

504.1 General.

The heights permitted by Table 503 shall only be increased in accordance with this section.

Exception: The height of one-story aircraft hangars, aircraft paint hangars and buildings used for the manufacturing of aircraft shall not be limited if the building is provided with an automatic fire-extinguishing system in accordance with Chapter 9 and is entirely surrounded by public ways or yards not less in width than one and one-half times the height of the building.

504.2 Automatic sprinkler system increase. Where a building is equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, the value specified in Table 503 for maximum height is increased by 20 feet (6096 mm) and the maximum number of stories is increased by one story. These increases are permitted in addition to the area increase in accordance with Sections 506.2 and 506.3. For Group R buildings equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.2, the value specified in Table 503 for maximum height is increased by 20 feet (6096 mm) and the maximum number of stories is increased by one story, but shall not exceed six stories or 60 feet (18 288 mm), respectively.

Exceptions:

1. Group I-2 of Type IIB, III, IV or V construction.
2. Group H-1, H-2, H-3 or H-5.
3. Fire-resistance rating substitution in accordance with Table 601, Note d.

504.3 Rooftop structures. Rooftop structures including but not limited to roof tanks and their supports, ventilating, air conditioning and similar building service equipment, bulkheads, penthouses, chimneys, and parapet walls 4 feet (1219 mm) or less in height shall not be included in the height of the building or considered an additional story unless

the aggregate area of all such structures exceeds 33 and one-third percent of the area of the roof of the building upon which they are erected. Rooftop structures shall be constructed in accordance with Section 1509.



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SECTION BC 505: MEZZANINES

NYC Administrative Code § 28-BC 505

505.1 General.

A mezzanine or mezzanines in compliance with this section shall be considered a portion of the floor below. Such mezzanines shall not contribute to either the building area or number of stories as regulated by Section 503.1. The area of the mezzanine shall be included in determining the fire area defined in Section 702. The clear height above and below the mezzanine floor construction shall not be less than 7 feet (2134 mm).

Exception: The clear height of habitable spaces above or below mezzanines within dwelling units shall not be less than 8 feet (2438 mm).

505.2Area limitation.The aggregate area of a mezzanine or mezzanines within a room or space shall not exceed one-third of the area of that room or space in which they are located. The enclosed portions of a room or space shall not be included in determining the permissible floor area of the mezzanine. The area of the mezzanine shall not contribute to the determination of the floor area of the room or space below.

Exception:

1. The aggregate area of mezzanines in buildings and structures of Type I or II construction for special industrial occupancies in accordance with Section 503.1.2 shall not exceed two-thirds of the area of the room.

2. The aggregate area of a mezzanine or mezzanines within a dwelling unit shall not exceed one-third of the net floor area of such dwelling unit, whether or not portions of such dwelling unit are enclosed. The area of the mezzanine shall not contribute to the determination of the floor area of the dwelling unit below.

505.3Egress.Each occupant of a mezzanine shall have access to at least two independent means of egress where the common path of egress travel exceeds the limitations of Section 1013.3. Where a stairway provides a means of exit access from a mezzanine, the maximum travel distance includes the distance traveled on the stairway measured in the

plane of the tread nosing.

Exceptions:

1. A single means of egress shall be permitted in accordance with Section 1014.1.
2. Accessible means of egress shall be provided in accordance with Section 1007.

505.4Openness. A mezzanine shall be open and unobstructed to the room in which such mezzanine is located except for walls or railings not more than 42 inches (1067 mm) high, columns and posts.

Exceptions:

1. Mezzanines or portions thereof are not required to be open to the room in which the mezzanines are located, provided that the occupant load of the aggregate area of the enclosed space does not exceed 10.
2. A mezzanine having two or more means of egress is not required to be open to the room in which the mezzanine is located, if at least one of the means of egress provides direct access to an exit from the mezzanine level.
3. Mezzanines or portions thereof are not required to be open to the room in which the mezzanines are located, provided that the aggregate floor area of the enclosed space does not exceed 10 percent of the mezzanine area.
4. In industrial facilities, mezzanines used for control equipment are permitted to be glazed on all sides.
5. In Group F occupancies of unlimited area, meeting the requirements of Section 507.2 or 507.3, mezzanines or portions thereof are not required to be open to the room in which the mezzanines are located, provided that an approved fire alarm system is installed throughout the entire building or structure and notification appliances are installed throughout the mezzanines in accordance with the provisions of NFPA 72. In addition, the fire alarm system shall be initiated by automatic sprinkler water flow.

505.5Industrial equipment platforms. Industrial equipment platforms in buildings shall not be considered as a portion of the floor below. Such equipment platforms shall not contribute to either the building area or the number of stories as regulated by Section 503.1. The area of the industrial equipment platform shall not be included in determining the fire area. Industrial equipment platforms shall not be a part of any mezzanine, and such platforms and the walkways, stairs and ladders providing access to an equipment platform shall not serve as a part of the means of egress from the building.

505.5.1Area limitations. The aggregate area of all industrial equipment platforms within a room shall not exceed two-thirds of the area of the room in which they occur. Where an equipment platform is located in the same room as a mezzanine, the area of the mezzanine shall be determined by Section 505.2, and the combined aggregate area of the equipment platforms and mezzanines shall not exceed two-thirds of the room in which they occur.

505.5.2Fire suppression. Where located in a building that is required to be protected by an automatic sprinkler system, industrial equipment platforms shall be fully protected by sprinklers above and below the platform, where required by the standards referenced in Section 903.3.

505.5.3Guards. Equipment platforms shall have guards where required by Section 1012.1.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 5: GENERAL BUILDING HEIGHTS AND AREAS; SEPARATION OF OCCUPANCIES*
SECTION BC 506: AREA MODIFICATIONS

NYC Administrative Code § 28-BC 506

506.1 General.

The areas limited by Table 503 shall be permitted to be increased due to frontage (If) and automatic sprinkler system protection (Is) in accordance with the following:

$$Aa = ;fbAt ;pl (At \times If) ;pl (At \times Is);rb(Equation 5-1)$$

where: Aa=Allowable area per story (square feet). At=Tabular area per story in accordance with Table 503 (square feet). If=Area increase factor due to frontage as calculated in accordance with Section 506.2. Is=Area increase factor due to sprinkler protection as calculated in accordance with Section 506.3.

506.2 Frontage increase. Where a building has more than 25 percent of its perimeter adjoining a public way or open space having a minimum width of 20 feet (6096 mm), the frontage increase shall be determined in accordance with the following:

$$If = (F/P ;ms 0.25)W/30(Equation 5-2)$$

where: If=Area increase factor due to frontage. F=Building perimeter that fronts on a public way or open space having 20 feet (6096 mm) open minimum width (feet). P=Perimeter of entire building (feet). W=Width of public way or open space (feet) in accordance with Section 506.2.1.

506.2.1 Width limits. "W" must be at least 20 feet (6096 mm). Where the value of W varies along the perimeter of the building, the calculation performed in accordance with Equation 5-2 shall be based on the weighted average of each portion of exterior wall and open space where the value of W is greater than or equal to 20 feet (6096 mm). Where W exceeds 30 feet (9144 mm), a value of 30 feet (9144 mm) shall be used in calculating the weighted average, regardless of the actual width of the open space.

Exception: The quantity W divided by 30 shall be permitted to be a maximum of 2 when the building meets all

requirements of Section 507 except for compliance with the 60-foot (18 288 mm) public way or yard requirement, as applicable.

506.2.2 Open space limits. Such open space shall be either on the same zoning lot or dedicated for public use and shall be accessed from a street or approved fire lane.

506.3 Automatic sprinkler system increase. Where a building is equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, the area limitation in Table 503 is permitted to be increased by an additional 200 percent (Is = 2) for buildings with more than one story above grade plane and an additional 300 percent (Is = 3) for buildings with no more than one story above grade plane. These increases are permitted in addition to the height and story increases in accordance with Section 504.2.

Exceptions:

1. Buildings with an occupancy in Group H-1, H-2 or H-3.
2. Fire-resistance rating substitution in accordance with Table 601, Note d.

506.4 Area determination. The maximum area of a building with more than one story above grade plane shall be determined by multiplying the allowable area per story (Aa), as determined in Section 506.1, by the number of stories above grade plane as listed below.

1. For buildings with two stories above grade plane, multiply by 2;
2. For buildings with three or more stories above grade plane, multiply by 3; and
3. No story shall exceed the allowable area per story (Aa), as determined in Section 506.1 for the occupancies on that story.

Exceptions:

1. Unlimited area buildings in accordance with Section 507.
2. In group R occupancies 6 stories or less in height, the maximum area of a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.2 shall be determined by multiplying the allowable area per story (Aa), as determined in Section 506.1, by the number of stories above grade plane.

506.4.1 Mixed Occupancies. In buildings with mixed occupancies, the allowable area per story (Aa) shall be based on the most restrictive provisions for each occupancy when the mixed occupancies are treated according to Section 508.3.2 as nonseparated occupancies. When the occupancies are treated according to Section 508.3.3 as separated occupancies, the maximum total building area shall be such that the sum of the ratios for each such area on all floors as calculated according to Section 508.3.3.2 shall not exceed 2 for buildings with two stories above grade plane and 3 for buildings with three or more stories above grade plane.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.
 506.1 amended L.L. 8/2008 § 86, eff. July 1, 2008.
 506.2 amended L.L. 8/2008 § 86, eff. July 1, 2008.
 506.2.1 amended L.L. 8/2008 § 86, eff. July 1, 2008.
 506.3 amended L.L. 8/2008 § 86, eff. July 1, 2008.

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506.4 amended L.L. 8/2008 § 87, eff. July 1, 2008.

506.4.1 added L.L. 8/2008 § 87, eff. July 1, 2008.



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Chapter 5: GENERAL BUILDING HEIGHTS AND AREAS; SEPARATION OF OCCUPANCIES*
SECTION BC 507: UNLIMITED AREA BUILDINGS

NYC Administrative Code § 28-BC 507

507.1 Nonsprinklered, one story.

The area of a one-story, Group F-2 or S-2 building of other than Type V construction shall not be limited when the building is surrounded and adjoined on all sides by public ways or yards not less than 60 feet (18 288 mm) in width.

507.2Sprinklered, one story.The area of a one-story, Group B, F, M or S building or a one-story Group A-4 building of other than Type V construction shall not be limited when the building is provided with an automatic sprinkler system throughout in accordance with Section 903.3.1.1, and is surrounded and adjoined on all sides by public ways or yards not less than 60 feet (18 288 mm) in width. However, in Group F-2 and S-2 occupancies, one-story rack storage facilities of Type II construction that are not accessible to the public shall not be limited in height provided that such buildings conform to the requirements of this section and NFPA 13.

Exception: The automatic sprinkler system shall not be required in areas occupied for indoor participant sports, such as tennis, skating, swimming and equestrian activities, in occupancies in Group A-4, provided that:

1. Exit doors directly to the outside are provided for occupants of the participant sports areas; and
2. The building is equipped with a fire alarm system with manual fire alarm boxes installed in accordance with Section 907.

507.3Sprinklered, two story.The area of a two-story, Group B, F, M or S building shall not be limited when the building is provided with an automatic sprinkler system in accordance with Section 903.3.1.1 throughout, and is surrounded and adjoined on all sides by public ways or yards not less than 60 feet (18 288 mm) in width.

507.4Reduced open space.The permanent open space of 60 feet (18 288 mm) required in Sections 507.1, 507.2 and 507.3 shall be permitted to be reduced to not less than 40 feet (12 192 mm) provided the following requirements are met:

1. The reduced open space shall not be allowed for more than 75 percent of the perimeter of the building.

2. The exterior wall facing the reduced open space shall have a minimum fire-resistance rating of 3 hours.3. Openings in the exterior wall, facing the reduced open space, shall have opening protectives with a fire-resistance rating of 3 hours.

507.5Group A buildings.The area of a Group A-1, A-2, A-3, or A-4 building of Type IIA, IIIA, or IV construction shall not be limited where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. The area of a one-story, Group A-3 building used as a house of worship, community hall, dance hall, exhibition hall, gymnasium, lecture hall, indoor swimming pool or tennis court of Type IIB construction shall not be limited when all of the following criteria are met:

1. The building shall not have a stage other than a platform.

2. The building shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

3. The assembly floor shall be located at or within 21 inches (533 mm) of street or grade level and all exits are provided with ramps complying with Section 1010.1 to the street or grade level.

4. The building shall be surrounded and adjoined on all sides by public ways or yards not less than 60 feet (18 288 mm) in width.

507.6High-hazard occupancy groups.Group H-2, H-3 and H-4 fire areas shall be permitted in unlimited area buildings having occupancies in Groups F and S, in accordance with the limitations of this section. Fire areas located at the perimeter of the unlimited area building shall not exceed 10 percent of the area of the building, nor the area limitations specified in Table 503 as modified by Section 506.2, based upon the percentage of the perimeter of the fire area that fronts on a street or other unoccupied space. Other fire areas shall not exceed 25 percent of the area limitations specified in Table 503. Fire-resistance-rating requirements of fire barrier assemblies shall be in accordance with Table 508.3.3.

507.7Reserved.

507.8Group E buildings.The area of a Group E building of Type IIA, IIIA or IV construction shall not be limited where the building is protected throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1. The area of a one-story Group E building of Type IIB construction shall not be limited when the following criteria are met:

1. Each classroom shall have not less than two means of egress, with one of the means of egress being a direct exit to the outside of the building complying with Section 1017.

2. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

3. The building is surrounded and adjoined on all sides by public ways or yards not less than 60 feet (18 288 mm) in width.

507.9Motion picture theaters.In buildings of Type II, IIIA and IV construction, the area of one-story motion picture theaters shall not be limited when the building is provided with an automatic sprinkler system throughout in accordance with Section 903.3.1.1 and is surrounded and adjoined on all sides by public ways or yards not less than 60 feet (18 288 mm) in width.

507.10Group B buildings.Notwithstanding the provisions of Sections 507.2 and 507.3, the area of a Group B

building of Type IIA, IIIA or IV construction shall not be limited where the building is protected throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

507.11 Group F-2 buildings. Notwithstanding the provisions of Sections 507.2 and 507.3, the area of a Group F-2 building of Type IIA, IIIA or IV construction shall not be limited where the building is protected throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

507.12 Group M buildings. Notwithstanding the provisions of Sections 507.2 and 507.3, the area of a Group M building of Type IIA, IIIA or IV construction shall not be limited where the building is protected throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

507.13 Group R buildings. The area of a Group R-1 and R-2 building of Type IIA, IIIA or IV construction shall not be limited where the building is protected throughout with an approved automatic sprinkler system in accordance with Sections 903.3.1.1 or 903.3.1.2, as applicable.

507.14 Group S-2 buildings. Notwithstanding the provisions of Sections 507.2 and 507.3, the area of a Group S-2 building of Type IB, IIA, IIIA or IV construction shall not be limited where the building is protected throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

507.2 separately amended L.L. 8/2008 § 88, eff. July 1, 2008 and L.L. 26/2008

§ 7, eff. July 1, 2008.

507.6 amended L.L. 8/2008 § 88, eff. July 1, 2008.

507.8 amended L.L. 8/2008 § 88, eff. July 1, 2008.

507.10 amended L.L. 8/2008 § 88, eff. July 1, 2008.

507.11 amended L.L. 8/2008 § 88, eff. July 1, 2008.

507.12 amended L.L. 8/2008 § 88, eff. July 1, 2008.

507.13 amended L.L. 8/2008 § 88, eff. July 1, 2008.

507.14 amended L.L. 8/2008 § 88, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 5: GENERAL BUILDING HEIGHTS AND AREAS; SEPARATION OF OCCUPANCIES*
SECTION BC 508: INCIDENTAL USE AREAS AND MIXED OCCUPANCIES

NYC Administrative Code § 28-BC 508

508.1 General.

Where a building or portion thereof contains two or more occupancies or uses, the building or portion thereof shall comply with the applicable provisions of this section. For additional requirements for mixed occupancies, see Section 506.4.1.

508.2Incidental use areas.Incidental use areas shall comply with the provisions of this section.

Exception: Incidental use areas within and serving a dwelling unit are not required to comply with this section.

508.2.1Occupancy classification.A space that is listed in Table 508.2 and is incidental to a main occupancy shall be considered an incidental use area. An incidental use area shall be classified in accordance with the main occupancy to which the use is incidental; or such area shall be classified in accordance with its actual occupancy and shall comply with Section 508.3 for mixed occupancies.

508.2.1.1Fire protection requirements.Any additional fire protection requirements in Chapter 9 for an incidental use area shall be based upon the occupancy classification of the area's main occupancy.

508.2.1.2Allowable area and height.The actual floor area of an incidental use area shall be treated as being in the same occupancy group as its main occupancy for the purposes of calculating allowable height and area in accordance with Section 503.1.

508.2.2Separation.Incidental use areas shall be separated or protected, or both, from all other occupancies in accordance with Table 508.2.

508.2.2.1Construction.Where Table 508.2 requires a fire-resistance-rated separation, the incidental use area shall be separated from the remainder of the building by a fire barrier constructed in accordance with Section 706 or a horizontal assembly constructed in accordance with Section 711, or both. Where Table 508.2 permits an automatic

fire-extinguishing system without a fire barrier, the incidental use area shall be separated from the remainder of the building by construction capable of resisting the passage of smoke. The partitions shall extend from the floor to the underside of the fire-resistance-rated floor/ceiling assembly or fire-resistance-rated roof/ceiling assembly above or to the underside of the floor or roof sheathing, or sub deck above. Doors shall be self- or automatic closing upon detection of smoke in accordance with Section 715.4.7.3. Doors shall not have air transfer openings and shall not be undercut in excess of the clearance permitted in accordance with NFPA 80.

508.2.3 Protection. Where an automatic fire-extinguishing system or an automatic sprinkler system is provided in accordance with Table 508.2, only the incidental use areas need be equipped with such a system. 3] Table 508.2 Incidental Use Areas Room or Area Separation a 1] Room or Area Separation a 2] Furnace room where any piece of equipment is over 400,000 Btu per hour input 2 hour; or 1 hour and provide automatic fire-extinguishing system Furnace room where any piece of equipment is 400,000 Btu per hour input or less, except in R-3 occupancy 1 hour or provide automatic sprinkler system b Rooms with any boiler over 15 psi and 10 horsepower 2 hour; or 1 hour and provide automatic fire-extinguishing system Rooms with any boiler 15 psi or less and 10 horsepower or less, except in R-3 occupancy 1 hour or provide automatic sprinkler system Mechanical and/or electrical equipment room, except in R-3 occupancy 1 hour or provide automatic sprinkler system Refrigerant machinery rooms 1 hour or provide automatic sprinkler system Parking garage (Section 406.2) 2 hours; or 1 hour and provide automatic fire-extinguishing system Hydrogen cut-off rooms 2-hour fire barriers and floor/ceiling assemblies in all occupancy groups. Incinerator rooms 2 hours and automatic sprinkler system Paint shops, not classified as Group H, located in occupancies other than Group F 2 hours; or 1 hour and provide automatic fire-extinguishing system Laboratories and vocational shops, not classified as Group H, located in Group E or I-2 occupancies 2 hour; or 1 hour and provide automatic fire-extinguishing system Laundry rooms over 100 square feet, except within dwelling units 1 hour or provide automatic fire-extinguishing system Storage rooms over 100 square feet, except in R-3 occupancy 1 hour or provide automatic fire-extinguishing system Group I-3 cells equipped with padded surfaces 1 hour Group I-2 waste and linen collection rooms 1 hour Waste and linen collection rooms over 100 square feet 1 hour or provide automatic fire-extinguishing system Stationary lead-acid battery systems having a liquid capacity of more than 100 gallons used for facility emergency power or uninterrupted power supplies 2-hour fire barriers and floor/ceiling assemblies in all occupancy groups Rooms utilizing the electrical installation standards for "information technology rooms" as per Section 645.1 of the New York City Electrical Code As may be required by the New York City Electrical Code 4] For SI: 1 square foot = 0.0929 m², 1 pound per square inch = 6.9 kPa. 1 British thermal unit = 0.293 watts, 1 horsepower = 746 watts. 1 gallon = 3.785 L. a. Where an automatic fire-extinguishing system is provided, it need only be provided in the incidental use room or area. b. Multiple dwellings shall also comply with Section 65 of the New York State Multiple Dwelling Law.

508.3 Mixed occupancies. Each portion of a building shall be individually classified in accordance with Section 302.1. Where a building contains more than one occupancy group, the building or portion thereof shall comply with Sections 508.3.1, 508.3.2, 508.3.3 or a combination of these sections.

Exceptions:

1. Occupancies separated in accordance with Section 509.
2. Where required by Table 415.3.2, areas of Group H-1, H-2 or H-3 occupancies shall be located in a separate and detached building or structure.
3. Incidental use areas in accordance with Section 508.2.

508.3.1 Accessory occupancies. Accessory occupancies are those occupancies subsidiary to the main occupancy of the building or portion thereof. In addition, the aggregate of all accessory occupancies located on a single story shall not occupy more than 10 percent of the floor area of the story in which they are located and shall not exceed the tabular values in Table 503 for each such accessory occupancy, without height and area increases in accordance with Sections 504 and 506 for such accessory occupancies.

Exceptions:

1. The following accessory occupancies are permitted to occupy more than 10 percent of the floor area of the story in which they are located:

1.1. Accessory assembly areas having a floor area less than 750 square feet (69.7 m²).

1.2. Assembly areas that are accessory to Group E occupancies.

1.3. Accessory religious educational rooms and religious auditoriums with occupant loads of less than 100.

2. Rooms or spaces within Group H-2, H-3, H-4 or H-5 occupancy shall not be considered accessory occupancies and shall be treated as separated occupancies in accordance with Section 508.3.3.

508.3.1.1 Occupancy classification. Each accessory occupancy shall be individually classified in accordance with Section 302.1. All code requirements shall apply to each accessory occupancy based upon its individual occupancy classification, except that the most restrictive applicable provisions of Section 403 and Chapter 9 shall apply to the entire building or portion thereof.

Exception. Code requirements for allowable height and area and for separation shall be governed by Sections 508.3.1.2 and 508.3.1.3.

508.3.1.2 Allowable height and area. The allowable height and area of the building shall be based on the allowable height and area for the main occupancy in accordance with Section 503.1. The height and area of any accessory occupancy shall not exceed the tabular values in Table 503, without height and area increases in accordance with Sections 504 and 506 for such accessory occupancies.

508.3.1.3 Separation. No separation is required between an accessory occupancy and its main occupancy.

508.3.2 Nonseparated occupancies. Buildings or portions of buildings that comply with the provisions of this section shall qualify as nonseparated occupancies.

Exception: Rooms or spaces within Group H-2, H-3, H-4 or H-5 occupancy shall be considered a separated occupancy and shall comply with Section 508.3.3.

508.3.2.1 Occupancy classification. Nonseparated occupancies shall be individually classified in accordance with Section 302.1. All code requirements shall apply to each portion of the building based on the occupancy classification of that space, except that the most restrictive applicable provisions of Section 403 and Chapter 9 shall apply to the entire building or portion thereof.

Exception. Code requirements for allowable height and area and for separation shall be governed by Sections 508.3.2.2 and 508.3.2.3.

508.3.2.2 Allowable height and area. The allowable height and area of the building or portion thereof shall be based on the most restrictive allowances for the occupancy groups under consideration for the type of construction of the building in accordance with Section 503.1.

508.3.2.3 Separation. No separation is required between occupancies.

508.3.3 Separated occupancies. Buildings or portions of buildings that comply with the provisions of this section shall qualify as separated occupancies.

508.3.3.1 Occupancy classification. Separated occupancies shall be individually classified in accordance with

Section 302.1. Each fire area shall comply with this code based on the occupancy classification of that portion of the building.

508.3.3.2 Allowable area. In each story, the building area shall be such that the sum of the ratios of the actual floor area of each occupancy divided by the allowable area of each occupancy shall not exceed one.

508.3.3.3 Allowable height. Each occupancy shall comply with the height limitations based on the type of construction of the building in accordance with Section 503.1. The height, in both feet and stories, of each fire area shall be measured from grade plane. This measurement shall include the height, in both feet and stories, of intervening fire areas.

Exception: Special provisions permitted by Section 509.

508.3.3.4 Separation. Individual occupancies shall be separated from adjacent occupancies in accordance with Table 508.3.3. Where the building is equipped throughout with an automatic sprinkler system, installed in accordance with Section 903.3.1.1, the fire-resistance ratings in Table 508.3.3 are permitted to be reduced by 1 hour, but in no case shall be less than that required for floor construction according to the type of construction, or less than 1 hour, whichever is higher.

Exception: Fire separations of Group H and I-2 occupancies shall not be permitted any reductions in fire-resistance ratings.

508.3.3.4.1 Construction. Required separations shall be fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both, so as to completely separate adjacent occupancies.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 90, eff. July 1, 2008.



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Chapter 5: GENERAL BUILDING HEIGHTS AND AREAS; SEPARATION OF OCCUPANCIES*
SECTION BC 509: SPECIAL PROVISIONS

NYC Administrative Code § 28-BC 509

509.1 General.

The provisions in this section shall permit the use of special conditions that are exempt from, or modify, the specific requirements of this chapter regarding the allowable heights and areas of buildings based on the occupancy classification and type of construction, provided the special condition complies with the provisions specified in this section for such condition and other applicable requirements of this code.

509.2 Group S-2 enclosed parking garage with Group A, B, M or R above. A basement and/or the first story above grade plane of a building shall be considered as a separate and distinct building for the purpose of determining area limitations, continuity of fire walls, limitation of number of stories and type of construction, when all of the following conditions are met:

1. The basement and/or the first story above grade plane is of Type IA construction and is separated from the building above with a horizontal floor assembly having a minimum 3-hour fire-resistance rating.
2. Shaft, stairway, ramp or escalator enclosures through the horizontal floor assembly shall have a minimum of 2-hour fire-resistance rating with opening protectives in accordance with Table 715.3.

Exception: Where the enclosure walls below the horizontal floor assembly have a minimum of 3-hour fire-resistance rating with opening protectives in accordance with Table 715.3, the enclosure walls extending above the horizontal floor assembly shall be permitted to have a 1-hour fire-resistance rating provided:

1. The building above the horizontal floor assembly is not required to be of Type I construction;
2. The enclosure connects less than four stories, and
3. The enclosure opening protectives above the horizontal floor assembly have a minimum 1-hour fire protection rating.

3. The building above the horizontal floor assembly contains only Group A having an assembly room with an occupant load of less than 300, or Group B, M or R; and

4. The building below the horizontal floor assembly is a Group S-2 enclosed parking garage, used for the parking and storage of private motor vehicles.

Exceptions:

1. Entry lobbies, mechanical rooms, accessory storage and similar uses incidental to the operation of the building shall be permitted.

2. Group A having an assembly room with an occupant load of less than 300, or Group B or M shall be permitted in addition to those uses incidental to the operation of the building, provided that the entire structure below the horizontal floor assembly is protected throughout by an approved automatic sprinkler system.

5. The maximum building height in feet/meters as measured from the grade plane shall not exceed the limits set forth in Table 503 for the least restrictive type of construction involved.

509.3 Group S-2 enclosed parking garage with Group S-2 open parking garage above. A Group S-2 enclosed parking garage located in the basement or first story below a Group S-2 open parking garage shall be classified as a separate and distinct building for the purpose of determining the type of construction when the following conditions are met:

1. The allowable area of the structure shall be such that the sum of the ratios of the actual area divided by the allowable area for each separate occupancy shall not exceed 1.0.

2. The Group S-2 enclosed parking garage is of Type I or II construction and is at least equal to the fire-resistance requirements of the Group S-2 open parking garage.

3. The height and the number of the floors above the basement shall be limited as specified in Table 406.3.5.

4. The floor assembly separating the Group S-2 enclosed parking garage and Group S-2 open parking garage shall be protected as required for the floor assembly of the Group S-2 enclosed parking garage. Openings between the Group S-2 enclosed parking garage and Group S-2 open parking garage, except exit openings, shall not be required to be protected.

5. The Group S-2 enclosed parking garage is used exclusively for the parking or storage of private motor vehicles, but shall be permitted to contain an accessory office, waiting room and toilet room having a total area of not more than 1,000 square feet (93 m²), and mechanical equipment rooms incidental to the operation of the building.

509.4 Parking beneath Group R. Where a maximum one-story above grade plane Group S-2 parking garage, enclosed or open, or combination thereof, of Type I construction or open of Type IV construction, with grade entrance, is provided under a building of Group R, the number of stories to be used in determining the minimum type of construction shall be measured from the floor above such a parking area. The horizontal floor assembly between the parking garage and the Group R above shall comply with the type of construction required for the parking garage and shall also provide a fire-resistance rating not less than the mixed occupancy separation required in Section 508.3.3.

509.5 Reserved.

509.6 Group R-2 buildings of Type IIA construction. The height limitation for buildings of Type IIA construction in Group R-2 shall be increased to nine stories and 100 feet (30 480 mm) where the building is separated by not less than 50 feet (15 240 mm) from any other building on the lot and from property lines, the exits are segregated in an area enclosed by a 2-hour fire-resistance-rated fire wall and the first-floor construction has a fire-resistance rating of not less than 1 1/2 hours.

509.7 Open parking garage beneath Groups A, I, B, M and R. Open parking garages constructed under Groups A, I, B, M and R shall not exceed the height and area limitations permitted under Section 406.3. The height and area of the portion of the building above the open parking garage shall not exceed the limitations in Section 503 for the upper occupancy. The height, in both feet and stories, of the portion of the building above the open parking garage shall be measured from grade plane and shall include both the open parking garage and the portion of the building above the parking garage.

509.7.1 Fire separation. Fire separation assemblies between the parking occupancy and the upper occupancy shall correspond to the required fire-resistance rating prescribed in Table 508.3.3 for the occupancies involved. The type of construction shall apply to each occupancy individually, except that structural members, including main bracing within the open parking structure, which is necessary to support the upper occupancy, shall be protected with the more restrictive fire-resistance-rated assemblies of the groups involved as shown in Table 601. Means of egress for the upper occupancy shall conform to Chapter 10 and shall be separated from the parking occupancy by fire barriers having at least a 2-hour fire-resistance rating as required by Section 706, with self-closing doors complying with Section 715. Means of egress from the open parking garage shall comply with Section 406.3.

509.8 Industrial uses in buildings containing Group R. No space classified as Factory Industrial Group F shall be located above the second story of any building of Type III, IV, or V construction containing a space classified as Residential Group R-1 or R-2.

509.9 Separation of different tenancies. Spaces or dwelling units occupied by different tenants shall be separated by fire barriers having at least 1-hour fire resistance ratings.

Exceptions:

1. Non-residential spaces occupied by different tenants located in buildings that are sprinklered throughout.
2. Tenant spaces in covered mall buildings complying with section 402.

HISTORICAL NOTES:

Section renumbered and amended (former § BC508) L.L. 8/2008 § 89, eff. July

1, 2008.

Section added L.L. 33/2007 § 16, eff. July 1, 2008.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK

Title 28: NEW YORK CITY CONSTRUCTION CODES**

CHAPTER 7: THE NEW YORK CITY BUILDING CODE

Chapter 6: TYPES OF CONSTRUCTION

SECTION BC 601: GENERAL

NYC Administrative Code § 28-BC 601

601.1 Scope.

The provisions of this chapter shall control the classification of buildings as to type of construction with respect to occupancy and exterior fire separation distance.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 6: TYPES OF CONSTRUCTION
SECTION BC 602: CONSTRUCTION CLASSIFICATION

NYC Administrative Code § 28-BC 602

602.1 General.

Buildings and structures erected or to be erected, altered or extended in height or area shall be classified in one of the five construction types defined in Sections 602.2 through 602.5. The building elements shall have a fire-resistance rating not less than that specified in Table 601 and exterior walls shall have a fire-resistance rating not less than that specified in Table 602. Buildings constructed or altered inside the fire district shall further comply with Appendix D.

602.1.1 Minimum requirements. A building or portion thereof shall not be required to conform to the details of a type of construction higher than that type, which meets the minimum requirements based on occupancy even though certain features of such a building actually conform to a higher type of construction. Classification shall be that of the minimum requirement unless all of the requirements for the higher type of construction are met.

602.2 Types I and II. Type I and II construction are those types of construction in which the building elements listed in Table 601 are of noncombustible materials.

602.3 Type III. Type III construction is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of any material permitted by this code. Fire-retardant-treated wood framing complying with Section 2303.2 shall be permitted within exterior wall assemblies of a 2-hour rating or less.

Exceptions:

1. In Group I-1, R-1, and R-2 occupancies, all exterior walls, fire walls, exit passageways, and shaft enclosures shall be non-combustible.

2. In Group F occupancies subject to Section 270(1) of the New York State Labor Law, all exterior wall assemblies and all structural elements shall meet the requirements for a "fireproof building" as such term is defined in Section 264 of such law.

3. Inside the fire district, exterior load-bearing walls shall be constructed of noncombustible material.

4. Inside the fire district, exterior nonload-bearing walls may be constructed with fire-retardant-treated wood complying with Section 2303.2 where the building is equipped throughout with an automatic sprinkler system in accordance with Sections 903.3.1.1 through 903.3.1.3, unless otherwise prohibited by Exception 1 or 2 above.

602.4Type IV. Type IV construction (Heavy Timber, HT) is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of solid or laminated wood without concealed spaces. The details of Type IV construction shall comply with the provisions of this section. Fire-retardant-treated-wood framing complying with Section 2303.2 shall be permitted within exterior wall assemblies with a 2-hour rating or less.

Exceptions:

1. In Group I-1, R-1, and R-2 occupancies, all exterior walls, fire walls, exit passageways, and shaft enclosures shall be non-combustible.

2. In Group F occupancies subject to Section 270(1) of the New York State Labor Law, all exterior wall assemblies and all structural elements shall meet the requirements for a "fireproof building" as defined in Section 264 of such law.

3. Inside the fire district, exterior load-bearing walls shall be constructed of noncombustible material.

4. Inside the fire district, exterior non-bearing walls may be constructed with fire-retardant-treated wood complying with Section 2303.2 where the building is equipped throughout with an automatic sprinkler system in accordance with Sections 903.3.1.1 through 903.3.1.3, unless otherwise prohibited by Exception 1 or 2 above.

602.4.1Columns. Wood columns shall be sawn or glued laminated and shall not be less than 8 inches (203 mm) nominal in any dimension where supporting floor loads and not less than 6 inches (152 mm) nominal in width and not less than 8 inches (203 mm) nominal in depth where supporting roof and ceiling loads only. Columns shall be continuous or superimposed and connected in an approved manner.

602.4.2Floor framing. Wood beams and girders shall be of sawn or glued-laminated timber and shall be not less than 6 inches (152 mm) nominal in width and not less than 10 inches (254 mm) nominal in depth. Framed sawn or glued-laminated timber arches, which spring from the floor line and support floor loads, shall be not less than 8 inches (203 mm) nominal in any dimension. Framed timber trusses supporting floor loads shall have members of not less than 8 inches (203 mm) nominal in any dimension.

602.4.3Roof framing. Wood-frame or glued-laminated arches for roof construction, which spring from the floor line or from grade and do not support floor loads, shall have members not less than 6 inches (152 mm) nominal in width and have less than 8 inches (203 mm) nominal in depth for the lower half of the height and not less than 6 inches (152 mm) nominal in depth for the upper half. Framed or glued laminated arches for roof construction that spring from the top of walls or wall abutments, framed timber trusses and other roof framing, which do not support floor loads, shall have members not less than 4 inches (102 mm) nominal in width and not less than 6 inches (152 mm) nominal in depth. Spaced members shall be permitted to be composed of two or more pieces not less than 3 inches (76 mm) nominal in thickness where blocked solidly throughout their intervening spaces or where spaces are tightly closed by a continuous wood cover plate of not less than 2 inches (51 mm) nominal in thickness secured to the underside of the members. Splice plates shall be not less than 3 inches (76 mm) nominal in thickness. Where protected by approved automatic sprinklers under the roof deck, framing members shall be not less than 3 inches (76 mm) nominal in width.

602.4.4Floors. Floors shall be without concealed spaces. Wood floors shall be of sawn or glued-laminated planks, splined or tongue-and-groove, of not less than 3 inches (76 mm) nominal in thickness covered with 1-inch (25 mm) nominal dimension tongue-and-groove flooring, laid crosswise or diagonally, or 0.5-inch (12.7 mm) particleboard or planks not less than 4 inches (102 mm) nominal in width set on edge close together and well spiked and covered with

1-inch (25mm) nominal dimension flooring or 15/32-inch (12 mm) wood structural panel or 0.5-inch (12.7 mm) particleboard. The lumber shall be laid so that no continuous line of joints will occur except at points of support. Floors shall not extend closer than 0.5 inch (12.7 mm) to walls. Such 0.5-inch (12.7 mm) space shall be covered by a molding fastened to the wall and so arranged that it will not obstruct the swelling or shrinkage movements of the floor. Corbeling of masonry walls under the floor shall be permitted to be used in place of molding.

602.4.5Roofs.Roofs shall be without concealed spaces and wood roof decks shall be sawn or glued laminated, splined or tongue-and-groove plank, not less than 2 inches (51 mm) thick, 1 1/8-inch-thick (32 mm) wood structural panel (exterior glue), or of planks not less than 3 inches (76 mm) nominal in width, set on edge close together and laid as required for floors. Other types of decking shall be permitted to be used if providing equivalent fire resistance and structural properties.

602.4.6Partitions.Partitions shall be of solid wood construction formed by not less than two layers of 1-inch (25 mm) matched boards or laminated construction 4 inches (102 mm) thick, or of 1-hour fire-resistance-rated construction.

602.4.7Exterior structural members.Where a horizontal separation of 20 feet (6096 mm) or more is provided, wood columns and arches conforming to heavy timber sizes shall be permitted to be used externally, except as prohibited by Section 602.4 for Occupancy Groups F, I-1, R-1 and R-2.

602.5Type V.Type V construction is that type of construction in which the structural elements, exterior walls and interior walls are of any materials permitted by this code. Type V construction shall not be permitted inside the fire district.

Exception: In Group F occupancies subject to Section 270(1) of the New York State Labor Law, all exterior wall assemblies and all structural elements shall meet the requirements for a "fireproofbuilding" as defined in Section 264 of such law.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 6: TYPES OF CONSTRUCTION
SECTION BC 603: COMBUSTIBLE MATERIAL IN TYPE I AND II CONSTRUCTION

NYC Administrative Code § 28-BC 603

603.1 Allowable materials.

Combustible materials shall be permitted in buildings of Type I or II construction in the following applications and in accordance with Sections 603.1.1 through 603.1.3.

1. Fire-retardant-treated wood, complying with Section 2303.2, shall be permitted in:

1.1. Nonbearing interior partitions where the required fire-resistance rating is 1 hour or less.

Exception: Public corridors and exits shall be constructed of noncombustible materials.

1.2. Roof construction as permitted in Table 601, Note c, Item 3.

2. Thermal and acoustical insulation, other than foam plastics, having a flame spread index of not more than 25.

Exceptions:

1. Insulation placed between two layers of combustible materials without an intervening airspace shall be allowed to have a flame spread index of not more than 100.

2. Insulation installed between a finished floor and solid decking without intervening airspace shall be allowed to have a flame spread index of not more than 200.

3. Foam plastics in accordance with Chapter 26.

4. Roof coverings that have an A or B classification as defined in Section 1505.

5. Interior floor finish and interior finish, trim and millwork such as doors, door frames, window sashes and frames,

as permitted by Chapter 8.

6. Where not installed over 15 feet (4572 mm) above grade, show windows, nailing or furring strips, wooden bulkheads below show windows, their frames, aprons and show cases, as permitted by Section 1405.

7. Finished flooring applied directly to the floor slab or to wood sleepers that are firestopped in accordance with Section 717.2.7, where combustible finish flooring is permitted by Chapter 8.

8. Partitions dividing portions of stores, offices or similar places occupied by one tenant only and which do not establish a corridor serving an occupant load of 30 or more shall be permitted to be constructed of fire-retardant-treated wood, 1-hour fire-resistance-rated construction or of wood panels or similar light construction up to 6 feet (1829 mm) in height.

9. Platforms as permitted in Section 410.

10. Combustible exterior wall coverings in accordance with Chapter 14.

11. Blocking such as for handrails, millwork, cabinets and window and door frames.

12. Light-transmitting plastics as permitted by Chapter 26.

13. Mastics and caulking materials applied to provide flexible seals between components of exterior wall construction.

14. Exterior plastic veneer installed in accordance with Section 2605.2.

15. Nailing or furring strips as permitted by Section 803.4.

16. Heavy timber as permitted by Note c, Item 2, Table 601 and Section 602.4.7.

17. Aggregates, component materials and admixtures as permitted by Section 703.2.2.

18. Sprayed cementitious and mineral fiber fire-resistance-rated materials installed to comply with Section 1704.11.

19. Materials used to protect penetrations in fire-resistance-rated assemblies in accordance with Section 712.

20. Materials used to protect joints in fire-resistance-rated assemblies in accordance with Section 713.

21. Materials allowed in the concealed spaces of buildings of Type I and II construction in accordance with Section 717.5.

22. Materials exposed within plenums complying with Section 602 of the New York City Mechanical Code.

603.1.1Ducts. The use of nonmetallic ducts shall be permitted when installed in accordance with the limitations of the New York City Mechanical Code.

603.1.2Piping. The use of combustible piping materials shall be permitted when installed in accordance with the limitations of the New York City Plumbing Code.

603.1.3Electrical. The use of electrical wiring methods with combustible insulation, tubing, raceways and related components shall be permitted when installed in accordance with the limitations of the New York City Electrical Code.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE

Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION

SECTION BC 701: GENERAL

NYC Administrative Code § 28-BC 701

701.1 Scope.

The provisions of this chapter shall govern the materials and assemblies used for structural fire resistance and fire-resistance-rated construction separation of adjacent spaces to safeguard against the spread of fire and smoke within a building and the spread of fire to or from buildings.



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Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 702: DEFINITIONS

NYC Administrative Code § 28-BC 702

702.1 Definitions.

The following words and terms shall, for the purposes of this chapter, and as used elsewhere in this code, have the meanings shown herein.

ANNULAR SPACE. The opening around the penetrating item.

CEILING RADIATION DAMPER. A listed device installed in a ceiling membrane of a fire-resistance-rated floor/ceiling or roof/ceiling assembly to limit automatically the radiative heat transfer through an air inlet/outlet opening.

COMBINATION FIRE/SMOKE DAMPER. A listed device installed in ducts and air transfer openings designed to close automatically upon the detection of heat and to also resist the passage of air and smoke. The device is installed to operate automatically, controlled by a smoke detection system, and where required, is capable of being positioned from a remote command station.

CONCEALED SPACES. Enclosed spaces within partitions, walls, floors, roofs, stairs, furring, pipe chases and column enclosures and other similar spaces.

DAMPER. See "Ceiling radiation damper," "Combination fire/smoke damper," "Fire damper" and "Smoke damper."

DRAFT STOP. A material, device or construction installed to restrict the movement of air within open spaces of concealed areas of building components such as crawl spaces, floor/ceiling assemblies, roof/ceiling assemblies and attics.

F RATING. The time period that the through-penetration fire stop system limits the spread of fire through the penetration when tested in accordance with ASTM E 814.

FIRE AREA. The aggregate floor area enclosed and bounded by firewalls, fire barriers, exterior walls or fire-resistance-rated horizontal assemblies of a building.

FIRE BARRIER. A fire-resistance-rated vertical or horizontal assembly of materials complying with Section 706 designed to restrict the spread of fire in which openings are protected.

FIRE DAMPER. A listed device, installed in ducts and air transfer openings of an air distribution system or smoke control system, designed to close automatically upon detection of heat, to interrupt migratory airflow, and to restrict the passage of flame. Fire dampers are classified for use in either static systems that will automatically shut down in the event of a fire, or in a dynamic system that continues to operate during a fire. A dynamic fire damper is tested and rated for closure under airflow.

FIRE DOOR. The door component of a fire door assembly.

FIRE DOOR ASSEMBLY. Any combination of a fire door, frame, hardware, and other accessories that together, as an opening protective, provide a specific degree of fire protection to the opening.

FIRE PARTITION. A vertical assembly of materials complying with Section 708, designed to restrict the spread of fire in which openings are protected.

FIRE PROTECTION RATING. The period of time that an opening protective assembly will maintain the ability to confine a fire as determined by tests prescribed in Section 715. Ratings are stated in hours or minutes.

FIRE RESISTANCE. That property of materials or their assemblies that prevents or retards the passage of excessive heat, hot gases or flames under conditions of use.

FIRE-RESISTANCE RATING. The period of time a building element, component or assembly maintains the ability to withstand fire exposure, continues to perform a given structural function, or both, as determined by the tests, or the methods based on tests, prescribed in Section 703.

FIRE-RESISTANT JOINT SYSTEM. An assemblage of specific materials or products that are designed, tested, and fire-resistance rated in accordance with either ASTM E 1966 or UL 2079 to resist for a prescribed period of time the passage of fire through joints made in or between fire-resistance-rated assemblies.

FIRE SEPARATION DISTANCE. The distance measured from the building face to the closest interior tax lot line, to the centerline of a street or other public space, or to an imaginary line between two buildings on the same tax lot. The distance shall be measured at right angles from the face of the wall.

FIRE WALL. A fire-resistance-rated smoke-tight wall having protected openings, which restricts the spread of fire and extends continuously from the foundation to or through the roof, with sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall.

FIRE WINDOW ASSEMBLY. A window, as an opening protective, constructed and glazed to give protection against the passage of fire, smoke, and hot gases.

FIREBLOCKING. A building material or an assembly of building materials that may or may not have a fire-resistance rating installed to resist the free passage of flame or hot gases to other areas of the building through concealed spaces in accordance with Section 717.

FIRESTOPPING. A through-penetration firestop or a membrane penetration firestop.

FLOOR FIRE DOOR ASSEMBLY. A combination of a fire door, a frame, hardware and other accessories installed, as an opening protective, in a horizontal plane, which together provide a specific degree of fire protection to a

through opening in a fire-resistance-rated floor (see Section 712.4.6).

MEMBRANE PENETRATION. An opening made through one side (wall, floor or ceiling membrane) of an assembly.

MEMBRANE PENETRATION FIRESTOP. A material, device, or assemblage of specific materials or products that is designed, tested and fire-resistance rated to resist for a prescribed time period the passage of flame and heat through openings in a protective membrane in order to accommodate cables, cable trays, conduit, tubing, pipes or similar items.

PENETRATION FIRESTOP. A through-penetration firestop or a membrane penetration firestop.

SELF-CLOSING. As applied to a fire door or other opening, means equipped with an approved device that will ensure closing after having been opened.

SHAFT. An enclosed space extending through one or more stories of a building, connecting vertical openings in successive floors, or floors and roof.

SHAFT ENCLOSURE. The walls or construction forming the boundaries of a shaft.

SMOKE BARRIER. A continuous membrane, either vertical or horizontal, such as a wall, floor, or ceiling assembly, that is designed and constructed in accordance with Section 709 to restrict the movement of smoke.

SMOKE COMPARTMENT. A space within a building enclosed by smoke barriers on all sides, including the top and bottom.

SMOKE DAMPER. A listed device installed in ducts and air transfer openings that is designed to resist the passage of air and smoke. The device is installed to operate automatically, controlled by a smoke detection system, and where required, is capable of being positioned from a remote command station.

SMOKE PARTITION. A continuous vertical assembly that is designed and constructed to restrict the movement of smoke and is not generally required to have a fire-resistance rating in accordance with Section 710.

T RATING. The time period that the penetration firestop system, including the penetrating item, limits the maximum temperature rise to 325(degrees)F (163(degrees)C) above its initial temperature through the penetration on the nonfire side when tested in accordance with ASTM E 814.

THROUGH PENETRATION. An opening that passes through an entire assembly.

THROUGH-PENETRATION FIRESTOP SYSTEM. An assemblage of specific materials or products that are designed, tested and fire-resistance rated to resist for a prescribed period of time the spread of fire through penetrations. The F and T rating criteria for penetration firestop systems shall be in accordance with ASTM E 814. See definitions of "F rating" and "T rating."



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Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 703: FIRE-RESISTANCE RATINGS AND FIRE TESTS

NYC Administrative Code § 28-BC 703

703.1 Scope.

Materials prescribed herein for fire resistance shall conform to the requirements of this chapter.

703.2 Fire-resistance ratings. The fire-resistance rating of building elements shall be determined in accordance with the test procedures set forth in ASTM E 119 or in accordance with Section 703.3. Where materials, systems or devices that have not been tested as part of a fire-resistance-rated assembly are incorporated into the assembly, sufficient data shall be made available to the commissioner to show that the required fire-resistance rating is not reduced. Materials and methods of construction used to protect joints and penetrations in fire-resistance-rated building elements shall not reduce the required fire-resistance rating.

Exception: In determining the fire-resistance rating of exterior bearing walls, compliance with the ASTM E 119 criteria for unexposed surface temperature rise and ignition of cotton waste due to passage of flame or gases is required only for a period of time corresponding to the required fire-resistance rating of an exterior nonbearing wall with the same fire separation distance, and in a building of the same group. When the fire-resistance rating determined in accordance with this exception exceeds the fire-resistance rating determined in accordance with ASTM E 119, the fire exposure time period, water pressure, and application duration criteria for the hose stream test of ASTM E 119 shall be based upon the fire-resistance rating determined in accordance with this exception.

703.2.1 Nonsymmetrical wall construction. Interior walls and partitions of nonsymmetrical construction shall be tested with both faces exposed to the furnace, and the assigned fire-resistance rating shall be the shortest duration obtained from the two tests conducted in compliance with ASTM E 119. When evidence is furnished to show that the wall was tested with the least fire-resistant side exposed to the furnace, subject to acceptance of the commissioner, the wall need not be subjected to tests from the opposite side (see Section 704.5 for exterior walls).

703.2.2 Combustible components. Combustible aggregates may be integrated with other materials to form a non-combustible material provided that the entire mixture, in the form in which it is to be used in construction, meets

the requirement of this code for noncombustible construction.

703.2.3 Restrained classification. Fire-resistance-rated assemblies tested under ASTM E 119 shall not be considered to be restrained unless evidence satisfactory to the commissioner is furnished by the registered design professional showing that the construction qualifies for a restrained classification in accordance with ASTM E 119. Restrained construction shall be identified on the plans.

703.3 Alternative methods for determining fire resistance. The application of any of the alternative methods listed in this section shall be based on the fire exposure and acceptance criteria specified in ASTM E 119. The required fire resistance of a building element shall be permitted to be established by any of the following methods or procedures:

1. Fire-resistance designs documented in approved sources.
2. Prescriptive designs of fire-resistance-rated building elements as prescribed in Section 720.
3. Calculations in accordance with Section 721.
4. Engineering analysis based on a comparison of building element designs having fire-resistance ratings as determined by the test procedures set forth in ASTM E 119.
5. Alternative protection methods as allowed by Section 104.1.

703.4 Noncombustibility tests. The tests indicated in Sections 703.4.1 and 703.4.2 shall serve as criteria for acceptance of building materials as set forth in Sections 602.2, 602.3 and 602.4 in Type I, II, III and IV construction. The term "noncombustible" does not apply to the flame spread characteristics of interior finish or trim materials. A material shall not be classified as a noncombustible building construction material if it is subject to an increase in combustibility or flame spread beyond the limitations herein established through the effects of age, fabrication or erection techniques, moisture or other atmospheric conditions.

703.4.1 Elementary materials. Materials required to be noncombustible shall be tested in accordance with ASTM E 136.

703.4.2 Composite materials. Materials having a structural base of noncombustible material as determined in accordance with Section 703.4.1 with a surfacing not more than 0.125 inch (3.18 mm) thick that has a flame spread index not greater than 50 when tested in accordance with ASTM E 84 shall be acceptable as noncombustible materials.



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SECTION BC 704: EXTERIOR WALLS

NYC Administrative Code § 28-BC 704

704.1 General.

Exterior walls shall be fire-resistance rated and have opening protection as required by this section. Exterior wall construction shall comply with the provisions of Chapter 14 and Appendix D where applicable.

704.2 Projections. Cornices, eave overhangs, exterior balconies and similar architectural appendages, including but not limited to, fascias, belt courses, pilasters, surrounds, gutters, leaders, half-timber work, shutters, trellises, which extend beyond the floor area shall conform to the requirements of this section and Section 1406, provided, if removed or destroyed, will not reduce the structural stability of the building enclosure, and installed so as not to reduce the required fire resistance rating of the enclosure. Exterior egress balconies and exterior exit stairways shall comply with the requirements of this section, Section 1013.5, and Section 1022.1. Projections shall not extend beyond the distance determined by the following two methods, whichever results in the lesser projection:

1. A point one-third the distance to the lot line from an assumed vertical plane located where protected openings are required in accordance with Section 704.8.

2. More than 12 inches (305mm) into areas where openings are prohibited.

704.2.1 Type III, IV or V construction. Projections from walls of Type III, IV or V construction shall be of any approved material.

704.2.2 Combustible projections. Combustible projections located where openings are not permitted or where protection of openings is required shall be of at least 1-hour fire-resistance-rated construction, Type IV construction, or as required by Section 1406.3.

704.3 Buildings on the same lot. For the purposes of determining the required wall and opening protection and roof-covering requirements, buildings on the same tax lot shall be assumed to have an imaginary line between them.

Exception: Two or more buildings on the same tax lot shall either be regulated as separate buildings or shall be considered as portions of one building if the aggregate area of such buildings is within the limits specified in Chapter 5 for a single building. Where the buildings contain different occupancy groups or are of different types of construction, the area shall be that allowed for the most restrictive occupancy or construction.

704.4Materials.Exterior walls shall be of materials permitted by the building type of construction.

704.5Fire-resistance ratings.Exterior walls shall be fire-resistance rated in accordance with Tables 601, 602, and Appendix D where applicable. The fire-resistance rating of exterior walls with a fire-separation distance of greater than 5 feet (1524 mm) shall be rated for exposure to fire from the inside. The fire-resistance rating of exterior walls with a fire-separation distance of 5 feet (1524 mm) or less shall be rated for exposure to fire from both sides.

704.6Structural stability.The wall shall extend to the height required by Section 704.11 and shall have sufficient structural stability such that it will remain in place for the duration of time indicated by the required fire-resistance rating.

704.7Unexposed surface temperature.Where protected openings are not limited by Section 704.8, the limitation on the rise of temperature on the unexposed surface of exterior walls as required by ASTM E 119 shall not apply. Where protected openings are limited by Section 704.8, the limitation on the rise of temperature on the unexposed surface of exterior walls as required by ASTM E 119 shall not apply provided that a correction is made for radiation from the unexposed exterior wall surface in accordance with the following formula:

$$A_e = A \sqrt{\frac{A_f \times F_{eo}}{A_e}} \text{ (Equation 7-1)}$$

where:

A_e = Equivalent area of protected openings.

A = Actual area of protected openings.

A_f = Area of exterior wall surface in the story under consideration exclusive of openings, on which the temperature limitations of ASTM E119 for walls are exceeded.

F_{eo} = An "equivalent opening factor" derived from Figure 704.7 based on the average temperature of the unexposed wall surface and the fire-resistance rating of the wall.
[SEE graphical material in printed version]

704.8Allowable area of openings.The maximum area of unprotected or protected openings permitted in an exterior wall in any story shall not exceed the values set forth in Table 704.8. Where both unprotected and protected openings are located in the exterior wall in any story, the total area of the openings shall comply with the following formula:
[SEE graphical material in printed version]

704.8.1Automatic sprinkler system.In buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the maximum allowable area of unprotected openings in occupancies other than Groups H-1, H-2 and H-3 shall be the same as the tabulated limitations for protected openings.

704.8.2First story.In occupancies other than Group H, unlimited unprotected openings are permitted in the first story of exterior walls facing a street that have a fire separation distance of greater than 15 feet (4572 mm), or facing an unoccupied space. The unoccupied space shall be on the same lot or dedicated for public use, shall not be less than 30 feet (9144 mm) in width, and shall have access from a street by a posted fire lane in accordance with the New York City Fire Code.

704.9Vertical separation of openings.Openings in exterior walls in adjacent stories shall be separated vertically to

protect against fire spread on the exterior of the buildings where the openings are within 5 feet (1524 mm) of each other horizontally in accordance with Section 715.4.8. Such openings shall be separated vertically at least 3 feet (914 mm) by spandrel girders, exterior walls or other similar assemblies that have a fire-resistance rating of at least 1 hour or by flame barriers that extend horizontally at least 30 inches (762 mm) beyond the exterior wall and that are at least as wide as the opening. Flame barriers shall also have a fire-resistance rating of at least 1 hour. The unexposed surface temperature limitations specified in ASTM E 119 shall not apply to the flame barriers or vertical separation unless otherwise required by the provisions of this code. Where a curtain wall assembly is used on the exterior wall, the intersection between the floor assembly and curtain wall assembly shall be protected in accordance with Section 713.4.

Exceptions:

1. This section shall not apply to buildings that are three stories or less in height.
2. This section shall not apply to buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
3. This section shall not apply to open parking garages.
4. This section shall not apply to Occupancy Group A, E, I, or R.

704.10 Vertical exposure. For buildings on the same tax lot, approved protectives shall be provided in every opening that is less than 15 feet (4572 mm) vertically above the roof of an adjoining building or adjacent structure that is within a horizontal fire-separation distance of 15 feet (4572 mm) of the wall in which the opening is located.

Exception: Opening protectives are not required where the roof construction has a fire-resistance rating of not less than 1 hour for a minimum distance of 10 feet (3048 mm) from the adjoining building and the entire length and span of the supporting elements for the fire-resistance-rated roof assembly has a fire-resistance rating of not less than 1 hour.

704.11 Parapets. Parapets shall be provided on exterior walls of buildings.

Exceptions: A parapet need not be provided on an exterior wall where any of the following conditions exist:

1. The wall is not required to be fire-resistance rated in accordance with Table 602 because of fire separation distance.
2. The building has an area of not more than 1,000 square feet (93 m²) on every floor.
3. Walls that terminate at roofs of not less than 2-hour fire-resistance-rated construction.
4. One-hour fire-resistance-rated exterior walls that terminate at the underside of the roof sheathing, deck or slab, provided that the entire building is covered with a Class A roof covering. Such roof shall not have openings located within 10 feet (3048 mm) of the 1-hour fire-resistance-rated exterior wall and not within 5 feet (1524 mm) for Groups R and U.
 - 4.1. Where the roof/ceiling framing elements are parallel to the walls, such framing and elements supporting such framing shall not be of less than 1-hour fire-resistance-rated construction for a width of 4 feet (1219 mm) measured from the interior side of the wall for Groups R and U and 10 feet (3048 mm) for other occupancies; or
 - 4.2. Where roof/ceiling framing elements are not parallel to the wall, the entire span of such framing and elements supporting such framing shall not be of less than 1-hour fire-resistance-rated construction.
5. In occupancies of Groups R-2 and R-3, both provided with a Class A or B roof covering, the exterior wall shall be permitted to terminate at the roof sheathing or deck in Type III, IV and V construction provided:

5.1. The roof sheathing or deck is constructed of approved noncombustible materials or of fire-retardant-treated wood, for a distance of 4 feet (1219 mm) from the perimeter; or

5.2. The roof is protected with 0.625-inch (15.88 mm) Type X gypsum board directly beneath the underside of the roof sheathing or deck, supported by a minimum of nominal 2-inch (51 mm) ledgers attached to the sides of the roof framing members, for a minimum distance of 4 feet (1219 mm).

6. Where the wall is permitted to have at least 25 percent of the exterior wall areas containing unprotected openings based on fire separation distance as determined in accordance with Section 704.8.

704.11.1 Parapet construction. Parapets shall have the same fire-resistance rating as that required for the supporting wall, and on any side adjacent to a roof surface, shall have noncombustible faces for the uppermost 18 inches (457 mm), including counterflashing and coping materials. The height of the parapet shall not be less than 30 inches (762 mm) above the point where the roof surface and the wall intersect. Where the roof slopes toward a parapet at a slope greater than two units vertical in 12 units horizontal (16.7-percent slope), the parapet shall extend to the same height as any portion of the roof within a fire separation distance where protection of wall openings is required, but in no case shall the height be less than 30 inches (762 mm).

704.12 Opening protection. Windows required to be protected in accordance with Section 704.8, 704.9, or 704.10 shall comply with Section 715.4.8. Other openings required to be protected with fire doors or shutters in accordance with Sections 704.8, 704.9 and 704.10 shall comply with Section 715.3.

Exception: Fire protective assemblies are not required where the building is protected throughout by an automatic sprinkler system and the exterior openings are protected by an approved water curtain using automatic sprinklers approved for that use. The sprinklers and the water curtain shall be installed in accordance with NFPA 13, as modified in Appendix Q.

704.12.1 Unprotected openings. Where protected openings are not required by Section 704, windows and doors shall be constructed of any approved materials. Glazing shall conform to the requirements of Chapters 24 and 26.

704.13 Joints. Joints made in or between exterior walls required by this section to have a fire-resistance rating shall comply with Section 713.

Exception: Joints in exterior walls that are permitted to have unprotected openings.

704.13.1 Voids. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 713.4.

704.14 Ducts and air transfer openings. Penetrations by air ducts and air transfer openings in fire-resistance-rated exterior walls required to have protected openings shall comply with Section 716.

Exception: Foundation vents installed in accordance with this code are permitted.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 705: FIRE WALLS

NYC Administrative Code § 28-BC 705

705.1 General.

Each portion of a building separated by one or more fire walls that comply with the provisions of this section shall be considered a separate building. The extent and location of such fire walls shall provide a complete separation. Where a fire wall also separates groups that are required to be separated by a fire barrier wall, the most restrictive requirements of each separation shall apply. Concealed spaces in cornices and eaves shall comply with the provisions of Section 705.5.2.

705.1.1 Party walls. Any wall located on a property line between adjacent buildings, which is used or adapted for joint service between the two buildings, shall be constructed as a fire wall in accordance with Section 705, and shall create separate buildings.

705.1.2 Walls separating attached one- and two-family dwellings. Attached one- and two-family dwellings shall be separated by walls constructed in accordance with Section 705 or Appendix M.

705.2 Structural stability. Fire walls shall have sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall for the duration of time indicated by the required fire-resistance rating.

705.3 Materials. Fire walls shall be constructed of any approved noncombustible materials.

705.4 Fire-resistance rating. Fire walls shall have a fire-resistance rating of not less than that required by Table 705.4. Table 705.4 Fire Wall Fire-Resistance Ratings Group Fire-Resistance Rating (hours) A, B, E, H-4, I, R-1, R-2, U 3a F-1, H-3b, H-5, M, S-1 3 H-1, H-2 4b F-2, S-2, R-3, R-4 2 a. Walls shall be not less than 2-hour fire-resistance rated where separating buildings of Type II or V construction. b. For Group H-1, H-2 or H-3 buildings, also see Sections 415.4 and 415.5.

705.5Horizontal continuity.Fire walls shall be continuous from exterior wall to exterior wall and shall extend at least 18 inches (457 mm) beyond the exterior surface of exterior walls.

Exceptions:

1. Fire walls shall be permitted to terminate at the interior surface of combustible exterior sheathing or siding provided the exterior wall has a fire-resistance rating of at least 1 hour for a horizontal distance of at least 4 feet (1219 mm) on both sides of the fire wall. Openings within such exterior walls shall be protected by fire assemblies having a fire protection rating of not less than 3/4 hour.

2. Fire walls shall be permitted to terminate at the interior surface of noncombustible exterior sheathing, exterior siding or other noncombustible exterior finishes provided the sheathing, siding, or other exterior noncombustible finish extends a horizontal distance of at least 4 feet (1219 mm) on both sides of the fire wall.

3. Fire walls shall be permitted to terminate at the interior surface of noncombustible exterior sheathing where the building on each side of the fire wall is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

705.5.1Exterior walls.Where the fire wall intersects the exterior walls, the fire-resistance rating for the exterior walls on both sides of the fire wall shall have a 1-hour fire-resistance rating with 3/4-hour opening protection where opening protection is required. The fire-resistance rating of the exterior wall shall extend a minimum of 4 feet (1219 mm) on each side of the intersection of the fire wall to exterior wall. Exterior wall intersections at fire walls that form an angle equal to or greater than 180 degrees (3.14 rad) do not need exterior wall protection.

705.5.2Horizontal projecting elements.Fire walls shall extend to the outer edge of horizontal projecting elements such as balconies, roof overhangs, canopies, marquees and architectural projections that are within 4 feet (1219 mm) of the fire wall.

Exceptions:

1. Noncombustible horizontal projecting elements without concealed spaces provided the exterior wall behind and below the projecting element has not less than 1-hour fire-resistance-rated construction for a distance not less than the depth of the projecting element on both sides of the fire wall. Openings within such exterior walls shall be protected by fire assemblies having a fire protection rating of not less than 3/4 hour.

2. Noncombustible horizontal projecting elements with concealed spaces, provided a minimum 1-hour fire-resistance-rated wall extends through the concealed space. The projecting element shall be separated from the building by a minimum of 1-hour fire-resistance-rated construction for a distance on each side of the firewall equal to the depth of the projecting element. The wall is not required to extend under the projecting element where the building exterior wall is a minimum of 1-hour fire-resistance rated for a distance on each side of the firewall equal to the depth of the projecting element. Openings within such exterior walls shall be protected by fire assemblies having a fire protection rating of not less than 3/4 hour.

705.6Vertical continuity.Fire walls shall extend from the foundation through the roof, to form a parapet at least 30 inches (762 mm) in height. Such parapet shall in no event extend to a point less than 4 inches (102 mm) above the highest point of peaked or gabled roof.

Exceptions:

1. Where a two-hour fire wall is permitted in accordance with Table 705.4, such wall shall be permitted to terminate at the underside of the roof sheathing, deck or slab provided:

1.1. The lower roof assembly within 4 feet (1219 mm) of the wall has not less than a 1-hour fire-resistance rating and the entire length and span of supporting elements for the rated roof assembly has a fire-resistance rating of not less than 1 hour; and

1.2. Openings in the roof shall not be located within 4 feet (1219 mm) of the fire wall; and

1.3. Each building shall be provided with not less than a Class A roof covering.

2. In buildings of Type I or II constructions, fire walls shall be permitted to terminate at the underside of noncombustible roof sheathing, deck, or slabs where both buildings are provided with not less than a Class A roof covering. Openings in the roof shall not be located within 4 feet (1219 mm) of the fire wall.

3. In buildings of Type III, IV and V construction, fire walls shall be permitted to terminate at the underside of noncombustible roof sheathing or decks provided:

3.1. There are no openings in the roof within 4 feet (1219 mm) of the fire wall; and

3.2. The roof is covered with a minimum Class A roof covering.

4. Buildings located above a parking garage designed in accordance with Section 509.2 shall be permitted to have the fire walls for the buildings located above the parking garage extend from the horizontal separation between the parking garage and the buildings.

705.7 Combustible framing in fire walls. Adjacent combustible members entering into a concrete or masonry firewall from opposite sides shall not have less than a 4-inch (102 mm) distance between embedded ends. Where combustible members frame into hollow walls or walls of hollow units, hollow spaces shall be solidly filled for the full thickness of the wall and for a distance not less than 4 inches (102 mm) above, below and between the structural members, with noncombustible materials approved for fire blocking.

705.8 Openings. Each opening through a fire wall, a party wall, or a through wall between two buildings shall be protected in accordance with Section 715.3 and shall not exceed 120 square feet (11 m²), with no dimension greater than 12 feet (3658 mm). The aggregate width of openings at any floor level shall not exceed 25 percent of the length of the wall.

Exception: Openings shall not be limited to 120 square feet (11 m²) where both buildings are equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1. However, the aggregate width of all openings at any one floor level shall not exceed 25 percent of the length of the wall.

705.9 Penetrations. Penetrations through fire walls shall comply with Section 712.

705.10 Joints. Joints made in or between fire walls shall comply with Section 713.

705.11 Ducts and air transfer openings. Ducts and air transfer openings shall not penetrate fire walls.

Exception: Penetrations by ducts and air transfer openings of fire walls that are not on a tax lot line shall be allowed provided the penetrations comply with Sections 712 and 716. The size and aggregate width of all openings shall not exceed the limitations of Section 705.8.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

705.6 item 4 amended L.L. 8/2008 § 92, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 706: FIRE BARRIERS

NYC Administrative Code § 28-BC 706

706.1 General.

Fire barriers used for separation of shafts, exits, exit passageways, horizontal exits or incidental use areas, to separate different occupancies, to separate a single occupancy into different fire areas, or to separate other areas where a fire barrier is required elsewhere in this code or the New York City Fire Code, shall comply with this section.

706.2 Materials. The walls and floor assemblies shall be of materials permitted by the building type of construction.

706.3 Fire-resistance rating. The fire-resistance rating of the walls and floor assemblies shall comply with this section.

706.3.1 Shaft enclosures. The fire-resistance rating of the fire barrier separating building areas from a shaft shall comply with Section 707.4.

706.3.2 Exit enclosures. The fire-resistance rating of the fire barrier separating building areas from an exit shall comply with Section 1019.1.

706.3.3 Exit passageway. The fire-resistance rating of the separation between building areas and an exit passageway shall comply with Section 1020.1.

706.3.4 Horizontal exit. The fire-resistance rating of the separation between building areas connected by a horizontal exit shall comply with Section 1021.1.

706.3.5 Incidental use areas. The fire barrier separating incidental use areas shall have a fire-resistance rating of not less than that indicated in Table 508.2.

706.3.6 Separation of mixed occupancies. Where the provisions of Section 508.3.3 are applicable, the fire barrier separating mixed occupancies shall have a fire-resistance rating of not less than that indicated in Section 508.3.3 based

on the occupancies being separated.

706.3.7Single-occupancy fire areas.The fire barrier separating a single occupancy into different fire areas shall have a fire-resistance rating of not less than that indicated in Table 706.3.7.Table 706.3.7 Fire-Resistance Rating Requirements for Fire Barrier Assemblies Between Fire Areas Occupancy Group Fire-Resistance Rating (hours) H-1, H-2 4 F-1, H-3, S-1 3 A, B, E, F-2, H-4, H-5, I, M, R, S-2 2 U 1

706.3.8Atriums.The fire-resistance rating of the fire barrier separating atriums shall comply with Section 404.5.

706.4Continuity of fire barrier walls.Fire barrier walls shall extend from the top of the floor/ceiling assembly below to the underside of the floor or roof slab or deck above and shall be securely attached thereto. These walls shall be continuous through concealed spaces such as the space above a suspended ceiling. The supporting construction for fire barrier walls shall be protected to afford the required fire-resistance rating of the fire barrier supported except for 1-hour fire-resistance-rated incidental use area separations as required by Table 508.2 in buildings of Type IIB, IIIB and VB construction. Hollow vertical spaces within the fire barrier wall shall be fire-stopped at every floor level.

Exceptions:

1. The maximum required fire-resistance rating for assemblies supporting fire barriers separating tank storage as provided for in Section 415.7.2.1 shall be 2 hours, but not less than required by Table 601 for the building construction type.

2. Shaft enclosure shall be permitted to terminate at a top enclosure complying with Section 707.12.

706.5Horizontal fire barriers.Horizontal fire barriers shall be constructed in accordance with Section 711.

706.6Exterior walls.Where exterior walls serve as a part of a required fire-resistance-rated enclosure, such walls shall comply with the requirements of Section 704 for exterior walls, and the fire-resistance-rated enclosure requirements of Section 706 shall not apply.

Exception: Exterior walls required to be fire-resistance rated in accordance with Section 1022.6.

706.7Openings.Openings in a fire barrier wall shall be protected in accordance with Section 715. Openings shall be limited to a maximum aggregate width of 25 percent of the length of the wall, and the maximum area of any single opening shall not exceed 120 square feet (11 m²). Openings in vertical exit enclosures and exit passageways shall also comply with Sections 1019.1.1 and 1020.4, respectively.

Exceptions:

1. Openings shall not be limited to 120 square feet (11 m²) where adjoining fire areas are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

2. Openings for fire doors serving an exit enclosure shall not be limited to an aggregate width of 25 percent of the length of the wall.

3. Openings shall not be limited to 120 square feet (11 m²) or an aggregate width of 25 percent of the length of the wall where the opening protective assembly has been tested in accordance with ASTM E 119 and has a minimum fire-resistance rating not less than the fire-resistance rating of the wall.

4. Openings permitted in atrium enclosures shall comply with the provisions of Section 404.5.

706.8Penetrations.Penetrations through fire barriers shall comply with Section 712.

706.8.1 Prohibited penetrations. Penetrations into an exit enclosure shall only be allowed when permitted by Sections 1019.1.2 and 1020.5.

706.9 Joints. Joints made in or between fire barriers shall comply with Section 713.

706.10 Ducts and air transfer openings. Penetrations by ducts and air transfer openings shall comply with Sections 712 and 716.

706.10.1 Prohibited ducts and air transfer openings. Penetrations by ducts and air transfer openings into an exit enclosure shall only be allowed when permitted by Sections 1019.1.2 and 1020.5.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

706.3.5 amended L.L. 8/2008 § 93, eff. July 1, 2008.

706.3.6 amended L.L. 8/2008 § 93, eff. July 1, 2008.

706.4 open par amended L.L. 8/2008 § 93, eff. July 1, 2008.

706.8.1 amended L.L. 8/2008 § 93, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 707: SHAFT ENCLOSURES

NYC Administrative Code § 28-BC 707

707.1 General.

The provisions of this section shall apply to vertical shafts where such shafts are required to protect openings and penetrations through floor/ceiling and roof/ceiling assemblies.

707.2 Shaft enclosure required. Openings through a floor/ceiling assembly shall be protected by a shaft enclosure complying with this section.

Exceptions:

1. A shaft enclosure is not required for openings totally within an individual residential dwelling unit and connecting four stories or less where such dwelling unit is fully sprinklered in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3.

2. A shaft enclosure is not required in a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 for an escalator opening or stairway which is not a portion of the means of egress protected according to Item 2.1 or 2.2:

2.1. Where the area of the floor opening between stories does not exceed twice the horizontal projected area of the escalator or stairway and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13, as modified in Appendix Q. In other than Groups B and M, this application is limited to openings that do not connect more than four stories.

2.2. Where the opening is protected by approved power-operated automatic shutters at every floor penetrated. The shutters shall be of noncombustible construction and have a fire-resistance rating of not less than 1.5 hours. The shutter shall be so constructed as to close immediately upon the actuation of a smoke detector installed in accordance with Section 907.10 and shall completely shut off the well opening. Escalators shall cease operation when the shutter begins

to close. The shutter shall operate at a speed of not more than 30 feet per minute (152.4 mm/s) and shall be equipped with a sensitive leading edge to arrest its progress where in contact with any obstacle, and to continue its progress on release therefrom.

3. A shaft enclosure is not required for penetrations by pipe, tube, conduit, wire, cable, and vents protected in accordance with Section 712.4.

4. A shaft enclosure is not required for penetrations by ducts protected in accordance with Section 712.4. Grease ducts shall be protected in accordance with the New York City Mechanical Code.

5. In other than Group H Occupancies, a shaft enclosure is not required for floor openings complying with the provisions for atriums in Section 404.

6. A shaft enclosure is not required for approved masonry chimneys, where annular space protection is provided at each floor level in accordance with Section 717.2.5.

7. In other than Groups I-2 and I-3, a shaft enclosure is not required for a floor opening that complies with all of the following:

7.1. Does not connect more than two stories.

7.2. Is not part of the required means of egress system except as permitted in Section 1019.1.

7.3. Is not concealed within the building construction.

7.4. Is not open to a corridor in Group I and R occupancies where such corridor is required to be fire-resistance rated in accordance with Table 1016.1.

7.5. Is not open to a corridor on nonsprinklered floors in any occupancy where such corridor is required to be fire-resistance rated in accordance with Table 1016.1.

7.6. Is separated from floor openings serving other floors by construction conforming to required shaft enclosures.

8. A shaft enclosure is not required for automobile ramps in open parking garages and enclosed parking garages constructed in accordance with Sections 406.3 and 406.4, respectively.

9. A shaft enclosure is not required for floor openings between a mezzanine and the floor below.

10. A shaft enclosure is not required for joints protected by a fire-resistant joint system in accordance with Section 713.

11. Where permitted by other sections of this code.

707.3Materials. The shaft enclosure shall be of materials permitted by the building type of construction.

Exception: Noncombustible materials shall be used for shaft enclosures in Groups I-1, R-1 and R-2 buildings irrespective of the building type of construction.

707.4Fire-resistance rating. Shaft enclosures shall have a fire-resistance rating of not less than 2 hours where penetrating three stories or more and not less than 1 hour where penetrating fewer than three stories. The number of stories connected by the shaft enclosure shall include any basements or cellars, but not any mezzanines. Shaft enclosures shall be constructed as fire barriers in accordance with Section 706. Shaft enclosures shall have a fire-resistance rating not less than the floor assembly penetrated, but need not exceed 2 hours.

707.5Continuity.Where the roof construction is of combustible materials, shaft enclosure walls shall extend through the roof construction at least 30 inches (762 mm) above the roof. Where the roof construction is of noncombustible materials, shaft enclosure walls shall extend from the top of the floor/ceiling assembly below to the underside of the floor or roof slab or deck above and shall be securely attached thereto. These walls shall be continuous through concealed spaces such as the space above a suspended ceiling. The supporting construction shall be protected to afford the required fire-resistance rating of the element supported. Hollow vertical spaces within the shaft enclosure construction wall shall be firestopped at every floor level.

Exception: A shaft enclosure of a refuse or laundry chute shall extend through combustible or noncombustible roof construction at least 6 feet (1829 mm) above the roof.

707.6Exterior walls.Where exterior walls serve as a part of a required shaft enclosure, such walls shall comply with the requirements of Section 704 for exterior walls and the fire-resistance-rated enclosure requirements of Section 707.4 shall not apply.

Exception: Exterior walls required to be fire-resistance rated in accordance with Section 1022.6.

707.7Openings.Openings in a shaft enclosure shall be protected in accordance with Section 715 as required for fire barriers. Such openings shall be self-closing or automatic-closing by smoke detection. Automatic-closing by smoke detection is not permitted for required vertical exit doors.

707.7.1Prohibited openings.Openings other than those necessary for the purpose of the shaft shall not be permitted in shaft enclosures.

707.8Penetrations.Penetrations in a shaft enclosure shall be protected in accordance with Section 712 as required for fire barriers.

707.8.1Prohibited penetrations.Penetrations other than those necessary for the purpose of the shaft shall not be permitted in shaft enclosures.

Exception: Duct penetrations in accordance with Section 707.10, as permitted in Sections 1019.1.2, 1019.1.3, and 1020.5.

707.9Joints.Joints in a shaft enclosure shall comply with Section 713.

707.10Ducts and air transfer openings.Penetrations of a shaft enclosure by ducts and air transfer openings shall comply with Sections 712 and 716.

707.11Enclosure at the bottom.Shafts that do not extend to the bottom of the building or structure shall:

1. Be enclosed at the lowest level with construction of the same fire-resistance rating as the lowest floor through which the shaft passes, but not less than the rating required for the shaft enclosure; or
2. Terminate in a room having a use related to the purpose of the shaft. The room shall be separated from the remainder of the building by construction having a fire-resistance rating and opening protectives at least equal to the protection required for the shaft enclosure.

Exceptions:

1. The fire-resistance-rated room separation is not required provided there are no openings in or penetrations of the shaft enclosure to the interior of the building except at the bottom. The bottom of the shaft shall be closed off around the penetrating items with materials permitted by Section 717.3.1 for draft stopping, or the room shall be provided with an approved automatic fire suppression system.

2. A shaft enclosure containing a refuse chute or laundry chute shall not be used for any other purpose and shall terminate in a room protected in accordance with Section 707.13.4.

3. The fire-resistance-rated room separation and the protection at the bottom of the shaft are not required provided there are no combustibles in the shaft and there are no openings or other penetrations through the shaft enclosure to the interior of the building.

707.12Enclosure at the top.A shaft enclosure that does not extend to the underside of the roof deck of the building shall be enclosed at the top with construction of the same fire-resistance rating as the topmost floor penetrated by the shaft, but not less than the fire-resistance rating required for the shaft enclosure.

707.13Refuse and laundry chutes.Refuse and laundry chutes, access and termination rooms and incinerator rooms shall meet the requirements of Sections 707.13.1 through 707.13.6.

Exception: Chutes serving and contained within a single dwelling unit.

707.13.1Refuse and laundry chute enclosures.A shaft enclosure containing a refuse or laundry chute shall not be used for any other purpose and shall have a fire-resistance rating of 2 hours. Openings into the shaft, including those from access rooms and termination rooms, shall be protected in accordance with this section and Section 715. Openings into chutes shall not be located in exit access corridors. Opening protectives shall be self-closing.

707.13.2Materials.A shaft enclosure containing a refuse or laundry chute shall be constructed of noncombustible materials.

707.13.3Refuse and laundry chute access rooms.Access openings for refuse and laundry chutes shall be located in dedicated rooms or compartments completely enclosed by construction that has a fire-resistance rating of not less than 2 hours. Openings into the access rooms shall be protected by opening protectives having a fire protection rating of not less than 1 1/2 hour and shall be self-closing. Openings may be automatic-closing upon the detection of smoke provided that the storage of refuse, including recyclables, or laundry is not permitted in such access rooms.

Exception: Access openings for refuse or laundry chutes located within a dwelling unit need not be located within a separate room or compartment.

707.13.4Termination room.Refuse and laundry chutes shall discharge into an enclosed room completely separated from the remainder of the building by construction that has a fire-resistance rating of not less than 3 hours. Openings into the termination room shall be protected by opening protectives having a fire protection rating of not less than 1 1/2 hours and shall be self-closing.

707.13.5Incinerator room.Incinerator rooms shall comply with Table 508.2.

707.13.6Automatic fire sprinkler system.An approved automatic fire sprinkler system shall be installed in accordance with Section 903.2.10.2.

707.14Elevator and dumbwaiter shafts.Elevator hoist way and dumbwaiter enclosures shall be constructed in accordance with Section 707.4 and Chapter 30.

707.14.1Elevator lobby.Elevator lobbies shall be provided in accordance with Section 403.9.1.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

707.2 item 2.2 amended L.L. 8/2008 § 94, eff. July 1, 2008.

707.13.4 amended L.L. 8/2008 § 95, eff. July 1, 2008.

707.13.5 amended L.L. 8/2008 § 95, eff. July 1, 2008.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 708: FIRE PARTITIONS

NYC Administrative Code § 28-BC 708

708.1 General.

The following wall assemblies shall comply with this section.

1. Walls separating tenant spaces in covered mall buildings as required by Section 402.7.2.
2. Walls as required by Section 1016.1.

708.2 Materials. The walls shall be of materials permitted by the building type of construction.

708.3 Fire-resistance rating. The fire-resistance rating of the walls shall be 1 hour.

Exception: Interior corridor walls as permitted by Table 1016.1.

708.4 Continuity. Fire partitions shall extend from the top of the floor assembly below to the underside of the floor or roof slab or deck above or to the fire-resistance-rated floor/ceiling or roof/ceiling assembly above, and shall be securely attached thereto. If the partitions are not continuous to the deck, the space between the ceiling and the deck above shall be fire blocked or draft stopped in accordance with Sections 717.2.1 and 717.3.1 at the partition line. The supporting construction shall be protected to afford the required fire-resistance rating of the wall supported.

Exceptions:

1. The fire partition separating tenant spaces in a mall, complying with Section 402.7.2, is not required to extend beyond the underside of a ceiling that is not part of a fire-resistance-rated assembly. A wall is not required in attic or ceiling spaces above tenant separation walls.
2. Fire blocking or draft stopping is not required at the partition line in Group R-2 buildings that do not exceed four stories in height provided the attic space is subdivided by draft stopping into areas not exceeding 3,000 square feet (279

m2) or above every two dwelling units, whichever is smaller.

3. Fire blocking or draft stopping is not required at the partition line in buildings equipped with an automatic sprinkler system installed throughout in accordance with Section 903.3.1.1 or 903.3.1.2 provided that automatic sprinklers are installed in combustible floor/ceiling and roof/ceiling spaces.

708.5Exterior walls.Where exterior walls serve as a part of a required fire-resistance-rated enclosure, such walls shall comply with the requirements of Section 704 for exterior walls and the fire-resistance-rated enclosure requirements of Section 708.3 shall not apply.

708.6Openings.Openings in a fire partition shall be protected in accordance with Section 715.

708.7Penetrations.Penetrations through fire partitions shall comply with Section 712.

708.8Joints.Joints made in or between fire partitions shall comply with Section 713.

708.9Ducts and air transfer openings.Penetrations by ducts and air transfer openings shall comply with Sections 712 and 716.



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Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 709: SMOKE BARRIERS

NYC Administrative Code § 28-BC 709

709.1 General.

Smoke barriers shall comply with this section.

709.2 Materials. Smoke barriers shall be of materials permitted by the building type of construction.

709.3 Fire-resistance rating. A 1-hour fire-resistance rating is required for smoke barriers.

Exception: Smoke barriers constructed of minimum 0.10-inch-thick (2.5 mm) steel in Group I-3 buildings.

709.4 Continuity. Smoke barriers shall form an effective membrane continuous from outside wall to outside wall and from floor slab to floor or roof deck above, including continuity through concealed spaces, such as those found above suspended ceilings, and interstitial structural and mechanical spaces. The supporting construction shall be protected to afford the required fire-resistance rating of the wall or floor supported in buildings of other than Type IIB, IIIB or VB construction.

Exception: Smoke barrier walls are not required in interstitial spaces where such spaces are designed and constructed with ceilings that provide resistance to the passage of fire and smoke equivalent to that provided by the smoke barrier walls.

709.5 Openings. Openings in a smoke barrier shall be protected in accordance with Section 715.

Exception: In Group I-2, where such doors are installed across corridors, a pair of opposite-swinging doors without a center mullion shall be installed having vision panels with approved fire-resistance-rated glazing materials in approved fire-resistance-rated frames, the area of which shall not exceed that tested. The doors shall be close fitting within operational tolerances, and shall not have undercuts, louvers or grilles. The doors shall have head and jamb stops, astragals or rabbets at meeting edges and automatic-closing devices. Positive-latching devices are not required.

709.6 Penetrations. Penetrations through smoke barriers shall comply with Section 712.

709.7 Joints. Joints made in or between smoke barriers shall comply with Section 713.

709.8 Duct and air transfer openings. Penetrations by duct and air transfer openings shall comply with Sections 712 and 716.



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SECTION BC 710: SMOKE PARTITIONS

NYC Administrative Code § 28-BC 710

710.1 General.

Smoke partitions installed as required elsewhere in the code shall comply with this section.

710.2Materials. Smoke partitions shall be constructed of noncombustible materials. Glazing may be used provided it is heat-strengthened or tempered glazing complying and shall otherwise comply with Chapter 24, and shall be protected by sprinkler heads installed in a maximum of 6 feet (1829 mm) on center on each side of the smoke partition.

710.3Fire-resistance rating. Unless required elsewhere in the code, smoke partitions are not required to have a fire-resistance rating.

710.4Continuity. Smoke partitions shall extend from the floor to the underside of the floor or roof deck above or to the underside of the ceiling above where the ceiling membrane is constructed to limit the transfer of smoke.

710.5Openings. Windows shall be sealed to resist the free passage of smoke or be automatic-closing upon detection of smoke. Doors in smoke partitions shall comply with this section.

710.5.1Louvers. Doors in smoke partitions shall not include louvers.

710.5.2Smoke and draft-control doors. Where required elsewhere in the code, doors in smoke partitions shall be tested in accordance with UL 1784 with an artificial bottom seal installed across the full width of the bottom of the door assembly. The air leakage rate of the door assembly shall not exceed 3.0 cubic feet per minute per square foot [ft³/(min ft²)] (0.015424 m³/sm²) of door opening at 0.10 inch (24.9 Pa) of water for both the ambient temperature test and the elevated temperature exposure test.

710.5.3Self-closing or automatic-closing doors. Where required elsewhere in the code, doors in smoke partitions shall be self-closing or automatic-closing in accordance with Section 715.3.7.3.

710.6 Penetrations and joints. The space around penetrating items and in joints shall be filled with an approved material to limit the free passage of smoke.

710.7 Ducts and air transfer openings. Air transfer openings in smoke partitions shall be provided with a smoke damper complying with Section 716.3.2.

Exception: Where the installation of a smoke damper will interfere with the operation of a required smoke control system in accordance with Section 909, approved alternative protection shall be utilized.



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SECTION BC 711: HORIZONTAL ASSEMBLIES

NYC Administrative Code § 28-BC 711

711.1 General.

Floor and roof assemblies required to have a fire-resistance rating shall comply with this section.

711.2 Materials. The floor and roof assemblies shall be of materials permitted by the building type of construction.

Exception: Horizontal floor or roof assemblies shall be of noncombustible materials when such assemblies serve as a horizontal offset to a fire wall or fire barrier that is required to be noncombustible.

711.3 Fire-resistance rating. The fire-resistance rating of floor and roof assemblies shall not be less than that required by the building type of construction. Where the floor assembly separates mixed occupancies, the assembly shall have a fire-resistance rating of not less than that required by Section 508.3.3 based on the occupancies being separated. Where the floor assembly separates a single occupancy into different fire areas, the assembly shall have a fire-resistance rating of not less than that required by Section 706.3.7. Floor assemblies separating dwelling units in Group I-1 or R Occupancies shall be a minimum of 1-hour fire-resistance-rated construction.

711.3.1 Ceiling panels. Where the weight of lay-in ceiling panels, used as part of fire-resistance-rated floor/ceiling or roof/ceiling assemblies, is not adequate to resist an upward force of 1 lb/ft.² (48 Pa), wire or other approved devices shall be installed above the panels to prevent vertical displacement under such upward force.

711.3.2 Access doors. Access doors shall be permitted in ceilings of fire-resistance-rated floor/ceiling and roof/ceiling assemblies provided such doors are tested in accordance with ASTM E 119 as horizontal assemblies and labeled by an approved agency for such purpose.

711.3.3 Unusable space. In 1-hour fire-resistance-rated floor construction, the ceiling membrane is not required to be installed over unusable crawl spaces not intended for occupancy or storage, less than 24 inches (610 mm) in height. In 1-hour fire-resistance-rated roof construction, the floor membrane is not required to be installed where the unusable attic

space above is not intended for occupancy or storage.

711.4Continuity.Assemblies shall be continuous without openings, penetrations or joints except as permitted by this section and Sections 707.2, 712.4 and 713. Skylights and other penetrations through a fire-resistance-rated roof deck are permitted to be unprotected, provided that the structural integrity of the fire-resistance-rated roof construction is maintained. Unprotected skylights shall not be permitted in roof construction required to be fire-resistance rated in accordance with Section 704.10. The supporting construction shall be protected to afford the required fire-resistance rating of the horizontal assembly supported.

711.5Penetrations.Penetrations through fire-resistance-rated horizontal assemblies shall comply with Section 712.

711.6Joints.Joints made in or between fire-resistance-rated horizontal assemblies shall comply with Section 713. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 713.4.

711.7Ducts and air transfer openings.Penetrations by ducts and air transfer openings shall comply with Sections 712 and 716.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

711.3 amended L.L. 8/2008 § 96, eff. July 1, 2008.



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SECTION BC 712: PENETRATIONS

NYC Administrative Code § 28-BC 712

712.1 Scope.

The provisions of this section shall govern the materials and methods of construction used to protect through penetrations and membrane penetrations.

712.1.1 Special inspection. All through-penetration and membrane-penetration firestop systems shall comply with the special inspection requirements of Chapter 17.

712.2 Installation details. Where sleeves are used, they shall be securely fastened to the assembly penetrated. The space between the item contained in the sleeve and the sleeve itself and any space between the sleeve and the assembly penetrated shall be protected in accordance with this section. Insulation and coverings on or in the penetrating item shall not penetrate the assembly unless the specific material used has been tested as part of the assembly in accordance with this section.

712.3 Fire-resistance-rated walls. Penetrations into or through fire walls, fire barriers, smoke barrier walls, and fire partitions shall comply with this section.

712.3.1 Through penetrations. Through penetrations of fire-resistance-rated walls shall comply with Section 712.3.1.1 or 712.3.1.2.

Exception: Where the penetrating items are steel, ferrous or copper pipes or steel conduits, the annular space between the penetrating item and the fire-resistance-rated wall shall be permitted to be protected as follows:

1. In concrete or masonry walls where the penetrating item is a maximum 6-inch (152 mm) nominal diameter and the opening is a maximum 144 square inches (0.0929 m²), concrete, grout or mortar shall be permitted where installed the full thickness of the wall or the thickness required to maintain the fire-resistance rating; or

2. The material used to fill the annular space shall prevent the passage of flame and hot gases sufficient to ignite

cotton waste where subjected to ASTM E 119 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.

712.3.1.1 Fire-resistance-rated assemblies. Penetrations shall be installed as tested in an approved fire-resistance-rated assembly.

712.3.1.2 Through-penetration firestop system. Through penetrations shall be protected by an approved penetration fire stop system installed as tested in accordance with ASTM E 814 or UL 1479, with a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water and shall have an F rating of not less than the required fire-resistance rating of the wall penetrated.

712.3.2 Membrane penetrations. Membrane penetrations shall be protected by a membrane penetration firestop installed in accordance with Section 712.3.1. Where walls and partitions are required to have a minimum 1-hour fire-resistance rating, recessed fixtures shall be installed such that the required fire resistance will not be reduced.

Exceptions:

1. Steel electrical boxes that do not exceed 16 square inches (0.0103 m²) in area provided the total area of such openings does not exceed 100 square inches (0.0645 m²) for any 100 square feet (9.29 m²) of wall area. Outlet boxes on opposite sides of the wall shall be separated as shown:

1.1. By a horizontal distance of not less than 24 inches (610 mm);

1.2. By a horizontal distance of not less than the depth of the wall cavity where the wall cavity is filled with cellulose loose fill, rock wool or slag mineral wool insulation;

1.3. By solid fire blocking in accordance with Section 717.2.1;

1.4. By protecting both outlet boxes by listed putty pads; or

1.5. By other listed materials and methods.

2. Membrane penetrations for listed electrical outlet boxes of any material are permitted provided such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. Outlet boxes on opposite sides of the wall shall be separated as follows:

2.1. By a horizontal distance of not less than 24 inches (610 mm);

2.2. By solid fire blocking in accordance with Section 717.2.1;

2.3. By protecting both outlet boxes by listed putty pads; or

2.4. By other listed materials and methods.

3. The annular space created by the penetration of a fire sprinkler provided it is covered by a metal escutcheon plate.

712.3.3 Ducts and air transfer openings. Penetrations of fire-resistance-rated walls by ducts and air transfer openings that are not protected with fire dampers shall comply with this section.

712.3.4 Dissimilar materials. Noncombustible penetrating items shall not connect to combustible items beyond the point of fire stopping unless it can be demonstrated to the commissioner that the fire-resistance integrity of the wall is

maintained.

712.4 Horizontal assemblies. Penetrations of a floor, floor/ceiling assembly or the ceiling membrane of a roof/ceiling assembly shall be protected in accordance with Section 707. Penetrations permitted by Exceptions 3 and 4 of Section 707.2 shall comply with Sections 712.4.1 through 712.4.4.

Exception: Penetrations located within the same room or undivided area as floor openings not required to have a shaft enclosure in accordance with Exceptions 1, 2, 5, 7, 8 or 9 in Section 707.2.

712.4.1 Through penetrations. Through penetrations of fire-resistance-rated horizontal assemblies shall comply with Section 712.4.1.1 or 712.4.1.2.

Exceptions:

1. Penetrations by steel, ferrous or copper conduits, pipes, tubes, vents, concrete, or masonry through a single fire-resistance-rated floor assembly where the annular space is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated. Penetrating items with a maximum 6-inch (152 mm) nominal diameter shall not be limited to the penetration of a single fire-resistance-rated floor assembly provided that the area of the penetration does not exceed 144 square inches (92 900 mm²) in any 100 square feet (9.3m²) of floor area.

2. Penetrations in a single concrete floor by steel, ferrous or copper conduits, pipes, tubes and vents with a maximum 6-inch (152 mm) nominal diameter provided concrete, grout or mortar is installed the full thickness of the floor or the thickness required to maintain the fire-resistance rating. The penetrating items with a maximum 6-inch (152 mm) nominal diameter shall not be limited to the penetration of a single concrete floor provided that the area of the penetration does not exceed 144 square inches (0.0929 m²).

3. Electrical outlet boxes of any material are permitted provided that such boxes are tested for use in fire-resistance-rated assemblies and installed in accordance with the tested assembly.

712.4.1.1 Fire-resistance-rated assemblies. Penetrations shall be installed as tested in the approved fire-resistance-rated assembly.

712.4.1.2 Through-penetration firestop system. Through penetrations shall be protected by an approved through-penetration fire stop system installed and tested in accordance with ASTM E 814 or UL 1479, with a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water. The system shall have an F rating and a T rating of not less than 1 hour but not less than the required rating of the floor penetrated.

Exception: Floor penetrations contained and located within the cavity of a wall do not require a T rating.

712.4.2 Membrane penetrations. Penetrations of membranes that are part of a fire-resistance-rated horizontal assembly shall comply with Section 712.4.1.1 or 712.4.1.2. Where floor/ceiling assemblies are required to have a minimum 1-hour fire-resistance rating, recessed fixtures shall be installed such that the required fire resistance will not be reduced.

Exceptions:

1. Membrane penetrations by steel, ferrous or copper conduits, electrical outlet boxes, pipes, tubes, vents, concrete, or masonry-penetrating items where the annular space is protected either in accordance with Section 712.4.1 or to prevent the free passage of flame and the products of combustion. Such penetrations shall not exceed an aggregate area

of 100 square inches (64 500 mm²) in any 100 square feet (9.3 m²) of ceiling area in assemblies tested without penetrations.

2. Membrane penetrations by listed electrical outlet boxes of any material are permitted provided such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.

3. The annular space created by the penetration of a fire sprinkler provided it is covered by a metal escutcheon plate.

712.4.3 Nonfire-resistance-rated assemblies. Penetrations of horizontal assemblies without a required fire-resistance rating shall meet the requirements of Section 707 or shall comply with Sections 712.4.3.1 through 712.4.3.2.

712.4.3.1 Noncombustible penetrating items. Noncombustible penetrating items that connect not more than three stories are permitted provided that the annular space is filled with an approved noncombustible material to resist the free passage of flame and the products of combustion.

712.4.3.2 Penetrating items. Penetrating items that connect not more than two stories are permitted provided that the annular space is filled with an approved material to resist the free passage of flame and the products of combustion.

712.4.4 Ducts and air transfer openings. Penetrations of horizontal assemblies by ducts and air transfer openings that are not required to have dampers shall comply with this section. Ducts and air transfer openings that are protected with dampers shall comply with Section 716.

712.4.5 Dissimilar materials. Noncombustible penetrating items shall not connect to combustible materials beyond the point of fire stopping unless it can be demonstrated that the fire-resistance integrity of the horizontal assembly is maintained.

712.4.6 Floor fire doors. Floor fire door assemblies used to protect openings in fire-resistance-rated floors shall be tested in the horizontal position in accordance with ASTM E 119, and shall achieve a fire-resistance rating not less than the assembly being penetrated. Floor fire doors shall be labeled by an approved agency.



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SECTION BC 713: FIRE-RESISTANT JOINT SYSTEMS

NYC Administrative Code § 28-BC 713

713.1 General.

Joints installed in or between fire-resistance-rated walls, floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies shall be protected by an approved fire-resistant joint system designed to resist the passage of fire for a time period not less than the required fire-resistance rating of the wall, floor or roof in or between which it is installed. Fire-resistant joint systems shall be tested in accordance with Section 713.3. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 713.4.

Exception: Fire-resistant joint systems shall not be required for joints in all of the following locations:

1. Floors within a single dwelling unit.
2. Floors where the joint is protected by a shaft enclosure in accordance with Section 707.
3. Floors within atriums where the space adjacent to the atrium is included in the volume of the atrium for smoke control purposes.
4. Floors within malls.
5. Floors within open parking structures.
6. Mezzanine floors.
7. Walls that are permitted to have unprotected openings.
8. Roofs where openings are permitted.
9. Control joints not exceeding a maximum width of 0.625 inch (15.9 mm) and tested in accordance with ASTM E

119.

713.2Installation. Fire-resistant joint systems shall be securely installed in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases.

713.3Fire test criteria. Fire-resistant joint systems shall be tested in accordance with the requirements of either ASTM E 1966 or UL 2079. Nonsymmetrical wall joint systems shall be tested with both faces exposed to the furnace, and the assigned fire-resistance rating shall be the shortest duration obtained from the two tests. When evidence is furnished to show that the wall was tested with the least fire-resistant side exposed to the furnace, subject to acceptance of the commissioner, the wall need not be subjected to tests from the opposite side.

Exception: For exterior walls with a horizontal fire separation distance greater than 5 feet (1524 mm), the joint system shall be required to be tested for interior fire exposure only.

713.4Exterior curtain wall/floor intersection. Where fire resistance-rated floor or floor/ceiling assemblies are required, voids created at the intersection of the exterior curtain wall assemblies and such floor assemblies shall be sealed with an approved material or system to prevent the interior spread of fire. Such material or systems shall be securely installed and capable of preventing the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (0.254 mm) of water column (2.5 Pa) for the time period at least equal to the fire-resistance rating of the floor assembly. Height and fire-resistance requirements for curtain wall spandrels shall comply with Section 704.9.



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SECTION BC 714: FIRE-RESISTANCE RATING OF STRUCTURAL MEMBERS

NYC Administrative Code § 28-BC 714

714.1 Requirements.

The fire-resistance rating of structural members and assemblies shall comply with the requirements for the type of construction and shall not be less than the rating required for the fire-resistance-rated assemblies supported.

Exception: Fire barriers and fire partitions as provided in Sections 706.4 and 708.4, respectively.

714.1.1 Inspection of Fire Protection. The installation of all required sprayed-on fire protection shall be subject to the special inspection requirements of Section 1704.11.

714.2 Protection of structural members. Protection of columns, girders, trusses, beams, lintels or other structural members that are required to have a fire-resistance rating shall comply with this section.

714.2.1 Individual protection. Columns, girders, trusses, beams, lintels or other structural members that are required to have a fire-resistance rating and that support more than one floor or a roof, or support a load-bearing wall or a non-load-bearing wall more than one story high, shall be individually protected on all sides for the full length with materials having the required fire-resistance rating. Girders, trusses, beams, lintels or other structural members required to have a fire-resistance rating and that support only one floor or a roof, and/or a non-bearing wall not more than one story high, shall be protected by individual encasement, by a membrane or ceiling protection as specified in Section 711, or by a combination of both, which together provide the required fire-resistance rating. Columns shall also comply with Section 714.2.2.

714.2.2 Column protection. Where columns require a fire-resistance rating, the entire column, including its connections to beams or girders, shall be individually protected. Where the column extends through a ceiling, fire resistance of the column shall be continuous from the top of the floor through the ceiling space to the top of the column.

714.2.3 Truss protection. The required thickness and construction of fire-resistance-rated assemblies enclosing

trusses shall be based on the results of full-scale tests or combinations of tests on truss components or on approved calculations based on such tests that satisfactorily demonstrate that the assembly has the required fire resistance

714.2.4 Attachments to structural members. The edges of lugs, brackets, rivets and bolt heads attached to structural members shall be protected to the highest fire-resistance rating of the members connected.

714.2.5 Reinforcing. Thickness of protection for concrete or masonry reinforcement shall be measured to the outside of the reinforcement, including stirrups, ties and spiral reinforcing ties.

714.3 Embedments and enclosures. Pipes, wires, conduits, ducts or other service facilities shall not be embedded in the required fire protection of a structural member that is required to be individually encased; except that pipes, wires, and conduits may be installed in the space between the required fire protection and the structural member protected, provided that where such facilities pierce the required fire protection, the area of the penetration does not exceed two percent of the area of the fire protection on any one face, the penetrations are closed off with close-fitting metal escutcheons or plates, and the concealed space shall be firestopped at each story.

714.4 Impact protection. Where the fire protective covering of a structural member is subject to impact damage from moving vehicles, the handling of merchandise or other activity, the fire protective covering shall be protected by corner guards or by a substantial jacket of metal or other noncombustible material to a height adequate to provide full protection, but not less than 5 feet (1524 mm) from the finished floor.

714.5 Exterior structural members. Load-bearing structural members located within the exterior walls or exposed to the outdoors shall be provided with the highest fire-resistance rating as determined in accordance with the following:

1. As required by Table 601 for the type of building element based on the type of construction of the building; and
2. As required by Table 601 for exterior bearing walls based on the type of construction; and
3. As required by Table 602 for exterior walls based on the fire separation distance.

714.6 Lintel protection. Lintels over openings wider than 4 feet (1219 mm) in masonry walls, other than in walls of masonry veneer on wood frame structures, shall be fire protected as required by Section 714.2, when the full load over the opening is not relieved by a masonry arch of required strength.

Exceptions:

1. The members of an assembled metal lintel that support only outer face masonry that is securely bonded or anchored to backing need not be fire protected, provided that the inner members of the assembly support the full load imposed.
2. The use of stone lintels in spans exceeding 4 feet (1219 mm) shall not be permitted unless supplemented by fire protected structural members or masonry arches of the required strength to support the superimposed loads.

714.7 Seismic isolation systems. Fire-resistance ratings for the isolation system shall meet the fire-resistance rating required for the columns, walls, or other structural elements in which the isolation system is installed in accordance with Table 601.

Isolation systems required to have a fire-resistance rating shall be protected with approved materials or construction assemblies designed to provide the same degree of fire resistance as the structural element in which it is installed when tested in accordance with ASTM E 119 (see Section 703.2).

Such isolation system protection applied to isolator units shall be capable of retarding the transfer of heat to the isolator unit in such a manner that the required gravity load-carrying capacity of the isolator unit will not be impaired

after exposure to the standard time-temperature curve fire test prescribed in ASTM E 119 for a duration not less than that required for the fire resistance rating of the structure element in which it is installed.

Such isolation system protection applied to isolator units shall be suitably designed and securely installed so as not to dislodge, loosen, sustain damage, or otherwise impair its ability to accommodate the seismic movements for which the isolator unit is designed and to maintain its integrity for the purpose of providing the required fire-resistance protection.



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SECTION BC 715: OPENING PROTECTIVES

NYC Administrative Code § 28-BC 715

715.1 General.

Opening protectives required by other sections of this code shall comply with the provisions of this section.

715.2 Fire-resistance-rated glazing. Labeled fire-resistance-rated glazing tested as part of a fire-resistance-rated wall assembly in accordance with ASTM E 119 shall not be required to comply with this section.

715.3 Fire door and shutter assemblies. Approved fire door and fire shutter assemblies shall be constructed of any material or assembly of component materials that conforms to the test requirements of Section 715.3.1, 715.3.2 or 715.3.3 and the fire protection rating indicated in Table 715.3. Fire door assemblies and shutters shall be installed in accordance with the provisions of this section and NFPA 80.

Exceptions:

1. Labeled protective assemblies that conform to the requirements of this section or UL 10A, UL 14B and UL 14C for tin-clad fire door assemblies.

2. Floor fire doors shall comply with Section 712.4.6. Table 715.3 Fire Door and Fire Shutter Fire Protection Ratings

Type of Assembly	Required Assembly Rating (hours)	Minimum Fire Door and Fire Shutter Assembly Rating (hours)
Fire walls and fire barriers having a required fire-resistance rating greater than 1 hour	4 3 2 1 1/2 3 3a 1 1/2 1 1/2	
Fire barriers having a required fire-resistance rating of 1 hour:		

Shaft exit enclosure and exit

passageway walls 1

Other fire barriers 1 3/4 Fire partitions:

Corridor walls^{1 3/4}

Other partitions^{1 3/4} Exterior walls^{3 2 1 11/2 11/2 3/4} a. Two doors, each with a fire protection rating of 1 1/2-hours, installed on opposite sides of the same opening in a fire wall, shall be deemed equivalent in fire protection rating to one 3-hour fire door.

715.3.1 Side-hinged or pivoted swinging doors. Side-hinged and pivoted swinging doors shall be tested in accordance with NFPA 252 or UL 10C. After 5 minutes into the NFPA 252 test, the neutral pressure level in the furnace shall be established at 40 inches (1016 mm) or less above the sill.

715.3.2 Other types of doors. Other types of doors, including swinging elevator doors, shall be tested in accordance with NFPA 252 or UL 10B. The pressure in the furnace shall be maintained as nearly equal to the atmospheric pressure as possible. Once established, the pressure shall be maintained during the entire test period.

715.3.3 Door assemblies in corridors and smoke barriers. Fire door assemblies located in corridor walls or smoke barrier walls having a fire-resistance rating in accordance with Table 715.3 shall be tested in accordance with NFPA 252 or UL 10C. Glazing material in any part of the door assembly, including transom lites and sidelites, shall be tested in accordance with NFPA 257 in accordance with Section 715.4. Fire door assemblies shall also meet the requirements for a smoke- and draft-control door assembly tested in accordance with UL 1784 with an artificial bottom seal installed across the full width of the bottom of the door assembly. The air leakage rate of the door assembly shall not exceed 3.0 cfm per square foot (0.01524 m³/s/m²) of door opening at 0.10 inch (24.9 Pa) of water for both the ambient temperature and elevated temperature tests. Louvers shall be prohibited.

Exceptions:

1. Viewports that require a hole not larger than 1 inch (25 mm) in diameter through the door, have at least an 0.25-inch-thick (6.4 mm) glass disc and the holder is of metal that will not melt out where subject to temperatures of 1,700(degrees)F (927(degrees)C).

2. Corridor door assemblies in occupancies of Group I-2 shall be in accordance with Section 407.3.1.

715.3.4 Doors in vertical exit enclosures and exit passageways. Fire door assemblies in vertical exit enclosures and exit passageways shall have a maximum transmitted temperature end point of not more than 450(degrees)F (232(degrees)C) above ambient at the end of 30 minutes of standard fire test exposure.

Exception: The maximum transmitted temperature end point is not required in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

715.3.4.1 Glazing in doors. Fire-protection-rated glazing in excess of 100 square inches (0.065 m²) shall be permitted in fire door assemblies when tested in accordance with NFPA 252 as components of the door assemblies and not as glass lights, and shall have a maximum transmitted temperature end point of 450(degrees)F (232(degrees)C) in accordance with Section 715.3.4.

Exception: The maximum transmitted temperature end point is not required in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

715.3.5 Labeled protective assemblies. Fire door assemblies shall be labeled by an approved agency. The labels shall comply with NFPA 80, and shall be permanently affixed to the door or frame.

715.3.5.1 Fire door labeling requirements. Fire doors shall be labeled showing the name of the manufacturer, the name of the third-party inspection agency, the fire protection rating and, where required for fire doors in exit enclosures by Section 715.3.4, the maximum transmitted temperature end point. Smoke and draft control doors complying with UL

1784 shall be labeled as such. Labels shall be approved and permanently affixed. The label shall be applied at the factory or location where fabrication and assembly are performed.

715.3.5.2Oversized doors.Oversized fire doors shall bear an oversized fire door label by an approved agency or shall be provided with a certificate of inspection furnished by an approved testing agency. When a certificate of inspection is furnished by an approved testing agency, the certificate shall state that the door conforms to the requirements of design, materials and construction, but has not been subjected to the fire test.

715.3.5.3Smoke and draft control door labeling requirements.Smoke and draft control doors complying with UL 1784 shall be labeled in accordance with Section 715.3.5.1 and shall show the letter "S" on the fire rating label of the door. This marking shall indicate that the door and frame assembly are in compliance when listed or labeled gasketing is also installed.

715.3.5.4Fire door frame labeling requirements.Fire door frames shall be labeled showing the names of the manufacturer and the third-party inspection agency.

715.3.6Glazing material.Fire-protection-rated glazing conforming to the opening protection requirements in Section 715.3 shall be permitted in fire door assemblies.

715.3.6.1Size limitations.Wired glass used in fire doors shall comply with Table 715.4.3. Other fire-protection-rated glazing shall comply with the size limitations of NFPA 80.

Exceptions:

1. Fire-protection-rated glazing in fire doors located in fire walls shall be prohibited except that where serving as a horizontal exit, a self-closing swinging door shall be permitted to have a vision panel of not more than 100 square inches (0.065 m²) without a dimension exceeding 10 inches (254 mm).

2. Fire-protection-rated glazing shall not be installed in fire doors having a 1 1/2-hour fire protection rating intended for installation in fire barriers, unless the glazing is not more than 100 square inches (0.065 m²) in area.

715.3.6.2Exit and elevator protectives.Approved fire-protection-rated glazing used in fire doors in elevator and stairway shaft enclosures shall be so located as to furnish clear vision of the passageway or approach to the elevator or stairway.

715.3.6.3Labeling.Fire-protection-rated glazing shall bear a label or other identification showing the name of the manufacturer, the test standard and the fire protection rating. Such label or other identification shall be issued by an approved agency and shall be permanently affixed.

715.3.6.4Safety glazing.Fire-protection-rated glazing installed in fire doors or fire window assemblies in areas subject to human impact in hazardous locations shall comply with Chapter 24.

715.3.7Door closing.Fire doors shall be self-closing or automatic-closing in accordance with this section.

Exception: Fire doors located in common walls separating sleeping units in Group R-1 shall be permitted without automatic-closing or self-closing devices.

715.3.7.1Latch required.Unless otherwise specifically permitted, single fire doors and both leaves of pairs of side-hinged swinging fire doors shall be provided with an active latch bolt that will secure the door when it is closed.

715.3.7.2Automatic-closing fire door assembliesAutomatic-closing fire door assemblies shall be self-closing in accordance with NFPA 80.

715.3.7.3 Smoke-activated doors. Automatic-closing fire doors installed in the following locations shall be automatic-closing by the actuation of smoke detectors installed in accordance with Section 907.10 or by loss of power to the smoke detector or hold-open device. Fire doors that are automatic-closing by smoke detection shall not have more than a 10-second delay before the door starts to close after the smoke detector is actuated.

1. Doors installed across a corridor.
2. Doors that protect openings in horizontal exits, exits or exit access corridors required to be of fire-resistance-rated construction.
3. Doors that protect openings in walls required to be fire-resistance rated by Table 508.2.
4. Doors installed in smoke barriers in accordance with Section 709.5.
5. Doors installed in fire partitions in accordance with Section 708.6.
6. Doors installed in a fire wall in accordance with Section 705.8.

715.3.7.4 Doors in pedestrian ways. Vertical sliding or vertical rolling steel fire doors in openings through which pedestrian's travel shall be heat activated or activated by smoke detectors with alarm verification.

715.3.8 Swinging fire shutters. Where fire shutters of the swinging type are installed in exterior openings, not less than one row in every three vertical rows shall be arranged to be readily opened from the outside, and shall be identified by distinguishing marks or letters not less than 6 inches (152 mm) high.

715.3.9 Rolling fire shutters. Where fire shutters of the rolling type are installed, such shutters shall include approved automatic-closing devices.

715.4 Fire-protection rated glazing. Glazing in fire window assemblies shall be fire protection rated in accordance with this section and Table 715.4. Glazing in fire doors shall comply with Section 715.3.6. Fire-protection-rated glazing installed as an opening protective in fire partitions, smoke barriers and fire barriers shall be tested in accordance with and shall meet the acceptance criteria of NFPA 257 for a fire protection rating of 45 minutes. Fire-protection-rated glazing shall also comply with NFPA 80. Fire-protection-rated glazing required in accordance with Section 704.12 for exterior wall opening protection shall be tested in accordance with and shall meet the acceptance criteria of NFPA 257 for a fire protection rating as required in Section 715.4.8.

Exception: Wired glass in accordance with Section 715.4.3. Table 715.4 Fire Window Assembly Fire Protection Ratings Type of Assembly Required Assembly Rating (hours) Minimum Fire Window Assembly Rating (hours)

Interior walls:

Fire walls All NPa

Fire barriers and fire partitions; mt 1 NPa 1 3/4

Smoke barriers 1 3/4 Exterior walls; mt 1 1 1/2 3/4 Party walls All Npa a. Not permitted except as specified in Section 715.2.

715.4.1 Testing under positive pressure. NFPA 257 shall evaluate fire-protection-rated glazing under positive pressure. Within the first 10 minutes of a test, the pressure in the furnace shall be adjusted so at least two-thirds of the test specimen is above the neutral pressure plane, and the neutral pressure plane shall be maintained at that height for the balance of the test.

715.4.2 Nonsymmetrical glazing systems. Nonsymmetrical fire-protection-rated glazing systems in fire partitions,

fire barriers or in exterior walls with a fire separation of 5 feet (1524 mm) or less pursuant to Section 704 shall be tested with both faces exposed to the furnace, and the assigned fire protection rating shall be the shortest duration obtained from the two tests conducted in compliance with NFPA 257.

715.4.3Wired glass.Steel window frame assemblies of 0.125-inch (3.2 mm) minimum solid section or of not less than nominal 0.048-inch-thick (1.2 mm) formed sheet steel members fabricated by pressing, mitering, riveting, interlocking or welding and having provision for glazing with 1/4-inch (6.4 mm) wired glass where securely installed in the building construction and glazed with 1/4-inch (6.4 mm) labeled wired glass shall be deemed to meet the requirements for a 3/4-hour fire window assembly. Wired glass panels shall conform to the size limitations set forth in Table 715.4.3. Table 715.4.3 Fire Door and Fire Shutter Fire Protection Ratings Opening Fire Protection Rating Maximum Area (square inches) Maximum Height (inches) Maximum Width (inches) 3 hours0 0 0 1 1 1/2-hour doors in exterior walls0 0 0 1 and 1 1/2 hours100 33 10 3/4 hours1,296 54 54 Fire window assemblies1,296 54 54 For SI: 1 inch = 25.4 mm, 1 square inch = 645.2 mm²

715.4.4Nonwired glass.Glazing other than wired glass in fire window assemblies shall be fire-protection-rated glazing installed in accordance with and complying with the size limitations set forth in NFPA 80.

715.4.5Installation.Fire-protection-rated glazing shall be in the fixed position or be automatic-closing and shall be installed in approved frames.

715.4.6Window mullions.Metal mullions that exceed a nominal height of 12 feet (3658 mm) shall be protected with materials to afford the same fire-resistance rating as required for the wall construction in which the protective is located.

715.4.7Interior fire window assemblies.Fire-protection-rated glazing used in fire window assemblies located in fire partitions and fire barriers shall be limited to use in assemblies with a maximum fire-resistance rating of 1 hour in accordance with this section.

715.4.7.1Where permitted.Fire-protection-rated glazing shall be limited to fire partitions designed in accordance with Section 708 and fire barriers utilized in the applications set forth in Sections 706.3.5 and 706.3.6 where the fire-resistance rating does not exceed 1 hour.

715.4.7.2Size limitations.The total area of windows shall not exceed 25 percent of the area of a common wall with any room.

715.4.8Exterior fire window assemblies.Exterior openings, other than doors, required to be protected by Section 704.12, where located in a wall required by Table 602 to have a fire-resistance rating of greater than 1 hour, shall be protected with an assembly having a fire protection rating of not less than 1 1/2 hours. Exterior openings required to be protected by Section 704.8, where located in a wall required by Table 602 to have a fire-resistance rating of 1 hour, shall be protected with an assembly having a fire protection rating of not less than 3/4 hour. Exterior openings required to be protected by Section 704.9 or 704.10 shall be protected with an assembly having a fire protection rating of not less than 3/4 hour. Openings in nonfire-resistance-rated exterior wall assemblies that require protection in accordance with Section 704.8, 704.9 or 704.10 shall have a fire protection rating of not less than 3/4 hour.

715.4.9Labeling requirements.Fire-protection-rated glazing shall bear a label or other identification showing the name of the manufacturer, the test standard, and the fire protection rating. Such label or identification shall be issued by an approved agency and shall be permanently affixed.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

715.3.7.3 item 3 amended L.L. 8/2008 § 97, eff. July 1, 2008.

715.4 amended (table 715.4 not amended) L.L. 8/2008 § 98, eff. July 1, 2008.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 716: DUCTS AND AIR TRANSFER OPENINGS

NYC Administrative Code § 28-BC 716

716.1 General.

The provisions of this section shall govern the protection of ducts and air transfer openings in fire-resistance-rated assemblies.

716.1.1 Ducts and air transfer openings without dampers. Ducts and air transfer openings that penetrate fire-resistance-rated assemblies and are not required by this section to have dampers shall comply with the requirements of Section 712.

716.2 Installation. Fire dampers, smoke dampers, combination fire/smoke dampers and ceiling dampers located within air distribution and smoke control systems shall be installed in accordance with the requirements of this section, the New York City Mechanical Code, the manufacturer's installation instructions and listing.

716.2.1 Smoke control system. Where the installation of a fire damper will interfere with the operation of a required smoke control system in accordance with Section 909, approved alternative protection shall be utilized.

716.2.1.1 Remote control. Provisions for operation by remote control of combination fire/smoke dampers shall be in accordance with Section 607.3.1.1 of the New York City Mechanical Code.

716.2.2 Hazardous exhaust ducts. Fire dampers for hazardous exhaust duct systems shall comply with the New York City Mechanical Code.

716.2.3 Supply air systems. Smoke dampers in supply airhandling systems having a capacity equal to or greater than 15,000 cfm (7.1 m³/s) shall be installed in accordance with Section 607.2.3 of the New York City Mechanical Code.

716.3 Damper testing and ratings. Dampers shall be listed and bear the label of an approved testing agency indicating compliance with the standards in this section. Fire dampers shall comply with the requirements of UL 555. Only fire dampers labeled for use in dynamic systems shall be installed in heating, ventilation and air-conditioning

systems designed to operate with fans on during a fire. Smoke dampers shall comply with the requirements of UL 555S. Combination fire/smoke dampers shall comply with the requirements of both UL 555 and UL 555S. Ceiling radiation dampers shall comply with the requirements of UL 555C.

716.3.1 Fire protection rating. Fire dampers shall have the minimum fire protection rating specified in Table 716.3.1 for the type of penetration. Table 716.3.1 Fire Damper Rating Type of Penetration Minimum Damper Rating (hour) Less than 3-hour fire-resistance-rated assemblies 1.5 3-hour or greater fire-resistance-rated assemblies 3

716.3.1.1 Fire damper actuating device. The fire damper actuating device shall meet one of the following requirements:

1. The operating temperature shall be approximately 50(degrees)F (10(degrees)C) above the normal temperature within the duct system, but not less than 160(degrees)F (71(degrees)C).
2. The operating temperature shall be not more than 286(degrees)F (141(degrees)C) where located in a smoke control system complying with Section 909.
3. Where a combination fire/smoke damper is located in a smoke control system complying with Section 909, the operating temperature rating shall be approximately 50(degrees)F (10(degrees)C) above the maximum smoke control system designed operating temperature, or a maximum temperature of 350(degrees)F (177(degrees)C). The temperature shall not exceed the UL 555S degradation test temperature rating for a combination fire/smoke damper.

716.3.2 Smoke damper ratings. Smoke damper leakage ratings shall not be less than Class II. Elevated temperature ratings shall not be less than 250(degrees)F (121(degrees)C).

716.3.2.1 Smoke damper actuation methods. The smoke damper shall close upon actuation of a listed smoke detector or detectors installed in accordance with Section 907.10 and one of the following methods, as applicable:

1. Where a damper is installed within a duct, a smoke detector shall be installed in the duct within 5 feet (1524 mm) of the damper with no air outlets or inlets between the detector and the damper. The detector shall be listed for the air velocity, temperature and humidity anticipated at the point where it is installed. Other than in mechanical smoke control systems, dampers shall be closed upon fan shutdown where local smoke detectors require a minimum velocity to operate.
2. Where a damper is installed above smoke barrier doors in a smoke barrier, a spot-type detector listed for releasing service shall be installed on either side of the smoke barrier door opening.
3. Where a damper is installed within an unducted opening in a wall, a spot-type detector listed for releasing service shall be installed within 5 feet (1524 mm) horizontally of the damper.
4. Where a damper is installed in a corridor wall, the damper shall be permitted to be controlled by a smoke detection system installed in the corridor.
5. Where a total-coverage smoke detector system is provided within areas served by a heating, ventilation and air-conditioning (HVAC) system, dampers shall be permitted to be controlled by the smoke detection system.
6. Smoke dampers that are part of an engineered smoke control system shall be controlled in accordance with Section 607.3.2.1 of the New York City Mechanical Code.

716.4 Access and identification. Fire and smoke dampers shall be provided with an approved means of access, large enough to permit inspection and maintenance of the damper and its operating parts. The access shall not affect the integrity of fire-resistance-rated assemblies. The access openings shall not reduce the fire-resistance rating of the assembly. Access points shall be permanently identified on the exterior by a label having letters not less than 0.5 inch

(12.7 mm) in height reading: SMOKE DAMPER or FIRE DAMPER followed by an identification marking that is individual and unique to the damper accessed.

716.5 Where required. Fire dampers, smoke dampers, combination fire/smoke dampers and ceiling radiation dampers shall be provided as specified in this section. Where an assembly is required to have both fire dampers and smoke dampers, combination fire/smoke dampers or a fire damper and a smoke damper shall be required.

Exceptions:

1. Smoke dampers shall not be required on air systems other than where necessary for the proper function of that system where the system is designed specifically to:

1.1. Function as an engineered smoke-control system, including the provision of continuous air movement with the air-handling system;

1.2. Provide air to other areas of the building during a fire emergency; or

1.3. Provide pressure differentials during a fire emergency.

2. Smoke dampers shall not be required to be located within a prescribed distance of a fire rated enclosure where isolation smoke dampers are used in air-handling equipment.

3. Smoke dampers shall not be required in ducts where the air continues to move and the air-handling system installed is arranged to prevent recirculation of exhaust or return air under fire emergency conditions

716.5.1 Fire walls. Ducts and air transfer openings permitted in fire walls in accordance with Section 705.11 shall be protected with approved fire dampers and smoke dampers installed in accordance with their listing.

716.5.2 Fire barriers. Duct and air transfer openings of fire barriers shall be protected with approved fire dampers installed in accordance with their listing. In addition, smoke dampers shall be installed in penetrations of public corridor walls in accordance with Section 716.5.4.1.

Exception: Fire dampers are not required at penetrations of fire barriers where any of the following apply:

1. Penetrations are tested in accordance with ASTM E 119 as part of the fire-resistance-rated assembly.

2. Ducts are used as part of an approved smoke control system in accordance with Section 716.2.1 and Section 909.

3. Such walls are penetrated by ducted HVAC systems, have a required fire-resistance rating of 1 hour or less, are in areas of other than Group H and are in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than 26 gage thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals.

716.5.2.1 Public corridors. A listed smoke damper designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a public corridor wall constructed as a fire barrier.

Exceptions:

1. Smoke dampers are not required where the building is equipped throughout with an approved smoke control system in accordance with Section 909, and smoke dampers are not necessary for the operation and control of the system.

2. Smoke dampers are not required in corridor penetrations where the duct is constructed of steel not less than 0.019-inch (0.48 mm) in thickness and there are no openings serving the corridor.

3. Smoke dampers are not required in corridor penetrations in Group R-2 buildings and spaces.

716.5.3 Shaft enclosures. Ducts and air transfer openings shall not penetrate a shaft serving as an exit enclosure except as permitted by Section 1019.1.2.

716.5.3.1 Penetrations of shaft enclosures. Shaft enclosures that are permitted to be penetrated by ducts and air transfer openings shall be protected with approved fire and smoke dampers installed in accordance with their listing.

Exceptions:

1. Fire dampers are not required at penetrations of shafts where:

1.1. Steel exhaust subducts are extended at least 22 inches (559 mm) vertically in exhaust shafts provided there is a continuous airflow upward to the outside, or

1.2. Penetrations are tested in accordance with ASTM E 119 as part of the rated assembly, or

1.3. Ducts are used as part of an approved smoke control system designed and installed in accordance with Section 909, and where the fire damper will interfere with the operation of the smoke control system, or

1.4. The penetrations are in parking garage exhaust or supply shafts that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.

2. In Group B occupancies, equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, smoke dampers are not required at penetrations of shafts where:

2.1. Bathroom and toilet room exhaust openings with steel exhaust subducts, having a wall thickness of at least 0.019 inches (0.48 mm) that extend at least 22 inches (559 mm) vertically and the exhaust fan at the upper terminus, powered continuously in accordance with the provisions of Section 909.11, maintains airflow upward to the outside, or

2.2. Ducts are used as part of an approved smoke control system, designed and installed in accordance with Section 909, and where the smoke damper will interfere with the operation of the smoke control system, or

3. Smoke dampers are not required at penetration of exhaust or supply shafts in parking garages that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.

4. Fire dampers and smoke dampers shall not be required at a shaft where the shaft is acting as an extension of the mechanical equipment room that it serves and the shaft and mechanical equipment room maintain fire and smoke separation required by the greater of the two spaces from the occupied portions of the building and meet the requirements of Section 707.11.

5. Smoke dampers shall not be required to be located within a prescribed distance of a fire rated enclosure where isolation smoke dampers are used in air-handling equipment.

6. Smoke dampers shall not be required in ducts where the air continues to move and the air-handling system installed is arranged to prevent recirculation of exhaust or return air under fire emergency conditions.

7. Smoke dampers shall not be required in exhaust ducts or shafts where the exhaust fan is maintained in operation during occupancy, such as in bathroom and toilet room exhausts.

716.5.3.2 Limitations. Shafts that constitute air ducts shall be limited in accordance with Section 607.5.5.2 of the New York City Mechanical Code.

716.5.4 Fire partitions. Duct penetrations in fire partitions shall be protected with approved fire dampers installed in accordance with their listing.

Exceptions: In occupancies other than Group H, fire dampers are not required where any of the following apply:

1. The partitions are tenant separation and interior corridor walls in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and the duct is protected as a through penetration in accordance with Section 712.

2. The duct system is constructed of approved materials in accordance with the New York City Mechanical Code and the duct penetrating the wall meets all of the following minimum requirements:

2.1. The duct shall not exceed 100 square inches (0.06 m²).

2.2. The duct shall be constructed of steel a minimum of 0.0217 inch (0.55 mm) in thickness.

2.3. The duct shall not have openings that communicate the corridor with adjacent spaces or rooms.

2.4. The duct shall be installed above a ceiling.

2.5. The duct shall not terminate at a wall register in the fire-resistance-rated wall.

2.6. A minimum 12-inch-long (0.30 m) by 0.060-inch-thick (1.52 mm) steel sleeve shall be centered in each duct opening. The sleeve shall be secured to both sides of the wall and all four sides of the sleeve with minimum 1 1/2-inch by 1 1/2-inch by 0.060-inch (0.038 m by 0.038 m by 1.52 mm) steel retaining angles. The retaining angles shall be secured to the sleeve and the wall with No. 10 (M5) screws. The annular space between the steel sleeve and wall opening shall be filled with rock (mineral) wool batting or approved equivalent on all sides.

716.5.5 Smoke barriers. A listed smoke damper designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a smoke barrier. Smoke dampers and smoke damper actuation methods shall comply with Section 716.3.2.1.

Exception: Smoke dampers are not required where the openings in ducts are limited to a single smoke compartment and the ducts are constructed of steel.

716.6 Horizontal assemblies. Penetrations by ducts and air transfer openings of a floor, floor/ceiling assembly or the ceiling membrane of a roof/ceiling assembly shall be protected by a shaft enclosure that complies with Section 707 or shall comply with this section.

716.6.1 Through penetrations. In occupancies other than Groups I-2 and I-3, a duct and air transfer opening system constructed of approved materials in accordance with the New York City Mechanical Code that penetrates a fire-resistance-rated floor/ceiling assembly that connects not more than two stories is permitted without shaft enclosure protection provided a fire damper is installed at the floor line and the penetration is fire blocked in accordance with Section 717.2.5.

Exception: A duct serving a dwelling unit is permitted to penetrate three floors or less without a fire damper at each floor provided it meets all of the following requirements.

1. The duct shall be contained and located within the cavity of a wall and shall be constructed of steel not less than 0.019 inch (0.48 mm) (26 gage) in thickness.

2. The duct shall open into only one dwelling unit and the duct system shall be continuous from the unit to the exterior of the building.

3. The duct shall not exceed 5-inch (127 mm) nominal diameter and the total area of such ducts shall not exceed 100 square inches (0.065 m²) in any 100 square feet (9.3 m²) of floor area.

4. The annular space around the duct is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 time-temperature conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.

5. Grille openings located in a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be protected with a ceiling radiation damper in accordance with Section 716.6.2.

716.6.2 Membrane penetrations. Where duct systems constructed of approved materials in accordance with the New York City Mechanical Code penetrate a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly, shaft enclosure protection is not required provided an approved ceiling radiation damper and firestopping is installed at the ceiling line. Where a duct is not attached to a diffuser that penetrates a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly, shaft enclosure protection is not required provided an approved ceiling radiation damper and firestopping is installed at the ceiling line. Ceiling radiation dampers shall be tested in accordance with UL 555C and constructed in accordance with the details listed in a fire-resistance-rated assembly or shall be labeled to function as a heat barrier for air-handling outlet/inlet penetrations in the ceiling of a fire-resistance-rated assembly. Ceiling radiation dampers shall not be required where ASTM E 119 fire tests have shown that ceiling radiation dampers are not necessary in order to maintain the fire-resistance rating of the assembly. Ceiling radiation dampers shall not be required where exhaust duct penetrations are protected in accordance with Section 712.4.2 and the exhaust ducts are located within the cavity of a wall, and do not pass through another dwelling unit or tenant space.

716.6.3 Non-fire-resistance-rated assemblies. Duct systems constructed of approved materials in accordance with the New York City Mechanical Code that penetrate non-fire-resistance-rated floor assemblies and that connect not more than two stories are permitted without shaft enclosure protection provided that the annular space between the assembly and the penetrating duct is filled with an approved noncombustible material to resist the free passage of flame and the products of combustion. Duct systems constructed of approved materials in accordance with the New York City Mechanical Code that penetrate non-fire-resistance-rated floor assemblies and that connect not more than three stories are permitted without shaft enclosure protection provided that the annular space between the assembly and the penetrating duct is filled with an approved noncombustible material to resist the free passage of flame and the products of combustion, and a fire damper is installed at each floor line.

Exception: Fire dampers are not required in ducts within individual residential dwelling units.

716.7 Flexible ducts and air connectors. Flexible ducts and air connectors shall not pass through any fire-resistance-rated assembly. Flexible air connectors shall not pass through any wall, floor or ceiling.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

716.5.3 amended L.L. 8/2008 § 99, eff. July 1, 2008.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
 Title 28: NEW YORK CITY CONSTRUCTION CODES**
 CHAPTER 7: THE NEW YORK CITY BUILDING CODE
 Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
 SECTION BC 717: CONCEALED SPACES

NYC Administrative Code § 28-BC 717

717.1 General.

Fire blocking and draft stopping shall be installed in combustible and noncombustible concealed locations in accordance with this section. Fire blocking shall comply with Section 717.2. Draft stopping in floor/ceiling spaces and attic spaces shall comply with Sections 717.3 and 717.4, respectively. The permitted use of combustible materials in concealed spaces of noncombustible buildings shall be limited to the applications indicated in Section 717.5. Installations of fire blocking and draft stopping shall comply with the special inspection requirements of Chapter 17.

Exception: Concealed spaces that are sprinklered in accordance with Chapter 9 or are constructed as a shaft.

717.2 Fire blocking. In combustible and noncombustible construction, fire blocking shall be installed to cut off concealed draft openings (both vertical and horizontal) and shall form an effective barrier between floors, between a top story and a roof or attic space. Fire blocking shall be installed in the locations specified in Sections 717.2.2 through 717.2.7.

717.2.1 Fire blocking materials. Fire blocking shall consist of 2-inch (51 mm) nominal lumber or two thicknesses of 1-inch (25 mm) nominal lumber with broken lap joints or one thickness of 0.719-inch (18.3 mm) wood structural panel with joints backed by 0.719-inch (18.3 mm) wood structural panel or one thickness of 0.75-inch (19 mm) particleboard with joints backed by 0.75-inch (19 mm) particleboard. Gypsum board, cement fiber board, batts or blankets of mineral wool or glass fiber or other approved materials installed in such a manner as to be securely retained in place shall be permitted as an acceptable fire block. Batts or blankets of mineral or glass fiber or other approved nonrigid materials shall be permitted for compliance with the 10-foot (3048 mm) horizontal fire blocking in walls constructed using parallel rows of studs or staggered studs. Loose-fill insulation material shall not be used as a fire block unless specifically tested in the form and manner intended for use to demonstrate its ability to remain in place and to retard the spread of fire and hot gases. The integrity of fire blocks shall be maintained.

717.2.1.1 Double stud walls. Batts or blankets of mineral or glass fiber or other approved nonrigid materials shall be

allowed as fire blocking in walls constructed using parallel rows of studs or staggered studs.

717.2.2 Concealed wall spaces. Fire blocking shall be provided in concealed spaces of stud walls and partitions, including furred spaces, and parallel rows of studs or staggered studs, as follows:

1. Vertically at the ceiling and floor levels.
2. Horizontally at intervals not exceeding 10 feet (3048 mm).

717.2.3 Connections between horizontal and vertical spaces. Fire blocking shall be provided at interconnections between concealed vertical stud wall or partition spaces and concealed horizontal spaces created by an assembly of floor joists or trusses, and between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings, cove ceilings and similar locations.

717.2.4 Stairways. Fire blocking shall be provided in concealed spaces between stair stringers at the top and bottom of the run. Enclosed spaces under stairs shall also comply with Section 1019.1.5.

717.2.5 Ceiling and floor openings. Where annular space protection is provided in accordance with Exception 6 of Section 707.2, Exception 1 of Section 712.4.2, or Section 712.4.3, fire blocking shall be installed at openings around vents, pipes, ducts, chimneys and fireplaces at ceiling and floor levels, with an approved material to resist the free passage of flame and the products of combustion. Factory-built chimneys and fireplaces shall be fire blocked in accordance with UL 103 and UL 127.

717.2.6 Architectural trim. Fire blocking shall be installed within concealed spaces of exterior wall finish and other exterior architectural elements where permitted to be of combustible construction in Section 1406 or where erected with combustible frames, at maximum intervals of 20 feet (6096 mm). If non-continuous, such elements shall have closed ends, with at least 4 inches (102 mm) of separation between sections.

Exceptions:

1. Fire blocking of cornices is not required in single-family dwellings. Fire blocking of cornices of a two-family dwelling is required only at the line of dwelling unit separation.

2. Fire blocking shall not be required where installed on noncombustible framing and the face of the exterior wall finish exposed to the concealed space is covered by one of the following materials:

- 2.1. Aluminum having a minimum thickness of 0.019 inch (0.5 mm).
- 2.2. Corrosion-resistant steel having a base metal thickness not less than 0.016 inch (0.4 mm) at any point.
- 2.3. Other approved noncombustible materials.

717.2.7 Concealed sleeper spaces. Where wood sleepers are used for laying wood flooring on masonry or concrete fire-resistance-rated floors, the space between the floor slab and the underside of the wood flooring shall be filled with an approved material to resist the free passage of flame and products of combustion or fire blocked in such a manner that there will be no open spaces under the flooring that will exceed 20 square feet (1.86 m²) in area and such space shall be filled solidly under permanent partitions so that there is no communication under the flooring between adjoining rooms.

Exceptions:

1. Fire blocking is not required for slab-on-grade floors in gymnasiums.

2. Fire blocking is required only at the juncture of each alternate lane and at the ends of each lane in a bowling facility.

717.3Draft stopping in floors.In combustible and noncombustible construction, draft stopping shall be installed to subdivide floor/ceiling assemblies in the locations prescribed in Sections 717.3.2 through 717.3.3.

717.3.1Draft stopping materials.In noncombustible construction, draft stopping shall be of noncombustible materials. In combustible construction, draft stopping materials shall not be less than 0.5-inch (12.7 mm) gypsum board, 0.375-inch (9.5 mm) wood structural panel, 0.375-inch (9.5 mm) particleboard or other approved materials adequately supported. The integrity of draft stops shall be maintained.

717.3.2Group R.Draft stopping shall be provided in floor/ceiling spaces in Group R buildings. Draft stopping shall be located above and in line with the dwelling unit separations.

Exceptions:

1. Draft stopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

2. Draft stopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.2, provided that automatic sprinklers are also installed in the combustible concealed spaces.

3. Where laminated wood I-joist assemblies are used, the space between the ceiling and the floor or roof above shall be divided into approximately equal areas not greater than 500 square feet (46.5 m²).

4. Draft stopping shall not be required where the structural members within the concealed ceiling space are individually protected on all sides for their full length with materials having the required fire resistance rating.

717.3.3Other groups.In occupancies other than Group R, draft stopping shall be installed so that horizontal floor areas do not exceed 3,000 square feet (279 m²).

Exceptions:

1. Draft stopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

2. Draft stopping shall not be required where the structural members within the concealed ceiling space are individually protected on all sides for their full length with materials having the required fire resistance rating.

717.4Draft stopping in attics.In combustible and noncombustible construction, draft stopping shall be installed to subdivide attic spaces and concealed roof spaces in the locations prescribed in Sections 717.4.2 and 717.4.3. Ventilation of concealed roof spaces shall be maintained in accordance with Section 1203.2.

717.4.1Draft stopping materials.Materials utilized for draft stopping of attic spaces shall comply with Section 717.3.1.

717.4.1.1Openings.Openings in draft stop partitions provided in accordance with Section 1209.2 shall be protected by self-closing doors with automatic latches constructed as required for the partitions.

717.4.2Groups R-1 and R-2.Draft stopping shall be provided in attics, mansards, overhangs or other concealed roof spaces of Group R-2 buildings with three or more dwelling units and in all Group R-1 buildings. Draft stopping shall be installed above, and in line with, dwelling unit separation walls that do not extend to the underside of the roof sheathing above.

Exceptions:

1. Draft stopping shall not be required where the structural members within the concealed attic space are individually protected on all sides for their full length with materials having the required fire resistance rating.

2. Draft stopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

3. In occupancies in Group R-2 that do not exceed four stories in height, the attic space shall be subdivided by draft stops into areas not exceeding 3,000 square feet (279 m²) or above every two dwelling units, whichever is smaller.

4. Draft stopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.2, provided that automatic sprinklers are also installed in the combustible concealed spaces.

5. Where laminated wood I-joint assemblies are used, the space between the ceiling and the floor or roof above shall be divided into approximately equal areas not greater than 500 square feet (46.5 m²).

717.4.3 Other groups. Draft stopping shall be installed in attics and concealed roof spaces, such that any horizontal area does not exceed 3,000 square feet (279 m²).

Exceptions:

1. Draft stopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

2. Draft stopping shall not be required where the structural members within the concealed attic space are individually protected on all sides for their full length with materials having the required fire resistance rating.

3. Where laminated wood I-joint assemblies are used, the space between the ceiling and the floor or roof above shall be divided into approximately equal areas not greater than 500 square feet (46.5 m²).

717.5 Combustibles in concealed spaces in Type I or II construction. Combustibles shall not be permitted in concealed spaces of buildings of Type I or II construction.

Exceptions:

1. Combustible materials in accordance with Section 603.

2. Combustible materials complying with Section 602 of the New York City Mechanical Code.

3. Class A interior finish materials.

4. Combustible piping within partitions or enclosed shafts installed in accordance with the provisions of this code. Combustible piping shall be permitted within concealed ceiling spaces where installed in accordance with the New York City Mechanical Code and the New York City Plumbing Code.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 718: FIRE-RESISTANCE REQUIREMENTS FOR PLASTER

NYC Administrative Code § 28-BC 718

718.1 Thickness of plaster.

The minimum thickness of gypsum plaster or portland cement plaster used in a fire-resistance-rated system shall be determined by the prescribed fire tests. The plaster thickness shall be measured from the face of the lath where applied to gypsum lath or metal lath.

718.2Plaster equivalents.For fire-resistance purposes, 0.5 inch (12.7 mm) of unsanded gypsum plaster shall be deemed equivalent to 0.75 inch (19.1 mm) of one-to-three gypsum sand plaster or 1 inch (25 mm) of portland cement sand plaster.

718.3Noncombustible furring.In buildings of Type I and II construction, plaster shall be applied directly on concrete or masonry or on approved noncombustible plastering base and furring.

718.4Double reinforcement.Plaster protection more than 1 inch (25 mm) in thickness shall be reinforced with an additional layer of approved lath embedded at least 0.75 inch (19.1 mm) from the outer surface and fixed securely in place.

Exception: Solid plaster partitions or where otherwise determined by fire tests.

718.5Plaster alternatives for concrete.In reinforced concrete construction, gypsum plaster or portland cement plaster is permitted to be substituted for 0.5 inch (12.7 mm) of the required poured concrete protection, except that a minimum thickness of 0.375 inch (9.5 mm) of poured concrete shall be provided in reinforced concrete floors and 1 inch (25 mm) in reinforced concrete columns in addition to the plaster finish. The concrete base shall be prepared in accordance with Section 2510.7.



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SECTION BC 719: THERMAL- AND SOUND-INSULATING MATERIALS

NYC Administrative Code § 28-BC 719

719.1 General.

Insulating materials, including facings such as vapor retarders and vapor- permeable membranes, similar coverings, and all layers of single and multilayer reflective foil insulations, shall comply with the requirements of this section. Where a flame spread index or a smoke-development index is specified in this section, such index shall be determined in accordance with ASTM E 84. Any material that is subject to an increase in flame spread index or smoke-development index beyond the limits herein established through the effects of age, moisture, or other atmospheric conditions shall not be permitted. Fiberboard insulation shall comply with Chapter 23 and the requirements of this section. Foam plastic insulation shall comply with Chapter 26 and the requirements of this section. Duct and pipe coverings and linings in plenums shall comply with the New York City Mechanical Code.

Exceptions: Exterior Insulation Finish Systems (EIFS) shall comply with Chapter 14 and Chapter 26.

719.1.1 Noncombustible construction. Insulating materials used in noncombustible construction must either:

1. Satisfactorily pass a test for determining non-combustibility of elementary materials, based on the test procedures of ASTM E 136; or
2. Have a flame spread index not greater than 25, a smoke-development index not greater than 50, and be without evidence of continued progressive combustion when tested in accordance with ASTM E 84.

719.1.2 Combustible construction. Insulating materials used in combustible construction shall have a flame spread index not greater than 25, a smoke-development index not greater than 450, and be without evidence of continuous progressive combustion when tested in accordance with ASTM E 84.

719.2 Concealed installation. Insulating materials, where concealed as installed in buildings of any type construction, shall comply with Sections 719.1, 719.1.1 and 719.1.2. Concealed insulation shall be separated from the building

interior by a thermal barrier consisting of at least 1/2-inch (12.7 mm) thick gypsum wallboard or approved equivalent.

Exception: Cellulose loose-fill insulation that is not spray applied, complying with the requirements of Section 719.6, shall only be required to meet the smoke-development index of not more than 450.

719.2.1 Facings. Where such materials are installed in concealed spaces in buildings of Type III, IV or V construction, the flame spread and smoke-development limits do not apply to facings, coverings, and layers of reflective foil insulation that are installed behind and in substantial contact with the unexposed surface of the ceiling, wall or floor finish.

719.3 Exposed installation. Insulation materials, where exposed as installed in buildings of any type construction, shall have a flame spread index of not more than 25 and a smoke-development index of not more than 50.

Exception: Cellulose loose-fill insulation that is not spray applied complying with the requirements of Section 719.6 shall only be required to meet the smoke-development index of not more than 50.

719.3.1 Attic floors. Exposed insulation materials installed on attic floors shall have a critical radiant flux of not less than 0.12 watt per square centimeter when tested in accordance with ASTM E 970.

719.3.2 Toxicity. Upon exposure to fire, insulating materials used in building interiors, including facings such as vapor retarders and vapor permeable membranes, similar coverings, and all layers of single and multi-layer reflective foil insulation, shall not produce products of decomposition or combustion that are more toxic in point of concentration than those given off by wood or paper when decomposing or burning under comparable conditions in accordance with test standards approved by the department.

719.4 Loose-fill insulation. Loose-fill insulation materials that cannot be mounted in the ASTM E 84 apparatus without a screen or artificial supports shall comply with the flame spread and smoke-developed limits of Sections 719.2 and 719.3 when tested in accordance with CAN/ULC S102.2.

Exception: Cellulose loose-fill insulation shall not be required to comply with this test method, provided such insulation complies with the requirements of Section 719.6.

719.5 Roof insulation. The use of combustible roof insulation not complying with Sections 719.2 and 719.3 shall be permitted in any type construction provided it is applied on top of roof decking or slab and is covered with approved roof coverings directly applied thereto.

719.6 Cellulose loose-fill insulation. Cellulose loose-fill insulation shall comply with CPSC 16 CFR, Part 1209 and CPSC 16 CFR, Part 1404. Each package of such insulating material shall be clearly labeled in accordance with CPSC 16 CFR, Part 1209 and CPSC 16 CFR, Part 1404.

719.7 Insulation and covering on pipe and tubing. Insulation and covering on pipe and tubing shall comply with the requirements of the New York City Mechanical Code.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

719.3 and exception amended L.L. 8/2008 § 100, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 720: DESCRIPTIVE FIRE RESISTANCE

NYC Administrative Code § 28-BC 720

720.1 General.

The provisions of this section contain prescriptive details of fire-resistance-rated building elements. The materials of construction listed in Tables 720.1(1), 720.1(2), and 720.1(3) shall be assumed to have the fire-resistance ratings prescribed therein. Where materials that change the capacity for heat dissipation are incorporated into a fire-resistance-rated assembly, fire test results or other substantiating data shall be made available to the commissioner to show that the required fire-resistance-rating time period is not reduced.

720.1.1 Thickness of protective coverings. The thickness of fire-resistant materials required for protection of structural members shall be not less than set forth in Table 720.1(1), except as modified in this section. The figures shown shall be the net thickness of the protecting materials and shall not include any hollow space in back of the protection.

720.1.2 Unit masonry protection. Where required, metal ties shall be embedded in transverse joints of unit masonry for protection of steel columns. Such ties shall be as set forth in Table 720.1(1) or be equivalent thereto.

720.1.3 Reinforcement for cast-in-place concrete column protection. Cast-in-place concrete protection for steel columns shall be reinforced at the edges of such members with wire ties of not less than 0.18 inch (4.6 mm) in diameter wound spirally around the columns on a pitch of not more than 8 inches (203 mm) or by equivalent reinforcement.

720.1.4 Plaster application. The finish coat is not required for plaster protective coatings where they comply with the design mix and thickness requirements of Tables 720.1(1), 720.1(2) and 720.1(3).

720.1.5 Bonded prestressed concrete tendons. For members having a single tendon or more than one tendon installed with equal concrete cover measured from the nearest surface, the cover shall not be less than that set forth in Table 720.1(1). For members having multiple tendons installed with variable concrete cover, the average tendon cover shall not be less than that set forth in Table 720.1(1), provided:

1. The clearance from each tendon to the nearest exposed surface is used to determine the average cover.

2. In no case can the clear cover for individual tendons be less than one-half of that set forth in Table 720.1(1). A minimum cover of 0.75 inch (19.1 mm) for slabs and 1 inch (25 mm) for beams is required for any aggregate concrete.

3. For the purpose of establishing a fire-resistance rating, tendons having a clear covering less than that set forth in Table 720.1(1) shall not contribute more than 50 percent of the required ultimate moment capacity for members less than 350 square inches (0.226 m²) in cross-sectional area and 65 percent for larger members. For structural design purposes, however, tendons having a reduced cover are assumed to be fully effective.

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 Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
 SECTION BC 721: CALCULATED FIRE RESISTANCE

NYC Administrative Code § 28-BC 721

721.1 General.

The provisions of this section contain procedures by which the fire resistance of specific materials or combinations of materials is established by calculations. These procedures apply only to the information contained in this section and shall not be otherwise used. The calculated fire resistance of concrete, concrete masonry, and clay masonry assemblies shall be permitted in accordance with ACI 216.1/TMS 0216.1. The calculated fire resistance of steel assemblies shall be permitted in accordance with Chapter 5 of ASCE/SFPE 29.

721.1.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

CERAMIC FIBER BLANKET. A mineral wool insulation material made of alumina-silica fibers and weighing 4 to 10 pounds per cubic foot (pcf) (64 to 160 kg/m³).

CONCRETE, CARBONATE AGGREGATE. Concrete made with aggregates consisting mainly of calcium or magnesium carbonate, such as limestone or dolomite, and containing 40 percent or less quartz, chert, or flint.

CONCRETE, CELLULAR. A lightweight insulating concrete made by mixing a preformed foam with portland cement slurry and having a dry unit weight of approximately 30 pcf (480 kg/m³).

CONCRETE, LIGHTWEIGHT AGGREGATE. Concrete made with aggregates of expanded clay, shale, slag or slate or sintered fly ash or any natural lightweight aggregate meeting ASTM C 330 and possessing equivalent fire-resistance properties and weighing 85 to 115 pcf (1360 to 1840 kg/m³).

CONCRETE, PERLITE. A lightweight insulating concrete having a dry unit weight of approximately 30 pcf (480 kg/m³) made with perlite concrete aggregate. Perlite aggregate is produced from a volcanic rock which, when heated, expands to form a glass-like material of cellular structure.

CONCRETE, SAND-LIGHTWEIGHT. Concrete made with a combination of expanded clay, shale, slag, slate, sintered fly ash, or any natural lightweight aggregate meeting ASTM C 330 and possessing equivalent fire-resistance properties and natural sand. Its unit weight is generally between 105 and 120 pcf (1680 and 1920 kg/m³).

CONCRETE, SILICEOUS AGGREGATE. Concrete made with normal-weight aggregates consisting mainly of silica or compounds other than calcium or magnesium carbonate, which contains more than 40-percent quartz, chert, or flint.

CONCRETE, VERMICULITE. A lightweight insulating concrete made with vermiculite concrete aggregate which is laminated micaceous material produced by expanding the ore at high temperatures. When added to a portland cement slurry the resulting concrete has a dry unit weight of approximately 30 pcf (480 kg/m³).

GLASS FIBERBOARD. Fibrous glass roof insulation consisting of inorganic glass fibers formed into rigid boards using a binder. The board has a top surface faced with asphalt and kraft reinforced with glass fiber.

MINERAL BOARD. A rigid felted thermal insulation board consisting of either felted mineral fiber or cellular beads of expanded aggregate formed into flat rectangular units.

721.2 Concrete assemblies. The provisions of this section contain procedures by which the fire-resistance ratings of concrete assemblies are established by calculations.

721.2.1 Concrete walls. Cast-in-place and precast concrete walls shall comply with Section 721.2.1.1. Multiwythe concrete walls shall comply with Section 721.2.1.2. Joints between precast panels shall comply with Section 721.2.1.3. Concrete walls with gypsum wallboard or plaster finish shall comply with Section 721.2.1.4.

721.2.1.1 Cast-in-place or precast walls. The minimum equivalent thickness of cast-in-place or precast concrete walls for fire-resistance ratings of 1 hour to 4 hours are shown in Table 721.2.1.1. For solid walls with flat vertical surfaces, the equivalent thickness is the same as the actual thickness. The values in Table 721.2.1.1 apply to plain, reinforced or prestressed concrete walls.

Table 721.2.1.1 Minimum Equivalent Thickness of Cast-In-Place or Precast Concrete Walls, Load-Bearing or Nonload-Bearing Concrete Type	Minimum Slab Thickness (inches) for	Fire-Resistance Rating of 1-hour	1 1/2-hour	2-hour	3-hour	4-hour	Siliceous	3.5	4.3	5.0	6.2	7.0	Carbonate	3.2	4.0	4.6	5.7
6.6 Sand-Lightweight	2.7	3.3	3.8	4.6	5.4	Lightweight	2.5	3.1	3.6	4.4	5.1	For SI: 1 inch = 25.4 mm.					

721.2.1.1.1 Hollow-core precast wall panels. For hollow-core precast concrete wall panels in which the cores are of constant cross section throughout the length, calculation of the equivalent thickness by dividing the net cross-sectional area (the gross cross section minus the area of the cores) of the panel by its width shall be permitted.

721.2.1.1.2 Core spaces filled. Where all of the core spaces of hollow-core wall panels are filled with loose-fill material, such as expanded shale, clay, or slag, or vermiculite or perlite, the fire-resistance rating of the wall is the same as that of a solid wall of the same concrete type and of the same overall thickness.

721.2.1.1.3 Tapered cross sections. The thickness of panels with tapered cross sections shall be that determined at a distance $2t$ or 6 inches (152 mm), whichever is less, from the point of minimum thickness, where t is the minimum thickness.

721.2.1.1.4 Ribbed or undulating surfaces. The equivalent thickness of panels with ribbed or undulating surfaces shall be determined by one of the following expressions:

For $s \geq 4t$, the thickness to be used shall be t

For $s \leq 4t$, the thickness to be used shall be t_e

For $4t \leq s \leq 4t_e$, the thickness to be used shall be

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721.2.1.2 Multiwythe walls. For walls that consist of two wythes of different types of concrete, the fire-resistance ratings shall be permitted to be determined from Figure 721.2.1.2.

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721.2.1.2.1 Two or more wythes. The fire-resistance rating for wall panels consisting of two or more wythes shall be permitted to be determined by the formula:

$$R = (R_{10.59} ; R_{20.59} ; R_{30.59} ; \dots ; R_{n0.59})^{1.7} \text{ (Equation 7-4)}$$

where:

R = The fire endurance of the assembly, minutes.

R₁, R₂, and R_n = The fire endurances of the individual wythes, minutes. Values of R_{n0.59} for use in Equation 7-4 are given in Table 721.2.1.2(1). Calculated fire-resistance ratings are shown in Table 721.2.1.2(2).

721.2.1.2.2 Foam plastic insulation. The fire-resistance ratings of precast concrete wall panels consisting of a layer of foam plastic insulation sandwiched between two wythes of concrete shall be permitted to be determined by use of Equation 7-4. Foam plastic insulation with a total thickness of less than 1 inch (25 mm) shall be disregarded. The R_n value for thickness of foam plastic insulation of 1 inch (25 mm) or greater, for use in the calculation, is 5 minutes; therefore R_{n0.59} = 2.5.

721.2.1.3 Joints between precast wall panels. Joints between precast concrete wall panels which are not insulated as required by this section shall be considered as openings in walls. Uninsulated joints shall be included in determining the percentage of openings permitted by Table 704.8. Where openings are not permitted or are required by this code to be protected, the provisions of this section shall be used to determine the amount of joint insulation required. Insulated joints shall not be considered openings for purposes of determining compliance with the allowable percentage of openings in Table 704.8.

721.2.1.3.1 Ceramic fiber joint protection. Figure 721.2.1.3.1 shows thicknesses of ceramic fiber blankets to be used to insulate joints between precast concrete wall panels for various panel thicknesses and for joint widths of 3/8 inch (9.5 mm) and 1 inch (25 mm) for fire-resistance ratings of 1 hour to 4 hours. For joint widths between 3/8 inch (9.5 mm) and 1 inch (25 mm), the thickness of ceramic fiber blanket is allowed to be determined by direct interpolation. Other tested and labeled materials are acceptable in place of ceramic fiber blankets.

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721.2.1.4 Walls with gypsum wallboard or plaster finishes. The fire-resistance rating of cast-in-place or precast concrete walls with finishes of gypsum wallboard or plaster applied to one or both sides shall be permitted to be calculated in accordance with the provisions of this section.

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Table 721.2.1.4(2) Time Assigned to Finish Materials on Fire-Exposed Side of Wall Finish Description Time (minute)
Gypsum wallbound

3/8 inch 10

1/2 inch 15

5/8 inch²⁰

2 layers of 3/8 inch²⁵

1 layer 3/8 inch, 1 layer 1/2 inch³⁵

2 layers 1/2 inch⁴⁰ Type X gypsum wallboard

1/2 inch²⁵

5/8 inch⁴⁰ Portland cement-sand plaster applied directly to concrete masonry See Note a Portland cement-sand plaster on metal lath

3/4 inch²⁰

7/8 inch²⁵

1 inch³⁰ Gypsum sand plaster on 3/8-inch gypsum lath

1/2 inch³⁵

5/8 inch⁴⁰

3/4 inch⁵⁰ Gypsum sand plaster on metal lath

3/4 inch⁵⁰

7/8 inch⁶⁰

1 inch⁸⁰ For SI: 1 inch = 25.4 mm.a. The actual thickness of portland cement-sand plaster, provided it is 5/8 inch or less in thickness, shall be permitted to be included in determining the equivalent thickness of the masonry for use in Table 721.3.2.

721.2.1.4.1 Nonfire-exposed side. Where the finish of gypsum wallboard or plaster is applied to the side of the wall not exposed to fire, the contribution of the finish to the total fire-resistance rating shall be determined as follows: The thickness of the finish shall first be corrected by multiplying the actual thickness of the finish by the applicable factor determined from Table 721.2.1.4(1) based on the type of aggregate in the concrete. The corrected thickness of finish shall then be added to the actual or equivalent thickness of concrete and fire-resistance rating of the concrete and finish determined from Table 721.2.1.1, Figure 721.2.1.2 or Table 721.2.1.2(1).

721.2.1.4.2 Fire-exposed side. Where gypsum wallboard or plaster is applied to the fire-exposed side of the wall, the contribution of the finish to the total fire-resistance rating shall be determined as follows: The time assigned to the finish as established by Table 721.2.1.4(2) shall be added to the fire-resistance rating determined from Table 721.2.1.1 or Figure 721.2.1.2, or Table 721.2.1.2(1) for the concrete alone, or to the rating determined in Section 721.2.1.4.1 for the concrete and finish on the nonfire-exposed side.

721.2.1.4.3 Nonsymmetrical assemblies. For a wall having no finish on one side or different types or thicknesses of finish on each side, the calculation procedures of Sections 721.2.1.4.1 and 721.2.1.4.2 shall be performed twice, assuming either side of the wall to be the fire-exposed side. The fire-resistance rating of the wall shall not exceed the lower of the two values.

Exception: For an exterior wall with more than 5 feet (1524 mm) of horizontal separation, the fire shall be assumed to occur on the interior side only.

721.2.1.4.4 Minimum concrete fire-resistance rating. Where finishes applied to one or both sides of a concrete wall contribute to the fire-resistance rating, the concrete alone shall provide not less than one-half of the total required fire-resistance rating. Additionally, the contribution to the fire resistance of the finish on the nonfire-exposed side of a load-bearing wall shall not exceed one-half the contribution of the concrete alone.

721.2.1.4.5 Concrete finishes. Finishes on concrete walls that are assumed to contribute to the total fire-resistance rating of the wall shall comply with the installation requirements of Section 721.3.2.5.

721.2.2 Concrete floor and roof slabs. Reinforced and prestressed floors and roofs shall comply with Section 721.2.2.1. Multicourse floors and roofs shall comply with Sections 721.2.2.2 and 721.2.2.3, respectively.

721.2.2.1 Reinforced and prestressed floors and roofs. The minimum thicknesses of reinforced and prestressed concrete floor or roof slabs for fire-resistance ratings of 1 hour to 4 hours are shown in Table 721.2.2.1. Table 721.2.2.1 Minimum Slab Thickness (inches) Concrete Type Fire-Resistance Rating (hour) 1 1 1/2 2 3 4 Siliceous 3.5 4.3 5.0 6.2 7.0 Carbonate 3.2 4.0 4.6 5.7 6.6 Sand-Lightweight 2.7 3.3 3.8 4.6 5.4 Lightweight 2.5 3.1 3.6 4.4 5.1 For SI: 1 inch = 25.4 mm.

721.2.2.1.1 Hollow-core prestressed slabs. For hollow-core prestressed concrete slabs in which the cores are of constant cross section throughout the length, the equivalent thickness shall be permitted to be obtained by dividing the net cross-sectional area of the slab including grout in the joints, by its width.

721.2.2.1.2 Slabs with sloping soffits. The thickness of slabs with sloping soffits (see Figure 721.2.2.1.2) shall be determined at a distance $2t$ or 6 inches (152 mm), whichever is less, from the point of minimum thickness, where t is the minimum thickness.

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721.2.2.1.3 Slabs with ribbed soffits. The thickness of slabs with ribbed or undulating soffits (see Figure 721.2.2.1.3) shall be determined by one of the following expressions, whichever is applicable:

For $s \leq 4t$, the thickness to be used shall be t

For $s \leq 2t$, the thickness to be used shall be t

For $4t \leq s \leq 2t$, the thickness to be used shall be

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721.2.2.2 Multicourse floors. The fire-resistance ratings of floors that consist of a base slab of concrete with a topping (overlay) of a different type of concrete shall comply with Figure 721.2.2.2.

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721.2.2.3 Multicourse roofs. The fire-resistance ratings of roofs which consist of a base slab of concrete with a topping (overlay) of an insulating concrete or with an insulating board and built-up roofing shall comply with Figures 721.2.2.3(1) and 721.2.2.3(2).

721.2.2.3.1 Heat transfer. For the transfer of heat, three-ply built-up roofing contributes 10 minutes to the fire-resistance rating. The fire-resistance rating for concrete assemblies such as those shown in Figure 721.2.2.3(1) shall be increased by 10 minutes. This increase is not applicable to those shown in Figure 721.2.2.3(2).

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[SEE graphical material in printed version]

721.2.2.4 Joints in precast slabs. Joints between adjacent precast concrete slabs need not be considered in calculating the slab thickness provided that a concrete topping at least 1 inch (25 mm) thick is used. Where no concrete topping is used, joints must be grouted to a depth of at least one-third the slab thickness at the joint, but not less than 1 inch (25 mm), or the joints must be made fire resistant by other approved methods.

721.2.3 Concrete cover over reinforcement. The minimum thickness of concrete cover over reinforcement in concrete slabs, reinforced beams and prestressed beams shall comply with this section.

721.2.3.1 Slab cover. The minimum thickness of concrete cover to the positive moment reinforcement shall comply with Table 721.2.3(1) for reinforced concrete and Table 721.2.3(2) for prestressed concrete. These tables are applicable for solid or hollow-core one-way or two-way slabs with flat undersurfaces. These tables are applicable to slabs that are either cast in place or precast. For precast prestressed concrete not covered elsewhere, the procedures contained in PCI MNL 124 shall be acceptable.

721.2.3.2 Reinforced beam cover. The minimum thickness of concrete cover to the positive moment reinforcement (bottom steel) for reinforced concrete beams is shown in Table 721.2.3(3) for fire-resistance ratings of 1 hour to 4 hours.

721.2.3.3 Prestressed beam cover. The minimum thickness of concrete cover to the positive moment prestressing tendons (bottom steel) for restrained and unrestrained prestressed concrete beams and stemmed units shall comply with the values shown in Tables 721.2.3(4) and 721.2.3(5) for fire-resistance ratings of 1 hour to 4 hours. Values in Table 721.2.3(4) apply to beams 8 inches (203 mm) or greater in width. Values in Table 721.2.3(5) apply to beams or stems of any width, provided the cross-section area is not less than 40 square inches (25 806 mm²). In case of differences between the values determined from Table 721.2.3(4) or 721.2.3(5), it is permitted to use the smaller value. The concrete cover shall be calculated in accordance with Section 721.2.3.3.1. The minimum concrete cover for nonprestressed reinforcement in prestressed concrete beams shall comply with Section 721.2.3.2.

721.2.3.3.1 Calculating concrete cover. The concrete cover for an individual tendon is the minimum thickness of concrete between the surface of the tendon and the fire-exposed surface of the beam, except that for ungrouped ducts, the assumed cover thickness is the minimum thickness of concrete between the surface of the duct and the fire-exposed surface of the beam. For beams in which two or more tendons are used, the cover is assumed to be the average of the minimum cover of the individual tendons. For corner tendons (tendons equal distance from the bottom and side), the minimum cover used in the calculation shall be one-half the actual value. For stemmed members with two or more prestressing tendons located along the vertical centerline of the stem, the average cover shall be the distance from the bottom of the member to the centroid of the tendons. The actual cover for any individual tendon shall not be less than one-half the smaller value shown in Tables 721.2.3(4) and 721.2.3(5), or 1 inch (25 mm), whichever is greater.

Table 721.2.3(1) Cover Thickness for Reinforced Concrete Floor or Roof Slabs (inches)

Concrete Aggregate Type	Fire-Resistance Rating (hours)	Restrained	1	1 1/2	2	3	4	Unrestrained	1	1 1/2	2	3	4
Siliceous	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Carbonate	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Sand-lightweight	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Orlightweight	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4

For SI: 1 inch = 25.4 mm.

Table 721.2.3(2) Cover Thickness for Prestressed Concrete Floor or Roof Slabs (inches)

Concrete Aggregate Type	Fire-Resistance Rating (hours)	Restrained	1	1 1/2	2	3	4	Unrestrained	1	1 1/2	2	3	4
Siliceous	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Carbonate	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Sand-lightweight	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Orlightweight	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4

For SI: 1 inch = 25.4 mm.

Table 721.2.3(3) Minimum Cover for Main Reinforcing Bars of Reinforced Concrete Beams (Applicable to All Types of Structural Concrete)

Restrained or Unrestrained	a Beam Width b (inches)	Fire-Resistance Rating (hours)	1	1 1/2	2	3	4
Restrained	5	7	me10	3/4	3/4	3/4	3/4
Unrestrained	5	7	me10	3/4	3/4	3/4	3/4

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm. a. Tabulated values for restrained assemblies apply to beams spaced more than 4 feet on center. For restrained beams spaced 4 feet or less on center, minimum cover of 3/4 inch is adequate for ratings of 4 hours or less. b. For beam widths between the tabulated values, the minimum cover thickness can be determined by direct interpolation. c. The cover for an individual reinforcing bar is the minimum thickness of concrete between the surface of the bar and the fire-exposed surface of the beam. For beams in which

721.2.4.4Precast cover units for steel columns.See Section 721.5.1.4.

721.3 Concrete masonry. The provisions of this section contain procedures by which the fire-resistance ratings of concrete masonry are established by calculations.

721.3.1 Equivalent thickness. The equivalent thickness of concrete masonry construction shall be determined in accordance with the provisions of this section.

721.3.1.1 Concrete masonry unit plus finishes. The equivalent thickness of concrete masonry assemblies, T_{ea} , shall be computed as the sum of the equivalent thickness of the concrete masonry unit, T_e , as determined by Section 721.3.1.2, 721.3.1.3, or 721.3.1.4, plus the equivalent thickness of finishes, T_{ef} , determined in accordance with Section 721.3.2:

$$T_{ea} = T_e + T_{ef} \text{ (Equation 7-6)}$$

$$T_e = V_n / L_n H_n = \text{Equivalent thickness of concrete masonry unit (inch) (mm).}$$

where:

$$V_n = \text{Net volume of masonry unit (inch}^3\text{) (mm}^3\text{).}$$

$$L_n = \text{Specified length of masonry unit (inch) (mm).}$$

$$H_n = \text{Specified height of masonry unit (inch) (mm).}$$

721.3.1.2 UngROUTED or partially grouted construction. T_e shall be the value obtained for the concrete masonry unit determined in accordance with ASTM C 140.

721.3.1.3 Solid grouted construction. The equivalent thickness, T_e , of solid grouted concrete masonry units is the actual thickness of the unit.

721.3.1.4 Airspaces and cells filled with loose-fill material. The equivalent thickness of completely filled hollow concrete masonry is the actual thickness of the unit when loose-fill materials are: sand, pea gravel, crushed stone, or slag that meet ASTM C 33 requirements; pumice, scoria, expanded shale, expanded clay, expanded slate, expanded slag, expanded fly ash, or cinders that comply with ASTM C 331; or perlite or vermiculite meeting the requirements of ASTM C 549 and ASTM C 516, respectively.

721.3.2 Concrete masonry walls. The fire-resistance rating of walls and partitions constructed of concrete masonry units shall be determined from Table 721.3.2. The rating shall be based on the equivalent thickness of the masonry and type of aggregate used.

721.3.2.1 Finish on nonfire-exposed side. Where plaster or gypsum wallboard is applied to the side of the wall not exposed to fire, the contribution of the finish to the total fire-resistance rating shall be determined as follows: The thickness of gypsum wallboard or plaster shall be corrected by multiplying the actual thickness of the finish by applicable factor determined from Table 721.2.1.4(1). This corrected thickness of finish shall be added to the equivalent thickness of masonry and the fire-resistance rating of the masonry and finish determined from Table 721.3.2.

721.3.2.2 Finish on fire-exposed side. Where plaster or gypsum wallboard is applied to the fire-exposed side of the wall, the contribution of the finish to the total fire-resistance rating shall be determined as follows: The time assigned to the finish as established by Table 721.2.1.4(2) shall be added to the fire-resistance rating determined in Section 721.3.2 for the masonry alone, or in Section 721.3.2.1 for the masonry and finish on the nonfire-exposed side.

721.3.2.3 Nonsymmetrical assemblies. For a wall having no finish on one side or having different types or thicknesses of finish on each side, the calculation procedures of this section shall be performed twice, assuming either side of the wall to be the fire-exposed side. The fire-resistance rating of the wall shall not exceed the lower of the two

values calculated.

Exception: For exterior walls with more than 5 feet (1524 mm) of horizontal separation, the fire shall be assumed to occur on the interior side only.

721.3.2.4 Minimum concrete masonry fire-resistance rating. Where the finish applied to a concrete masonry wall contributes to its fire-resistance rating, the masonry alone shall provide not less than one-half the total required fire-resistance rating.

721.3.2.5 Attachment of finishes. Installation of finishes shall be as follows:

1. Gypsum wallboard and gypsum lath applied to concrete masonry or concrete walls shall be secured to wood or steel furring members spaced not more than 16 inches (406 mm) on center (o.c.).

2. Gypsum wallboard shall be installed with the long dimension parallel to the furring members and shall have all joints finished.

3. Other aspects of the installation of finishes shall comply with the applicable provisions of Chapters 7 and 25. [SEE graphical material in printed version]

$$RA = (R1 + 0.59 \log_{10} R2 + 0.59 \log_{10} Rn + 0.59 \log_{10} A1 + 0.59 \log_{10} A2 + \dots + 0.59 \log_{10} An)^{1.7} \quad (\text{Equation 7-7})$$

where:

RA = Fire endurance rating of the assembly (hours).

R1, R2, . . . , Rn = Fire endurance rating of wythes for 1, 2, . . . , n (hours), respectively.

A1, A2, . . . , An = 0.30, factor for each continuous airspace for 1, 2, . . . , n, respectively, having a depth of 1/2 inch (12.7 mm) or more between wythes.

721.3.3 Multiwythe masonry walls. The fire-resistance rating of wall assemblies constructed of multiple wythes of masonry materials shall be permitted to be based on the fire-resistance rating period of each wythe and the continuous airspace between each wythe in accordance with the following formula:

721.3.4 Concrete masonry lintels. Fire-resistance ratings for concrete masonry lintels shall be determined based upon the nominal thickness of the lintel and the minimum thickness of concrete masonry or concrete, or any combination thereof, covering the main reinforcing bars, as determined according to Table 721.3.4, or by approved alternate methods. Table 721.3.4 Minimum Cover of Longitudinal Reinforcement in Fire-Resistance-Rated Reinforced Concrete Masonry Lintels (inches) Nominal Width of Lintel (inches) Fire-Resistance Rating (hours)

Nominal Width of Lintel (inches)	1	2	3	4	6	11/2	2	8	11/2
11/2	13/4	3	10 or greater	11/2	11/2	11/2	13/4	For SI: 1 inch = 25.4 mm.	

Table 721.3.5 Minimum Dimension of Concrete Masonry Columns (inches) Fire-Resistance Rating (hours)

Fire-Resistance Rating (hours)	1	2	3	4	8	10	12	14
For SI: 1 inch = 25.4 mm.								

721.3.5 Concrete masonry columns. The fire-resistance rating of concrete masonry columns shall be determined based upon the least plan dimension of the column in accordance with Table 721.3.5 or by approved alternate methods.

721.4 Clay brick and tile masonry. The provisions of this section contain procedures by which the fire-resistance ratings of clay brick and tile masonry are established by calculations.

721.4.1 Masonry walls. The fire-resistance rating of masonry walls shall be based upon the equivalent thickness as calculated in accordance with this section. The calculation shall take into account finishes applied to the wall and airspaces between wythes in multiwythe construction.

721.4.1.1 Equivalent thickness. The fire-resistance ratings of walls or partitions constructed of solid or hollow clay masonry units shall be determined from Table 721.4.1(1) or 721.4.1(2). The equivalent thickness of the clay masonry unit shall be determined by Equation 7-8 when using Table 721.4.1(1). The fire-resistance rating determined from Table 721.4.1(1) shall be permitted to be used in the calculated fire-resistance rating procedure in Section 721.4.2.

721.4.1.1.1 Hollow clay units. The equivalent thickness, T_e , shall be the value obtained for hollow clay units as determined in accordance with ASTM C 67.

$$T_e = V_n / L_n H_n \text{ (Equation 7-8)}$$

where:

T_e = The equivalent thickness of the clay masonry unit (inches).

V_n = The net volume of the clay masonry unit (inch³).

L_n = The specified length of the clay masonry unit (inches).

H_n = The specified height of the clay masonry unit (inches).

721.4.1.1.2 Solid grouted clay units. The equivalent thickness of solid grouted clay masonry units shall be taken as the actual thickness of the units.

721.4.1.1.3 Units with filled cores. The equivalent thickness of the hollow clay masonry units is the actual thickness of the unit when completely filled with loose-fill materials of: sand, pea gravel, crushed stone, or slag that meet ASTM C 33 requirements; pumice, scoria, expanded shale, expanded clay, expanded slate, expanded slag, expanded fly ash, or cinders in compliance with ASTM C 331; or perlite or vermiculite meeting the requirements of ASTM C 549 and ASTM C 516, respectively.

721.4.1.2 Plaster finishes. Where plaster is applied to the wall, the total fire-resistance rating shall be determined by the formula:

$$R = (R_n^{0.59} ; p_l^{1.7}) \text{ (Equation 7-9)}$$

where:

R = The fire endurance of the assembly (hours).

R_n = The fire endurance of the individual wall (hours).

p_l = Coefficient for thickness of plaster.

Values for $R_n^{0.59}$ for use in Equation 7-9 are given in Table 721.4.1(3). Coefficients for thickness of plaster shall be selected from Table 721.4.1(4) based on the actual thickness of plaster applied to the wall or partition and whether one or two sides of the wall are plastered.

721.4.1.3 Multiwythe walls with airspace. Where a continuous airspace separates multiple wythes of the wall or partition, the total fire-resistance rating shall be determined by the formula:

$$R = (R_1^{0.59} ; p_l^{1.7} ; R_2^{0.59} ; p_l^{1.7} ; \dots ; p_l^{1.7} ; R_n^{0.59} ; p_l^{1.7}) \text{ (Equation 7-10)}$$

where:

R = The fire endurance of the assembly (hours).

R_1 , R_2 and R_n =The fire endurance of the individual wythes (hours).

a_s =Coefficient for continuous airspace.

Values for $R_{n0.59}$ for use in Equation 7-10 are given in Table 721.4.1(3). The coefficient for each continuous air-space of 1/2 inch to 3 1/2 inches (12.7 to 89 mm) separating two individual wythes shall be 0.3.

721.4.1.4 Nonsymmetrical assemblies. For a wall having no finish on one side or having different types or thicknesses of finish on each side, the calculation procedures of this section shall be performed twice, assuming either side to be the fire-exposed side of the wall. The fire resistance of the wall shall not exceed the lower of the two values determined.

Exception: For exterior walls with more than 5 feet (1524 mm) of horizontal separation, the fire shall be assumed to occur on the interior side only.

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721.4.2 Multiwythe walls. The fire-resistance rating for walls or partitions consisting of two or more dissimilar wythes shall be permitted to be determined by the formula:

$$R = (R_{10.59} ; p_l R_{20.59} ; p_l \dots ; p_l R_{n0.59})^{1.7} \text{ (Equation 7-11)}$$

where:

R =The fire endurance of the assembly (hours).

R_1 , R_2 and R_n =The fire endurance of the individual wythes (hours).

Values for $R_{n0.59}$ for use in Equation 7-11 are given in Table 721.4.1(3).

721.4.2.1 Multiwythe walls of different material. For walls that consist of two or more wythes of different materials (concrete or concrete masonry units) in combination with clay masonry units, the fire-resistance rating of the different materials shall be permitted to be determined from Table 721.2.1.1 for concrete; Table 721.3.2 for concrete masonry units or Table 721.4.1(1) or 721.4.1(2) for clay and tile masonry units.

721.4.3 Reinforced clay masonry lintels. Fire-resistance ratings for clay masonry lintels shall be determined based on the nominal width of the lintel and the minimum covering for the longitudinal reinforcement in accordance with Table 721.4.1(5).

721.4.4 Reinforced clay masonry columns. The fire-resistance ratings shall be determined based on the last plan dimension of the column in accordance with Table 721.4.1(6). The minimum cover for longitudinal reinforcement shall be 2 inches (51 mm).

721.5 Steel assemblies. The provisions of this section contain procedures by which the fire-resistance ratings of steel assemblies are established by calculations.

721.5.1 Structural steel columns. The fire-resistance ratings of steel columns shall be based on the size of the element and the type of protection provided in accordance with this section.

721.5.1.1 General. These procedures establish a basis for determining the fire resistance of column assemblies as a

function of the thickness of fire-resistant material and, the weight, W , and heated perimeter, D , of steel columns. As used in these sections, W is the average weight of a structural steel column in pounds per linear foot. The heated perimeter, D , is the inside perimeter of the fire-resistant material in inches as illustrated in Figure 721.5.1(1).

721.5.1.1.1 Nonload-bearing protection. The application of these procedures shall be limited to column assemblies in which the fire-resistant material is not designed to carry any of the load acting on the column.

721.5.1.1.2 Embedments. In the absence of substantiating fire-endurance test results, ducts, conduit, piping, and similar mechanical, electrical, and plumbing installations shall not be embedded in any required fire-resistant materials.

721.5.1.1.3 Weight-to-perimeter ratio. Table 721.5.1(1) contains weight-to-heated-perimeter ratios (W/D) for both contour and box fire-resistant profiles, for the wide flange shapes most often used as columns. For different fire-resistant protection profiles or column cross sections, the weight-to-heated-perimeter ratios (W/D) shall be determined in accordance with the definitions given in this section.

721.5.1.2 Gypsum wallboard protection. The fire resistance of structural steel columns with weight to-heated-perimeter ratios (W/D) less than or equal to 3.65 and which are protected with Type X gypsum wallboard shall be permitted to be determined from the following expression:

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INSERT EQUATION 7-12 HERE

721.5.1.2.1 Attachment. The gypsum wallboard shall be supported as illustrated in either Figure 721.5.1(2) for fire-resistance ratings of 4 hours or less, or Figure 721.5.1(3) for fire-resistance ratings of 3 hours or less.

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721.5.1.2.2 Gypsum wallboard equivalent to concrete. The determination of the fire resistance of structural steel columns from Figure 721.5.1(4) is permitted for various thicknesses of gypsum wallboard as a function of the weight-to-heated-perimeter ratio (W/D) of the column. For structural steel columns with weight-to-heated-perimeter ratios (W/D) greater than 3.65, the thickness of gypsum wallboard required for specified fire-resistance ratings shall be the same as the thickness determined for a W14 x 233 wide flange shape.

721.5.1.3 Spray-applied fire-resistant materials. The fire resistance of wide-flange structural steel columns protected with spray-applied fire-resistant materials, as illustrated in Figure 721.5.1(5), shall be permitted to be determined from the following expression:

$$R = [C1 (W/D) ; p1 C2] h \text{ (Equation 7-13)}$$

where:

R = Fire resistance (minutes).

h = Thickness of spray-applied fire-resistant material (inches).

D=Heated perimeter of the structural steel column (inches).

C1 and C2=Material-dependent constants.

W=Weight of structural steel column (pounds per linear foot).

721.5.1.3.1Material-dependent constants.The material-dependent constants, C1 and C2, shall be determined for specific fire-resistant materials on the basis of standard fire endurance tests in accordance with Section 703.2. Unless evidence is submitted to the commissioner substantiating a broader application, this expression shall be limited to determining the fire resistance of structural steel columns with weight-to-heated-perimeter ratios (W/D) between the largest and smallest columns for which standard fire-endurance test results are available.

721.5.1.3.2Spray-applied identification.Spray-applied fire-resistant materials shall be identified by density and thickness required for a given fire-resistance rating.

721.5.1.4Concrete-protected columns.The fire resistance of structural steel columns protected with concrete, as illustrated in Figure 721.5.1(6) (a) and (b), shall be permitted to be determined from the following expression:

$$R = R_0 (1 + 0.03m)(\text{Equation 7-14})$$

where:

$$R_0 = 10 (W/D)^{0.7} + 17 (h^{1.6}/kc^{0.2}) \times (1 + 0.26 (H/pccch (L + h))^{0.8})$$

As used in these expressions:

R=Fire endurance at equilibrium moisture conditions (minutes).

R0=Fire endurance at zero moisture content (minutes).

m=Equilibrium moisture content of the concrete by volume (percent).

W=Average weight of the steel column (pounds per linear foot).

D=Heated perimeter of the steel column (inches).

h=Thickness of the concrete cover (inches).

kc=Ambient temperature thermal conductivity of the concrete (Btu/hr ft (degrees)F).

H=Ambient temperature thermal capacity of the steel column = 0.11W (Btu/ft (degrees)F).

pc=Concrete density (pounds per cubic foot).

cc=Ambient temperature specific heat of concrete (Btu/lb (degrees)F).

L=Interior dimension of one side of a square concrete box protection (inches).

721.5.1.4.1Reentrant space filled.For wide-flange steel columns completely encased in concrete with all reentrant spaces filled [Figure 721.5.1(6)(c)], the thermal capacity of the concrete within the reentrant spaces shall be permitted to be added to the thermal capacity of the steel column, as follows:

$$H = 0.11W + (pccc/144) (bfd - As)(\text{Equation 7-15})$$

where:

bf=Flange width of the steel column (inches).

d=Depth of the steel column (inches).

As=Cross-sectional area of the steel column (square inches).

721.5.1.4.2Concrete properties unknown.If specific data on the properties of concrete are not available, the values given in Table 721.5.1(2) are permitted.

721.5.1.4.3Minimum concrete cover.For structural steel column encased in concrete with all reentrant spaces filled, Figure 721.5.1(6)(c) and Tables 721.5.1(7) and 721.5.1(8) indicate the thickness of concrete cover required for various fire-resistance ratings for typical wide-flange sections. The thicknesses of concrete indicated in these tables also apply to structural steel columns larger than those listed.

721.5.1.4.4Minimum precast concrete cover.For structural steel columns protected with precast concrete column covers as shown in Figure 721.5.1(6)(a), Tables 721.5.1(9) and 721.5.1(10) indicate the thickness of the column covers required for various fire-resistance ratings for typical wide-flange shapes. The thicknesses of concrete given in these tables also apply to structural steel columns larger than those listed.

721.5.1.4.5Masonry protection.The fire resistance of structural steel columns protected with concrete masonry units or clay masonry units as illustrated in Figure 721.5.1(7), shall be permitted to be determined from the following expression:

$$R = 0.17 (W/D)^{0.7} ; p \leq [0.285 (T_e/1.6/K/0.2)]$$

$$[1.0 ; p \leq 42.7 ; f_b(As/dmT_e)/(0.25p ; p \leq T_e); r \leq 0.8](\text{Equation 7-16})$$

where:

R=Fire-resistance rating of column assembly (hours).

W=Average weight of steel column (pounds per foot).

D=Heated perimeter of the steel column (inches) [see Figure 721.5.1(7)].

T_e=Equivalent thickness of concrete or clay masonry unit (inches) (see Table 721.3.2 Note a or Section 721.4.1).

K=Thermal conductivity of concrete or clay masonry unit (Btu/hr ft (degrees)F) [see Table 721.5.1(3)].

As=Cross-sectional area of steel column (square inches).

dm=Density of the concrete or clay masonry unit (pounds per cubic foot).

p=Inner perimeter of concrete or clay masonry protection (inches) [see Figure 721.5.1(7)].

721.5.1.4.6Equivalent concrete masonry thickness.For structural steel columns protected with concrete masonry, Table 721.5.1(5) gives the equivalent thickness of concrete masonry required for various fire-resistance ratings for typical column shapes. For structural steel columns protected with clay masonry, Table 721.5.1(6) gives the equivalent thickness of concrete masonry required for various fire-resistance ratings for typical column shapes.
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721.5.2 Structural steel beams and girders. The fire-resistance ratings of steel beams and girders shall be based upon the size of the element and the type of protection provided in accordance with this section.

721.5.2.1 Determination of fire resistance. These procedures establish a basis for determining resistance of structural steel beams and girders which differ in size from that specified in approved fire-resistant assemblies as a function of the thickness of fire-resistant material and the weight (W) and heated perimeter (D) of the beam or girder. As used in these sections, W is the average weight of a structural steel member in pounds per linear foot (plf). The heated perimeter, D, is the inside perimeter of the fire-resistant material in inches as illustrated in Figure 721.5.2.

721.5.2.1.1 Weight-to-heated perimeter. The weight-to-heated-perimeter ratios (W/D), for both contour and box fire-resistant protection profiles, for the wide flange shapes most often used as beams or girders are given in Table 721.5.1(4). For different shapes, the weight-to-heated-perimeter ratios (W/D) shall be determined in accordance with the definitions given in this section.

721.5.2.1.2 Beam and girder substitutions. Except as provided for in Section 721.5.2.2, structural steel beams in approved fire-resistant assemblies shall be considered the minimum permissible size. Other beam or girder shapes shall be permitted to be substituted provided that the weight-to-heated-perimeter ratio (W/D) of the substitute beam is equal to or greater than that of the beam specified in the approved assembly.

721.5.2.2 Spray-applied fire-resistant materials. The provisions in this section apply to unrestrained structural steel beams and girders protected with spray-applied fire-resistant materials. Larger or smaller unrestrained beam and girder

shapes shall be permitted to be substituted for beams specified in approved unrestrained or restrained fire-resistant assemblies provided that the thickness of the fire-resistant material is adjusted in accordance with the following expression:

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721.5.2.2.1 Minimum thickness. Equation 7-17 is limited to beams with a weight-to-heated-perimeter ratio (W/D) of 0.37 or greater. The minimum thickness of fire-resistant material shall not be less than 3/8 inch (9.5 mm).

721.5.2.3 Structural steel trusses. The fire resistance of structural steel trusses protected with fire-resistant materials spray applied to each of the individual truss elements shall be permitted to be determined in accordance with this section. The thickness of the fire-resistant material shall be determined in accordance with Section 721.5.1.3. The weight-to-heated-perimeter ratio (W/D) of truss elements which can be simultaneously exposed to fire on all sides shall be determined on the same basis as columns, as specified in Section 721.5.1.1. The weight-to-heated-perimeter ratio (W/D) of truss elements which directly support floor or roof construction shall be determined on the same basis as beams and girders, as specified in Section 721.5.2.1.

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721.6 Wood assemblies. The provisions of this section contain procedures by which the fire-resistance ratings of wood assemblies are established by calculations.

721.6.1 General. This section contains procedures for calculating the fire-resistance ratings of walls, floor/ceiling and roof/ceiling assemblies based in part on the standard method of testing referenced in Section 703.2.

721.6.1.1 Maximum fire-resistance rating. Fire-resistance ratings calculated using the procedures in this section shall be used only for 1-hour rated assemblies.

721.6.1.2 Dissimilar membranes. Where dissimilar membranes are used on a wall assembly, the calculation shall be made from the least fire-resistant (weaker) side.

721.6.2 Walls, floors and roofs. These procedures apply to both load-bearing and nonload-bearing assemblies.

721.6.2.1 Fire-resistance rating of wood frame assemblies. The fire-resistance rating of a wood frame assembly is equal to the sum of the time assigned to the membrane on the fire-exposed side, the time assigned to the framing members and the time assigned for additional contribution by other protective measures such as insulation. The membrane on the unexposed side shall not be included in determining the fire resistance of the assembly.

721.6.2.2 Time assigned to membranes. Table 721.6.2(1) indicates the time assigned to membranes on the fire-exposed side.

721.6.2.3 Exterior walls. For an exterior wall having more than 5 feet (1524 mm) of horizontal separation, the wall is assigned a rating dependent on the interior membrane and the framing as described in Tables 721.6.2(1) and 721.6.2(2). The membrane on the outside of the nonfire-exposed side of exterior walls having more than 5 feet (1524 mm) of horizontal separation may consist of sheathing, sheathing paper, and siding as described in Table 721.6.2(3).

721.6.2.4 Floors and roofs. In the case of a floor or roof, the standard test provides only for testing for fire exposure from below. Except as noted in Section 703.3, Item 5, floor or roof assemblies of wood framing shall have an upper membrane consisting of a subfloor and finished floor conforming to Table 721.6.2(4) or any other membrane that has a contribution to fire resistance of at least 15 minutes in Table 721.6.2(1).

721.6.2.5 Additional protection. Table 721.6.2(5) indicates the time increments to be added to the fire resistance where glass fiber, rock wool, slag mineral wool, or cellulose insulation is incorporated in the assembly.

721.6.2.6Fastening.Fastening of wood frame assemblies and the fastening of membranes to the wood framing members shall be done in accordance with Chapter 23.

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Beams:2.54Zb (4 -(b/d)) for beams which may be exposed to fire on four sides.(Equation 7-18)2.54Zb (4 -(b/d)) for beams which may be exposed to fire on three sides.(Equation 7-19)

Columns:2.54Zd (3 -(d/b)) for columns which may be exposed to fire on four sides.(Equation 7-20)2.54Zd (3 -(d/2b)) for columns which may be exposed to fire on three sides.(Equation 7-21)

where:

b = The breadth (width) of a beam or larger side of a column before exposure to fire (inches).

d = The depth of a beam or smaller side of a column before exposure to fire (inches).

Z = Load factor, based on Figure 720.6.3(1).

721.6.3.1Equation 7-21.Equation 7-21 applies only where the unexposed face represents the smaller side of the column. If a column is recessed into a wall, its full dimension shall be used for the purpose of these calculations.

721.6.3.2Allowable loads.Allowable loads on beams and columns are determined using design values given in ANSI/AF&PA NDS.

721.6.3.3Fastener protection.Where minimum 1-hour fire resistance is required, connectors and fasteners shall be protected from fire exposure by 1 1/2 inches (38 mm) of wood, or other approved covering or coating for a 1-hour rating. Typical details for commonly used fasteners and connectors are shown in AITC Technical Note 7.

721.6.3.4Minimum size.Wood members are limited to dimensions of 6 inches (152 mm) nominal or greater. Glued-laminated timber beams utilize standard laminating combinations except that a core lamination is removed. The tension zone is moved inward and the equivalent of an extra nominal 2-inch-thick (51 mm) outer tension lamination is added.

721.7Other reference documents.Refer to Section 703.3, Item 1, and NBS BMS 71 and NBSTRBM-44 for fire-resistance ratings of materials and assemblies.

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HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

Table 721.2.3(2) repealed and added L.L. 8/2008 § 102, eff. July 1, 2008.

721.3.5 added L.L. 8/2008 § 103, eff July 1, 2008.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 8: INTERIOR FINISHES
SECTION BC 801: GENERAL

NYC Administrative Code § 28-BC 801

801.1 Scope.

Provisions of this chapter shall govern the use of materials used as interior finishes, trim and decorative materials.

801.1.1 Interior finishes. These provisions shall limit the allowable flame spread and smoke development based on location and occupancy classification.

Exceptions:

1. Materials having a thickness less than 0.036 inch (0.91 mm) applied directly to a non-combustible, or fire-retardant treated wood, substrate.
2. Exposed portions of structural members complying with the requirements for buildings of Type IV construction in Section 602.4.

801.1.2 Applicability in flood hazard areas. For buildings in flood hazard areas as established in Appendix G, interior finishes, trim and decorative materials below the design flood elevation shall be flood-damage-resistant materials.

801.2 Application. Combustible materials complying with the requirements of this chapter shall be permitted to be used as finish for walls, ceilings, floors and other interior surfaces of buildings.

801.2.1 Windows. Show windows in the first story of buildings shall be permitted to be of wood or of unprotected metal framing.

801.2.2 Foam plastics. Foam plastics shall not be used as interior finish or trim except as provided in Section 2603.7 or 2604.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 8: INTERIOR FINISHES
SECTION BC 802: DEFINITIONS

NYC Administrative Code § 28-BC 802

802.1 General.

The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

EXPANDED VINYL WALL COVERING. Wall covering consisting of a woven textile backing, an expanded vinyl base coat layer and a non-expanded vinyl skin coat. The expanded base coat layer is a homogeneous vinyl layer that contains a blowing agent. During processing, the blowing agent decomposes, causing this layer to expand by forming closed cells. The total thickness of the wall covering is approximately 0.055 inch to 0.070 inch (1.4 mm to 1.8 mm).

FLAME RESISTANCE. That property of materials or combinations of component materials that restricts the spread of flame in accordance with NFPA 701.

FLAME SPREAD. The propagation of flame over a surface.

FLAME SPREAD INDEX. The numerical value assigned to a material tested in accordance with ASTM E 84.

INTERIOR FINISH. Interior finish includes interior wall and ceiling finish and interior floor finish.

INTERIOR FLOOR FINISH. The exposed floor surfaces of buildings including coverings applied over a finished floor or stair, including risers.

INTERIOR WALL AND CEILING FINISH. The exposed interior surfaces of buildings including, but not limited to: fixed or movable walls and partitions; columns; ceilings; and interior wainscoting, paneling or other finish applied structurally or for decoration, acoustical correction, surface insulation, structural fire resistance or similar purposes, but not including trim.

SMOKE-DEVELOPED INDEX. The numerical value assigned to a material tested in accordance with ASTM E 84.

TRIM. Picture molds, chair rails, baseboards, handrails, door and window frames and similar decorative or protective materials used in fixed applications.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 8: INTERIOR FINISHES
SECTION BC 803: WALL AND CEILING FINISHES

NYC Administrative Code § 28-BC 803

803.1 General.

Interior wall and ceiling finishes shall be classified in accordance with ASTM E 84. Such interior finish materials shall be grouped in the following classes in accordance with their flame spread index.

Class A: Flame spread 0-25.

Class B: Flame spread 26-75.

Class C: Flame spread 76-200.

Exception: Materials, other than textiles, tested in accordance with Section 803.2.

803.1.1 Smoke developed index. Smoke developed index shall range from 0-450 with the following restrictions:

Exits, corridors 25

Occupancy Group I 50

Rooms in which the net floor area per occupant is 10

square feet or less 100

Exception: Materials other than textiles, tested in accordance with Section 803.2.

803.2. Interior wall or ceiling finishes other than textiles. Interior wall or ceiling finishes, other than textiles, shall be permitted to be tested in accordance with NFPA 286. Finishes tested in accordance with NFPA 286 shall comply with Sections 803.2.1 and 803.2.2.

803.2.1 Acceptance criteria. During the 40 kW exposure, the interior finish shall comply with Item 1. During the 160 kW exposure, the interior finish shall comply with Item 2. During the entire test, the interior finish shall comply with Item 3.

1. During the 40 kW exposure, flames shall not spread to the ceiling.
2. During the 160 kW exposure, the interior finish shall comply with the following:
 - 2.1. Flame shall not spread to the outer extremity of the sample on any wall or ceiling.
 - 2.2. Flashover, as defined in NFPA 286, shall not occur.
3. The total smoke released throughout the NFPA 286 test shall not exceed 1,000 m².

803.2.2 Toxicity. Interior wall or ceiling finishes, other than textiles, upon exposure to fire, shall not produce products of decomposition or combustion that are more toxic in point of concentration than those given off by wood or paper when decomposing or burning under comparable conditions.

803.3 Stability. Interior finish materials regulated by this chapter shall be applied or otherwise fastened in such a manner that such materials will not readily become detached where subjected to room temperatures of 200(degrees)F (93(degrees)C) for not less than 30 minutes.

803.4 Application. Where these materials are applied on walls, ceilings or structural elements required to have a fire-resistance rating or to be of noncombustible construction, they shall comply with the provisions of this section.

803.4.1 Direct attachment and furred construction. Where walls and ceilings are required by any provision in this code to be of fire-resistance-rated or noncombustible construction, the interior finish material shall be applied directly against such construction or to furring strips not exceeding 1.75 inches (44 mm) applied directly against such surfaces. The intervening spaces between such furring strips shall be filled with inorganic or Class A material or shall be fire blocked at a maximum of 8 feet (2438 mm) in any direction in accordance with Section 717.

803.4.2 Set-out construction. Where walls and ceilings are required to be of fire-resistance-rated or noncombustible construction and walls are set out or ceilings are dropped distances greater than specified in Section 803.4.1, Class A finish materials shall be used except where interior finish materials are protected on both sides by an automatic sprinkler system or attached to noncombustible backing or furring strips installed as specified in Section 803.4.1. The hangers and assembly members of such dropped ceilings that are below the main ceiling line shall be of noncombustible materials, except that in Type III and V construction, fire-retardant-treated wood shall be permitted. The construction of each set-out wall shall be of fire-resistance-rated construction as required elsewhere in this code.

803.4.3 Heavy timber construction. Wall and ceiling finishes of all classes as permitted in this chapter that are installed directly against the wood decking or planking of Type IV construction or to wood furring strips applied directly to the wood decking or planking shall be fire blocked as specified in Section 803.4.1.

803.4.4 Materials. An interior wall or ceiling finish that is not more than 0.25 inch (6.4 mm) thick shall be applied directly against a noncombustible backing.

Exceptions:

1. Class A materials.
2. Materials where the qualifying tests were made with the material suspended or furred out from the noncombustible backing.

803.5Interior finish requirements based on occupancy group.Interior wall and ceiling finish shall have a flame spread index not greater than that specified in Table 803.5 for the group and location designated. Interior wall and ceiling finish materials, other than textiles, tested in accordance with NFPA 286 and meeting the acceptance criteria of Sections 803.2.1 and 803.2.2, shall be permitted to be used where a Class A classification in accordance with ASTM E 84 is required.

803.6Textiles.Where used as interior wall or ceiling finish materials, textiles, including materials having woven or non-woven, napped, tufted, looped or similar surface, shall comply with the requirements of this section.

803.6.1Textile wall coverings.Textile wall coverings shall have a Class A flame spread index in accordance with ASTM E 84 and be protected by automatic sprinklers installed in accordance with Section 903.3.1.1 or 903.3.1.2 or the covering shall meet the criteria of Section 803.6.1.1 or 803.6.1.2 when tested in the manner intended for use in accordance with NFPA 265 using the product mounting system, including adhesive.

803.6.1.1Method A test protocol.During the Method A protocol, flame shall not spread to the ceiling during the 40 kW exposure. During the 150 kW exposure, the textile wall covering shall comply with all of the following:

1. Flame shall not spread to the outer extremity of the sample on the 8-foot by 12-foot (2438 mm by 3658 mm) wall.
2. The specimen shall not burn to the outer extremity of the 2-foot-wide (610 mm) samples mounted in the corner of the room.
3. Burning droplets deemed capable of igniting textile wall coverings or that burn for 30 seconds or more shall not form.
4. Flashover, as defined in NFPA 265, shall not occur.
5. The maximum net instantaneous peak heat release rate, determined by subtracting the burner output from the maximum heat release rate, does not exceed 300 kW.

803.6.1.2Method B test protocol.During the Method B protocol, flames shall not spread to the ceiling at any time during the 40 kW exposure. During the 150 kW exposure, the textile wall covering shall comply with the following:

1. Flame shall not spread to the outer extremities of the samples on the 8-foot by 12-foot (2438 mm by 3658mm) walls.
2. Flashover, as described in NFPA 265, shall not occur.

803.6.2Textile ceiling finish.Where used as a ceiling finish, carpet and similar textile materials shall have a Class A flame spread index in accordance with ASTM E 84 and be protected by automatic sprinklers.

803.7Expanded vinyl wall coverings.Expanded vinyl wall coverings shall comply with the requirements for textile wall and ceiling materials and their use shall comply with Section 803.6.

Exception: Expanded vinyl wall or ceiling coverings complying with Section 803.2 shall not be required to comply with Section 803.1 or 803.6.

803.8Insulation.Thermal and acoustical insulation shall comply with Section 719.

803.9Acoustical ceiling systems.The quality, design, fabrication and erection of metal suspension systems for acoustical tile and lay-in panel ceilings in buildings or structures shall conform with the provisions of this chapter and other applicable requirements of this code.

803.9.1 Materials and installation. Acoustical materials complying with the interior finish requirements of Section 803 shall be installed in accordance with the manufacturer's recommendations and applicable provisions for applying interior finish.

803.9.1.1 Suspended acoustical ceilings. Acoustical ceilings that are to be suspended below floor or roof construction by means of a framing system shall consist of supporting hangers of minimum 1/4 inch (6.4 mm) diameter steel rods, carrying channels of minimum 1 1/2 inch (38 mm) deep cold-rolled steel weighing 0.457 pounds per linear foot (0.707 kg/m), and a supporting grid complying with Appendix R. Use of wire hangers shall not be permitted. Direct hung suspension systems shall not be permitted.

Exception: Acoustical ceiling systems in Groups R-2 and R-3 occupancies shall be permitted to be installed in accordance with ASTM C 635 and ASTM C 636 without modifications.

803.9.1.2 Fire-resistance-rated construction. Acoustical ceiling systems that are part of fire-resistance-rated construction shall be installed in the same manner used in the assembly tested and shall comply with the provisions of Chapter 7.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

803.7 and exception amended L.L. 8/2008 § 104, eff. July 1, 2008.



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Chapter 8: INTERIOR FINISHES
SECTION BC 804: INTERIOR FLOOR FINISH

NYC Administrative Code § 28-BC 804

804.1 General.

Interior floor finish and floor covering materials shall comply with this section

804.2Classification. Interior floor finish and floor covering materials required by Section 804.5.1 to be of Class I or II materials shall be classified in accordance with NFPA 253. The classification referred to herein corresponds to the classifications determined by NFPA 253 as follows: Class I, 0.45 watts/cm² or greater; Class II, 0.22 watts/cm² or greater.

804.3Testing and identification. Floor covering materials shall be tested by an approved agency in accordance with NFPA 253 and identified by a hang tag or other suitable method so as to identify the manufacturer or supplier and style, and shall indicate the interior floor finish or floor covering classification according to Section 804.2. Carpet-type floor coverings shall be tested as proposed for use, including underlayment. Test reports confirming the information provided in the manufacturer's product identification shall be furnished to the department upon request.

804.4Application. Combustible materials installed in or on floors of buildings of Type I or II construction shall conform with the requirements of Sections 804.4.1 through 804.4.4.

Exception: Stages and platforms constructed in accordance with Sections 410.3 and 410.4, respectively.

804.4.1Sub-floor construction. Floor sleepers, bucks and nailing blocks shall not be constructed of combustible materials, unless the space between the fire-resistance-rated floor construction and the flooring is either solidly filled with approved noncombustible materials or fireblocked in accordance with Section 717, and provided that such open spaces shall not extend under or through permanent partitions or walls.

804.4.2Wood finish flooring. Wood finish flooring is permitted to be attached directly to the embedded or fireblocked wood sleepers and shall be permitted where cemented directly to the top surface of approved

fire-resistance-rated construction or directly to a wood subfloor attached to sleepers as provided for in Section 804.4.1.

804.4.3 Insulating boards. Combustible insulating boards not more than 0.5-inch (12.7 mm) thick and covered with approved finished flooring are permitted, where attached directly to a noncombustible floor assembly or to wood subflooring attached to sleepers as provided for in Section 804.4.1.

804.4.4 Carpet-type floor coverings. Carpet-type floor coverings are permitted where cemented directly to the top surface of approved fire-resistance-rated construction or directly to a wood subfloor attached to sleepers as provided for in Section 804.4.1.

804.5 Interior floor finish limitations. In buildings and spaces classified in Occupancy Group H and in all exits and exit passageways of any Occupancy Group, floor finishes shall be of non-combustible materials.

Exception: Interior floor finish may be of combustible materials in the following spaces. Carpet-type materials must be able to withstand a minimum critical radiant flux as specified in Section 804.5.1.

1. Buildings of Type VB Construction
2. Interior stairs in buildings of Types III, IV and V Construction in Occupancy Groups B, F, M or S-2, when the buildings are two stories in height or less.
3. Interior stairs in buildings of Types III, IV and V Construction in Occupancy Group R-2 and R-3 when the buildings are three stories in height or less.
4. Interior stairs in buildings of Types III, IV and V Construction in Occupancy Group R-2 when occupied by three families or less.

804.5.1 Minimum critical radiant flux. Interior floor finishes shall not be less than Class I in Occupancy Groups I-2 and I-3 and not less than Class II in Occupancy Groups A, B, E, H, I-4, M, R-1, R-2 and S. In all other Occupancy Groups, the interior floor finish shall comply with the DOC FF-1 "pill test" (CPSC 16 CFR, Part 1630).



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Chapter 8: INTERIOR FINISHES
SECTION BC 805: DECORATIONS AND TRIM

NYC Administrative Code § 28-BC 805

805.1 Decorations.

All decorations shall comply with the requirements of the New York City Fire Code.

805.2 Reserved.

805.3 Trim. Material used as interior trim shall have minimum Class C flame spread as required by Section 803.1 and smoke-developed index as required by Section 803.1.1. Combustible trim, excluding handrails and guardrails, shall not exceed 10 percent of the aggregate wall or ceiling area in which it is located.

805.4 Foam plastic as trim. Foam plastic used as trim shall be permitted in Group R-3 occupancies, within individual dwelling units of Group R-1 and R-2 occupancies, and where approved in accordance with the special provisions of Section 2603.8. Foam plastics used as trim in any occupancy shall comply with the requirements of Section 2604.2.

805.5 Pyroxylin plastic. Imitation leather or other material consisting of or coated with a pyroxylin or similarly hazardous base shall not be used in Group A occupancies.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 901: GENERAL

NYC Administrative Code § 28-BC 901

901.1 Scope.

The provisions of this chapter shall specify where fire protection systems are required and shall apply to the design, installation and operation of fire protection systems.

901.1.1 Referenced standards. Where this code makes reference to the nationally recognized standards NFPA 13, NFPA 13D, NFPA 13R, NFPA 14, or NFPA 72, such standard shall be as modified for New York City in accordance with Appendix Q.

901.2 Fire protection systems. Fire protection systems shall be installed, repaired, operated and maintained in accordance with this code and the New York City Fire Code. Any fire protection system for which an exception or reduction to the provisions of this code has been granted shall be considered to be a required system.

Exception: Any fire protection system or portion thereof not required by this code shall be permitted to be installed provided that such system meets the requirements of this code.

901.3 Modifications. No person shall remove or modify any fire protection system installed or maintained under the provisions of this code or the New York City Fire Code without approval by the commissioner.

901.4 Threads. Threads provided for Fire Department connections to sprinkler systems, standpipes, yard hydrants or any other fire hose connection shall be compatible with the connections used by the Fire Department.

901.5 Acceptance tests. Fire protection systems shall be tested in accordance with the requirements of this code and the New York City Fire Code. When required, the tests shall be conducted in the presence of the department or an approved agency. Tests required by this code, the New York City Fire Code and the standards listed in this code shall be conducted at the expense of the owner or the owner's representative. It shall be unlawful to occupy portions of a structure until the required fire protection systems within that portion of the structure have been tested and approved.

901.6Supervisory service.Where required, fire protection systems shall be monitored by an approved supervising station in accordance with NFPA 72.

901.6.1Automatic sprinkler systems.Automatic sprinkler systems shall be monitored by an approved supervising station.

Exceptions:

1. A supervising station is not required for automatic sprinkler systems protecting one- and two-family dwellings.
2. Limited area sprinkler systems serving fewer than 20 sprinkler heads.

901.6.2Fire alarm systems.Fire alarm systems required by the provisions of Section 907.2 of this code and the New York City Fire Code shall be monitored by an approved supervising station in accordance with Section 907.14.

Exceptions:

1. Single- and multiple-station smoke alarms and carbon monoxide alarms required by Section 907.2.10.
2. Smoke detectors in Group I-3 occupancies.
3. Supervisory service is not required for automatic sprinkler systems in one- and two-family dwellings.

901.6.3Group H.Manual fire alarm, automatic fire-extinguishing and emergency alarm systems in Group H occupancies shall be monitored by an approved supervising station.

901.7Fire areas.Where buildings, or portions thereof, are divided into fire areas so as not to exceed the limits established for requiring a fire protection system in accordance with this chapter, such fire areas shall be separated by fire barriers having a fire-resistance rating of not less than that determined in accordance with Section 706.3.7.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 902: DEFINITIONS

NYC Administrative Code § 28-BC 902

902.1 Definitions.

The following words and terms shall, for the purposes of this chapter, and as used elsewhere in this code, have the meanings shown herein.

ALARM NOTIFICATION APPLIANCE. A fire alarm system component such as a bell, horn, speaker, light or text display that provides audible, tactile or visible outputs, or any combination thereof.

ALARM SIGNAL. A signal indicating an emergency requiring immediate action, such as a signal indicative of fire.

ANNUNCIATOR. A unit containing one or more indicator lamps, alphanumeric displays or other equivalent means in which each indication provides status information about a circuit, condition or location.

AUDIBLE ALARM NOTIFICATION APPLIANCE. A notification appliance that alerts by the sense of hearing.

AUTOMATIC. As applied to fire protection devices, any device, equipment, or system that initiates a system function as a result of a predetermined temperature rise, rate of temperature rise or combustion products, without the necessity for human intervention.

AUTOMATIC FIRE-EXTINGUISHING SYSTEM. An approved system of devices and equipment that automatically detects a fire and discharges an approved fire-extinguishing agent onto or in the area of a fire.

AUTOMATIC SPRINKLER SYSTEM. An automatic fire-extinguishing system utilizing water, designed in accordance with fire protection engineering standards. The system includes a suitable water supply and a network of specially sized or hydraulically designed piping installed in a structure or area, generally overhead, to which automatic sprinklers are connected in a systematic pattern. The system is usually activated by heat from a fire and discharges water over the fire area.

AVERAGE AMBIENT SOUND LEVEL. The root mean square, A-weighted sound pressure level measured over a 24-hour period.

CARBON DIOXIDE EXTINGUISHING SYSTEMS. An automatic fire-extinguishing system supplying carbon dioxide (CO₂) from a pressurized vessel through fixed pipes and nozzles. The system includes a manual- or automatic-actuating mechanism.

CARBON MONOXIDE ALARM. A single- or multiple-station alarm responsive to carbon monoxide and not connected to a system.

CARBON MONOXIDE DETECTOR. A listed device that senses carbon monoxide.

CARBON MONOXIDE PRODUCING EQUIPMENT. Any furnace, boiler, water heater, fireplace, cooking appliance, gas clothes dryer, apparatus, appliance or device that burns coal, kerosene, oil, wood, fuel gases and other petroleum products including, but not limited to, methane, natural gas, liquefied natural gas and manufactured fuel gases.

CEILING LIMIT. The maximum concentration of an air-borne contaminant to which one may be exposed, as published in DOL 29 CFR Part 1910.1000.

CENTRAL STATION. A facility that receives alarm signals from a protected premise and/or retransmits such alarm signals to a Fire Department communication office.

CLEAN AGENT. Electrically nonconducting, volatile or gaseous fire extinguishant that does not leave a residue upon evaporation.

COMMERCIAL COOKING SYSTEM. A system consisting of commercial cooking equipment, exhaust hood, filters, exhaust duct system, fire suppression system and other related appurtenances designed to capture grease-laden cooking vapors and exhaust them safely to the outdoors.

CONSTANTLY ATTENDED LOCATION. A designated location at a facility staffed by trained personnel on a continuous basis where alarm or supervisory signals are monitored and facilities are provided for notification of the Fire Department or other emergency services.

DELUGE SPRINKLER SYSTEM. A sprinkler system employing open sprinklers attached to a piping system connected to a water supply through a valve that is opened by the operation of a detection system installed in the same areas as the sprinklers. When this valve opens, water flows into the piping system and discharges from all sprinklers attached thereto.

DETECTOR, HEAT. A fire detector that senses heat produced by burning substances. Heat is the energy produced by combustion that causes substances to rise in temperature.

DRY-CHEMICAL EXTINGUISHING SYSTEM. A fire extinguishing system designed to discharge a powder composed of small particles, usually of sodium bicarbonate, potassium bicarbonate, urea-potassium-based bicarbonate, potassium chloride or monoammonium phosphate, with added particulate material supplemented by special treatment to provide resistance to packing, resistance to moisture absorption (caking) and the proper flow capabilities.

EMERGENCY ALARM SYSTEM. A system to provide indication and warning of an emergency condition involving hazardous materials.

EMERGENCY VOICE/ALARM COMMUNICATIONS. Dedicated manual or automatic facilities for originating and distributing voice instructions, as well as alert and evacuation signals pertaining to a fire emergency, to the occupants of a building.

FIRE ALARM BOX, MANUAL. See "Manual Fire Alarm Box."

FIRE ALARM CONTROL PANEL. A system component that receives inputs from automatic and manual fire alarm devices and is capable of supplying power to detection devices and transponder(s) or off-premises transmitter(s). The control panel is capable of providing a transfer of power to the notification appliances and transfer of condition to relays or devices.

FIRE ALARM SIGNAL. A signal initiated by a fire alarm-initiating device such as a manual fire alarm box, automatic fire detector, water flow switch, or other device whose activation is indicative of the presence of a fire or fire signature.

FIRE ALARM SYSTEM. A system or portion of a combination system consisting of components and circuits arranged to monitor and annunciate the status of fire alarm or supervisory signal-initiating devices and to initiate the appropriate response to those signals.

FIRE COMMAND CENTER. The principal attended or unattended location where the status of detection, alarm communications and control systems is displayed, and from which the system(s) can be manually controlled.

FIRE DETECTOR, AUTOMATIC. A device designed to detect the presence of a fire signature and to initiate action.

FIRE PROTECTION SYSTEM. Approved devices, equipment and systems or combinations of systems used to detect a fire, activate an alarm, extinguish or control a fire, control or manage smoke and products of a fire or any combination thereof.

FIRE SAFETY FUNCTIONS. Building and fire control functions that are intended to increase the level of life safety for occupants or to control the spread of harmful effects of fire.

FOAM-EXTINGUISHING SYSTEM. A fire extinguishing system designed to discharge a foam made from concentrates, either mechanically or chemically, over the area to be protected.

HALOGENATED EXTINGUISHING SYSTEM. An automatic fire-extinguishing system using one or more of the following halogen elements: fluorine, chlorine, bromine and iodine.

INITIATING DEVICE. A system component that originates transmission of a change-of-state condition, such as in a smoke detector, manual fire alarm box or supervisory switch.

LIMITED AREA SPRINKLER SYSTEM. An automatic sprinkler system serving fewer than 20 sprinkler heads on any single connection.

LISTED. See Chapter 1 of Title 28 of the Administrative Code.

MANUAL FIRE ALARM BOX. A manually operated device used to initiate an alarm signal.

MULTIPLE-STATION ALARM DEVICE. Two or more single-station alarm devices that are capable of interconnection such that actuation of one causes all integral or separate audible alarms to operate. It also can consist of one single-station alarm device having connections to other detectors or to a manual fire alarm box.

MULTIPLE-STATION SMOKE ALARM. Two or more single-station smoke alarm devices that are capable of interconnection such that actuation of one causes all integral or separate audible alarms to operate.

PRESIGNAL SYSTEM. A fire alarm system having a feature that allows initial fire alarm signals to sound in a constantly attended central location and for which a human action is subsequently required to achieve a general alarm,

or a feature that allows the control equipment to delay the general alarm by more than 1 minute after the start of the alarm processing.

RECORD DRAWINGS. Drawings ("as built") that document the location of all devices, appliances, wiring sequences, wiring methods and connections of the components of a fire alarm system as installed.

SINGLE-STATION SMOKE ALARM. An assembly incorporating the detector, the control equipment and the alarm-sounding device in one unit, operated from a power supply either in the unit or obtained at the point of installation.

SMOKE ALARM. A single- or multiple-station alarm responsive to smoke and not connected to a system.

SMOKE DETECTOR. A listed device that senses visible or invisible particles of combustion.

SMOKEPROOF ENCLOSURE. An exit stairway designed and constructed so that the movement of the products of combustion produced by a fire occurring in any part of the building into the enclosure is limited.

STANDPIPE SYSTEM. Piping installed in a building or structure that serves to transfer water from a water supply to hose connections at one or more locations in a building or structure for firefighting purposes, including the following types of systems:

Automatic dry. A dry standpipe system, normally filled with pressurized air, that is arranged through the use of a device, such as dry pipe valve, to admit water into the system piping automatically upon the opening of a hose valve. The water supply for an automatic dry standpipe system shall be capable of supplying the system demand.

Automatic wet. A wet standpipe system that has a water supply that is capable of supplying the system demand automatically.

Manual dry. A dry standpipe system that does not have a permanent water supply attached to the system. Manual dry standpipe systems require water from a Fire Department pumper to be pumped into the system through the Fire Department connection in order to meet the system demand.

Manual wet. A wet standpipe system connected to a water supply for the purpose of maintaining water within the system but that does not have a water supply capable of delivering the system demand attached to the system. Manual-wet standpipe systems require water from a Fire Department pumper to be pumped into the system in order to meet the system demand.

Semiautomatic dry. A dry standpipe system that is arranged through the use of a device, such as a deluge valve, to admit water into the system piping upon activation of a remote control device located at a hose connection. A remote control activation device shall be provided at each hose connection. The water supply for a semiautomatic dry standpipe system shall be capable of supplying the system demand.

STANDPIPE SYSTEM, CLASSES OF. Standpipe classes are as follows:

Class I system. A system providing 2.5-inch (64 mm) hose connections to supply water for use by the Fire Department and those trained in handling heavy fire streams.

Class II system. A system providing 1.5-inch (38 mm) hose stations to supply water for use primarily by the building occupants or by the Fire Department during initial response.

Class III system. A system providing 1.5-inch (38 mm) hose stations to supply water for use by building occupants and 2.5-inch (64 mm) hose connections to supply a larger volume of water for use by the Fire Department and those trained in handling heavy fire streams.

SUPERVISING STATION. A facility that receives signals and at which personnel are in attendance at all times to respond to these signals.

SUPERVISORY SERVICE. The service required to monitor performance of guard tours and the operative condition of fixed suppression systems or other systems for the protection of life and property.

SUPERVISORY SIGNAL. A signal indicating the need for action in connection with the supervision of guard tours, fire suppression systems or equipment, fire alarm systems, or the maintenance features of related systems.

SUPERVISORY SIGNAL-INITIATING DEVICE. An initiation device, such as a valve supervisory switch, water-level indicator or low-air pressure switch on a dry-pipe sprinkler system, whose change of state signals an off-normal condition and its restoration to normal of a fire protection or life safety system, or a need for action in connection with the supervision of guard tours, fire suppression systems or equipment, fire alarm systems, or the maintenance features of related systems.

TIRES, BULK STORAGE OF. Storage of tires where the area available for storage exceeds 20,000 cubic feet (566 m³).

TROUBLE SIGNAL. A signal initiated by the fire alarm system or device indicative of a fault in a monitored circuit or component.

VISIBLE ALARM NOTIFICATION APPLIANCE. A notification appliance that alerts by the sense of sight.

WET-CHEMICAL EXTINGUISHING SYSTEM. A solution of water and potassium-carbonate-based chemical, potassium-acetate-based chemical or a combination thereof, forming an extinguishing agent.

WIRELESS PROTECTION SYSTEM. A system or a part of a system that can transmit and receive signals without the aid of wire.

ZONE. A defined area within the protected premises. A zone can define an area from which a signal can be received, an area to which a signal can be sent or an area in which a form of control can be executed.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 903: AUTOMATIC SPRINKLER SYSTEMS

NYC Administrative Code § 28-BC 903

903.1 General.

Automatic sprinkler systems shall comply with this section. Installation of automatic sprinkler systems shall comply with the special inspection requirements of Chapter 17.

903.1.1 Alternative protection. Where the discharge of water would be hazardous, alternative automatic fire-extinguishing systems complying with Section 904 shall be permitted in lieu of automatic sprinkler protection where recognized by the applicable standard and approved by the commissioner.

903.1.2 Construction documents. Construction documents for automatic sprinkler systems shall contain plans that include the following data and information:

1. The location and size of water supplies and the location, spacing, number, and type of sprinkler heads to be used, with approximate location and size of all feed mains, valves and other essential features of the system. For hydraulically calculated systems, hydraulic data substantiating pipe sizes shown shall be submitted and hydraulic reference points and areas must be indicated on the plan.
2. A diagram showing the proposed sprinkler system in relation to principal construction features of the building, such as its size, walls, columns, and partitions; and such other information as may be necessary for the evaluation of the system.
3. The location, number, and type of any electrical or automatic devices or alarms to be used in the system.
4. In buildings where a new separate fire sprinkler system is required, the available water pressure at the top and bottom floors of each zone shall be shown on the riser diagram.
5. For street pressure-fed systems and fire pumps, a statement from the New York City Department of Environmental Protection, giving the minimum water pressure in the main serving the building.

903.2 Where required. Approved automatic sprinkler systems in new buildings and structures shall be provided in the locations described in this section.

Exception: Sprinklers shall not be required in electrical equipment rooms where all of the following conditions are met:

1. The room is dedicated to electrical equipment only.
2. Only dry-type electrical equipment is used.
3. Equipment is installed in a 2-hour fire-rated enclosure including protection for penetrations.
4. No combustible storage is permitted to be stored in the room.

903.2.1 Group A. An automatic sprinkler system shall be provided throughout buildings and portions thereof used as Group A occupancies as provided in this section. The automatic sprinkler system shall be provided throughout the floor area where the Group A occupancy is located, and in all floors between the Group A occupancy and the level of exit discharge. In all Group A occupancies providing live entertainment, dressing rooms and property rooms used in conjunction with such assembly occupancy shall be provided with an automatic sprinkler system. Stages shall comply with Section 410.6.

903.2.1.1 Group A-1. An automatic sprinkler system shall be provided for Group A-1 occupancies where any one of the following conditions exists:

1. The fire area exceeds 12,000 square feet (1115 m²).
2. The fire area has an occupant load of 300 or more.
3. The aggregate occupant load of all fire areas occupied by Group A, located on any given floor other than the level of exit discharge, is 300 or more.
4. The fire area contains a multitheater complex.

903.2.1.2 Group A-2. An automatic sprinkler system shall be provided for Group A-2 occupancies where any one of the following conditions exists:

1. The fire area exceeds 5,000 square feet (464.5 m²).
2. The fire area has an occupant load of 300 or more.
3. The aggregate occupant load of all fire areas occupied by Group A, located on any given floor other than the level of exit discharge, is 300 or more.
4. The A-2 occupancy is used as a cabaret.

903.2.1.3 Group A-3. An automatic sprinkler system shall be provided for Group A-3 occupancies where any one of the following conditions exists:

1. The fire area exceeds 12,000 square feet (1115 m²).
2. The fire area has an occupant load of 300 or more.
3. The aggregate occupant load of all fire areas occupied by Group A, located on any given floor other than the level of exit discharge, is 300 or more.

Exception: Areas used exclusively as participant sports areas where the main floor area is located at the same level as the level of exit discharge of the main entrance and exit.

903.2.1.4 Group A-4. An automatic sprinkler system shall be provided for Group A-4 occupancies where any one of the following conditions exists:

1. The fire area exceeds 12,000 square feet (1115 m²).
2. The fire area has an occupant load of 300 or more.
3. The aggregate occupant load of all fire areas occupied by Group A, located on any given floor other than the level of exit discharge, is 300 or more.

Exception: Areas used exclusively as participant sports areas where the main floor area is located at the same level as the level of exit discharge of the main entrance and exit.

903.2.1.5 Group A-5. An automatic sprinkler system shall be provided in all enclosed areas of the structure, including but not limited to the concession concourse, concession stands, retail areas, press boxes and other accessory occupancies, in excess of 1,000 square feet (93 m²).

903.2.2 Group E. An automatic sprinkler system shall be provided for Group E occupancies as follows:

1. Throughout all Group E fire areas greater than 20,000 square feet (1858 m²) in area.
2. Throughout every portion of educational buildings below the level of exit discharge.

Exception: An automatic sprinkler system is not required in any fire area or area below the level of exit discharge where every classroom throughout the building has at least one exterior exit door at ground level without intervening corridors, passageways, or exit enclosures.

903.2.3 Group F. An automatic sprinkler system shall be provided throughout all buildings containing a Group F occupancy where any one of the following conditions exists:

1. Where a Group F-1 fire area exceeds 12,000 square feet (1115 m²);
2. Where a Group F-1 fire area is located more than three stories above grade; or
3. Where the combined area of all Group F-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²); or
4. Where required by Section 280 of the New York State Labor Law for "factory buildings" defined in Section 2 of such law.

903.2.3.1 Woodworking operations. An automatic sprinkler system shall be provided throughout any Group F-1 occupancy fire area that contains wood working operations in excess of 2,500 square feet (232 m²) in area that generate finely divided combustible waste or use finely divided combustible materials.

903.2.3.2 Repair garages. An automatic sprinkler system shall be provided throughout all buildings used as repair garages in accordance with Section 406, as follows:

1. Buildings two or more stories in height, including basements, with a fire area containing a repair garage exceeding 10,000 square feet (929 m²).
2. One-story buildings with a fire area containing a repair garage exceeding 12,000 square feet (1115 m²).

3. Buildings with a repair garage servicing vehicles parked in the basement.

903.2.3.3 Group F-1 fire areas. An automatic sprinkler system shall be provided throughout any Group F-1 occupancy fire area where any one of the following conditions exists:

1. The fire area exceeds 7,500 square feet (697 m²).
2. The fire area of any size is located more than 3 stories above grade.

903.2.4 Group H. Automatic sprinkler systems shall be provided in high-hazard occupancies as required in Sections 903.2.4.1 through 903.2.4.3 and the New York City Fire Code.

903.2.4.1 General. An automatic sprinkler system shall be installed in Group H occupancies. An automatic sprinkler system shall be installed throughout buildings with a main use or dominant occupancy of Group H.

903.2.4.2 Group H-5. An automatic sprinkler system shall be installed throughout buildings containing Group H-5 occupancies. The design of the sprinkler system shall not be less than that required by this code for the occupancy hazard classifications in accordance with Table 903.2.4.2. Where the design area of the sprinkler system consists of a corridor protected by one row of sprinklers, the maximum number of sprinklers required to be calculated is 13. [F] Table 903.2.4.2 Group H-5 Sprinkler Design Criteria Location Occupancy Hazard Classification Fabrication areas Ordinary Hazard Group 2 Service corridors Ordinary Hazard Group 2 Storage rooms without dispensing Ordinary Hazard Group 2 Storage rooms with dispensing Extra Hazard Group 2 Corridors Ordinary Hazard Group 2

903.2.4.3 Pyroxylin plastics. An automatic sprinkler system shall be provided in buildings, or portions thereof, where cellulose nitrate film or pyroxylin plastics are manufactured, stored or handled in quantities exceeding 100 pounds (45 kg).

903.2.5 Group I. An automatic sprinkler system shall be provided in Group I occupancies. An automatic sprinkler system shall be installed throughout buildings with a main use or dominant occupancy of Group I.

Exception: An automatic sprinkler system installed in accordance with Section 903.3.1.2 or 903.3.1.3 shall be allowed in Group I-1 facilities.

903.2.6 Group M. An automatic sprinkler system shall be provided throughout buildings containing a Group M occupancy where any one of the following conditions exists:

1. Where a Group M fire area exceeds 12,000 square feet (1115 m²);
2. Where the combined area of all Group M fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).

903.2.6.1 High-piled storage. An automatic sprinkler system shall be provided in accordance with the New York City Fire Code in all buildings of Group M where storage of merchandise is in high-piled or rack storage arrays.

903.2.6.2 Group M fire areas. An automatic sprinkler system shall be provided throughout any Group M occupancy fire area where any one of the following conditions exists:

1. The fire area exceeds 7,500 square feet (697 m²).
2. The fire area of any size is located more than 3 stories above grade.
3. The fire area of any size is located in a high-rise building.

4. The fire area of any size contains an unenclosed stair or escalator connecting two or more floors.

903.2.7Group R.An automatic sprinkler system shall be installed in Group R fire areas. An automatic sprinkler system shall be installed throughout buildings with a main use or dominant occupancy of Group R.

Exception: An automatic sprinkler system shall not be required in detached one- and two-family dwellings and multiple single-family dwellings (town houses), provided that such structures are not more than three stories above grade plane in height and have separate means of egress.

903.2.8Group S-1.An automatic sprinkler system shall be provided throughout all buildings containing a Group S-1 occupancy where any one of the following conditions exists:

1. A Group S-1 fire area exceeds 12,000 square feet (1115 m²);
2. The building is greater than 1,000 square feet (92.9 m²) in area and the main use or dominant occupancy is Group S-1; or
3. The combined area of all Group S-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).

903.2.8.1Group S-1 fire areas.An automatic sprinkler system shall be provided throughout any Group S-1 occupancy fire area where any one of the following conditions exists:

1. The fire area exceeds 500 square feet (46 m²).
2. The fire area of any size is located more than 3 stories above grade.

903.2.8.2Bulk storage of tires.Buildings and structures where the area for the storage of tires exceeds 500 square feet (47 m²) or 7,500 cubic feet (212 m³) shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

903.2.9Group S-2.An automatic sprinkler system shall be installed throughout buildings greater than 5,000 square feet (465 m²) in area where the main use or dominant occupancy is Group S-2.

903.2.9.1Commercial parking garages.An automatic sprinkler system shall be provided throughout buildings used for storage of commercial trucks or buses where the fire area exceeds 5,000 square feet (465 m²).

903.2.9.2Group S-2 fire areas.An automatic sprinkler system shall be provided throughout any Group S-2 occupancy fire area greater than 5,000 square feet (465 m²).

903.2.9.3Parking garages.An automatic sprinkler system shall be provided throughout buildings classified as enclosed parking garages in accordance with Section 406.4 or where an open or enclosed parking garage is located beneath other occupancy groups.

Exception: Parking garages located beneath Group R-3 occupancies.

903.2.10All occupancies.An automatic sprinkler system shall be installed in the locations set forth in Sections 903.2.10.1 through 903.2.10.6.

903.2.10.1Above or below-grade stories.An automatic sprinkler system shall be installed throughout every above or below grade story of all buildings where the floor area exceeds 1,500 square feet (139.4 m²) and where there is not provided at least one of the following types of exterior wall openings:

1. Openings below grade that lead directly to ground level by an exterior stairway complying with Section 1009 or an outside ramp complying with Section 1010. Openings shall be located in each 50 linear feet (15 240 mm), or fraction thereof, of exterior walls facing onto a street, public way or frontage space, in the story on at least one side.

2. Openings entirely above the adjoining ground level totaling at least 20 square feet (1.86 m²) in each 50 linear feet (15 240 mm), or fraction thereof, of exterior walls facing onto a street, public way or frontage space, in the story on at least one side.

903.2.10.1.1 Opening dimensions and access. Such openings shall have a minimum dimension of not less than 30 inches (762 mm). Such openings shall be accessible to the Fire Department from the exterior and shall not be obstructed in a manner that fire fighting or rescue cannot be accomplished from the exterior.

903.2.10.1.2 Openings on one side only. Where such openings in a story are provided on only one side and the opposite wall of such story is more than 100 feet (30 480 mm) from such openings, the story shall be equipped throughout with an approved automatic sprinkler system, or openings as specified above shall be provided on at least two sides of the story.

903.2.10.1.3 Below-grade stories. Where any portion of a below-grade story is located more than 75 feet (22 860 mm) from openings required by Section 903.2.10.1, the below-grade story shall be equipped throughout with an approved automatic sprinkler system.

903.2.10.2 Rubbish and linen chutes. An automatic sprinkler system shall be installed at the top of rubbish and linen chutes, in chute access rooms, and in their terminal rooms. Chutes extending through three or more floors shall have additional sprinkler heads installed within such chutes at alternate floors. Chute sprinklers shall be accessible for servicing.

903.2.10.3 Buildings over 55 feet in height. An automatic sprinkler system shall be installed throughout buildings with a floor level having an occupant load of 30 or more that is located 55 feet (16 764 mm) or more above the lowest level of fire department vehicle access.

903.2.10.4 Steel-plated and vault-like occupancies. An automatic sprinkler system shall be installed throughout all steel-plated or similarly reinforced or secured vault-like occupancies regardless of area.

903.2.10.5 Refuse collection and disposal areas. An automatic sprinkler system shall be installed throughout all areas used for the storage and sorting of refuse and recyclables.

903.2.10.6 Laundry drying areas. An automatic sprinkler system shall be installed in spaces in which two or more clothes drying machines are installed. Sprinkler heads shall be spaced to cover the areas 5 feet (1524 mm) on all sides of the drying machines.

903.2.11 During construction. Automatic sprinkler systems required during construction, alteration and demolition operations shall be provided in accordance with Chapter 33 and the New York City Fire Code.

903.2.12 Other hazards. Automatic sprinkler protection shall be provided for the hazards indicated in Sections 903.2.12.1 and 903.2.12.2.

903.2.12.1 Ducts conveying hazardous exhausts. Where required by the New York City Mechanical Code, automatic sprinklers shall be provided in ducts conveying hazardous exhaust, or flammable or combustible materials.

Exception: Ducts in which the largest cross-sectional diameter of the duct is less than 10 inches (254 mm).

903.2.12.2 Commercial cooking operations. An automatic sprinkler system shall not be installed in a commercial kitchen exhaust hood and duct system. Fire extinguishing systems shall be installed in commercial cooking systems in

accordance with Section 904.11

903.2.13 Other buildings, occupancies, and areas. In addition to the requirements of Section 903.2, the provisions indicated in Table 903.2.13 also require the installation of a suppression system for certain buildings and areas. Suppression systems shall also be required as provided for in other sections of this code, the New York City Fuel Gas Code, and the New York City Mechanical Code.3]Table 903.2.13 Additional Required Suppression Systems Section Subject 1]Section Subject 2]402.8 Covered malls403.2, 403.3 High-rise buildings404.3 Atriums405.3 Underground structures407.5 Group I-2410.6 Stages411.4 Special amusement buildings415.7.2.4 Group H-2416.4 Flammable finishes417.4 Drying rooms507 Unlimited area buildingsNYCFCNFPA-13 as modified for NYC

903.3 Installation requirements. Automatic sprinkler systems shall be designed and installed in accordance with Sections 903.3.1 through 903.3.7.

903.3.1 Standards. Sprinkler systems shall be designed and installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3.

903.3.1.1 NFPA 13 sprinkler systems. Where the provisions of this code require that a building or portion thereof be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, sprinklers shall be installed throughout in accordance with NFPA 13 as modified in Appendix Q except as provided in Section 903.3.1.1.1.

903.3.1.1.1 Exempt locations protected by other means. Automatic sprinklers shall not be required in the following rooms or areas where such rooms or areas are protected with an approved automatic fire detection system in accordance with Section 907.2 that will respond to visible or invisible particles of combustion and an alternative extinguishing system in accordance with Section 904. Sprinklers shall not be omitted from any room merely because it is damp, of fire-resistance-rated construction or contains electrical equipment.

1. Any room where the application of water, or flame and water, constitutes a serious life or fire hazard.
2. Any room or space where sprinklers are considered undesirable because of the nature of the contents, when approved by the commissioner.
3. Generator and transformer rooms separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a fire-resistance rating of not less than 2 hours.

903.3.1.2 NFPA 13R sprinkler systems. Where allowed in buildings of Group R, up to and including six stories in height, automatic sprinkler systems shall be installed throughout in accordance with NFPA 13R as modified in Appendix Q.

903.3.1.2.1 Balconies. Sprinkler protection shall be provided for exterior balconies and ground-floor patios of dwelling units where the building is of Type V construction and automatic sprinkler protection is required for the Group R occupancy. Side wall sprinklers that are used to protect such areas shall be permitted to be located such that their deflectors are within 1 inch (25 mm) to 6 inches (152 mm) below the structural members, and a maximum distance of 14 inches (356 mm) below the deck of the exterior balconies that are constructed of open wood joist construction.

903.3.1.3 NFPA 13D sprinkler systems. Where allowed, automatic sprinkler systems in one- and two-family dwellings shall be installed throughout in accordance with NFPA 13D as modified.

903.3.2 Quick-response and residential sprinklers. Where automatic sprinkler systems are required by this code, quick-response or residential automatic sprinklers shall be installed in the following areas in accordance with Section 903.3.1 and their listings:

1. Throughout all spaces within a smoke compartment containing patient dwelling units in Group I-2 in accordance

with this code.

2. Dwelling units in Group R and I-1 occupancies.

3. Light-hazard occupancies as defined in NFPA 13.

903.3.3 Obstructed locations. Automatic sprinklers shall be installed with due regard to obstructions that will delay activation or obstruct the water distribution pattern. Automatic sprinklers shall be installed in or under covered kiosks, displays, booths, concession stands, or equipment that exceeds 4 feet (1219 mm) in width. Not less than a 3-foot (914 mm) clearance shall be maintained between automatic sprinklers and the top of piles of combustible fibers.

Exception: Kitchen equipment under exhaust hoods protected with a fire-extinguishing system in accordance with Section 904.

903.3.4 Actuation. Automatic sprinkler systems shall be automatically actuated unless otherwise specifically provided in this code.

903.3.5 Water supplies. Water supplies for automatic sprinkler systems shall comply with this section and the standards referenced in Section 903.3.1. The potable water supply shall be protected against back flow in accordance with the requirements of this section, the New York City Plumbing Code, and Rules of the New York City Department of Environmental Protection.

903.3.5.1 Domestic services. Where the domestic service provides the water supply for the automatic sprinkler system, the supply shall be in accordance with NFPA 13.

903.3.5.1.1 Limited area sprinkler systems. Limited area sprinkler systems serving fewer than 20 sprinklers on any single connection are permitted to be connected to the domestic service where a wet automatic standpipe is not available. Limited area sprinkler systems connected to domestic water supplies shall comply with NFPA 13.

The domestic service shall be capable of supplying the simultaneous domestic demand and the sprinkler demand required to be hydraulically calculated by NFPA 13, NFPA 13R or NFPA 13D.

903.3.5.1.2 Residential combination services. A single combination water supply shall be permitted in accordance with NFPA 13R.

903.3.5.2 Secondary water supply. A secondary on-site water supply equal to the hydraulically calculated sprinkler demand, including the hose stream requirement, shall be provided for high-rise buildings in Seismic Design Category C or D as determined by this code, and in any high-rise building greater than 300 feet (91 440 mm) in height. The secondary water supply shall have a duration not less than 30 minutes as determined by the occupancy hazard classification in accordance with NFPA 13.

903.3.6 Hose threads. Fire hose threads used in connection with automatic sprinkler systems shall be approved and compatible with Fire Department hose threads.

903.3.7 Fire Department connections. The location of Fire Department connections shall be installed in accordance with Section 905 of this code.

903.4 Sprinkler system monitoring and alarms. All valves controlling the water supply for automatic sprinkler systems, pumps, tanks, water levels and temperatures, critical air pressures and water-flow switches on all sprinkler systems shall be electrically supervised by the fire alarm system.

Exceptions:

1. Automatic sprinkler systems protecting one- and two-family dwellings.
2. Automatic sprinkler systems installed in accordance with NFPA 13R where a common supply main is used to supply both domestic water and the automatic sprinkler systems and a separate shutoff valve for the automatic sprinkler system is not provided.
3. Jockey pump control valves that are sealed or locked in the open position.
4. Control valves to commercial kitchen hoods, paint spray booths or dip tanks that are sealed or locked in the open position.
5. Valves controlling the fuel supply to fire pump engines that are sealed or locked in the open position.
6. Trim valves to pressure switches in dry, preaction and deluge sprinkler systems that are sealed or locked in the open position.

903.4.1 Signals. Alarm, supervisory and trouble signals shall be distinctly different and automatically transmitted to an approved central station, remote supervising station or proprietary supervising station as defined in NFPA 72 or, when approved by the commissioner, shall sound an audible signal at a constantly attended location.

Exceptions:

1. Underground key or hub valves in roadway boxes provided by the city or a public utility are not required to be monitored.
2. Back flow prevention device test valves, located in limited area sprinkler system supply piping, shall be locked in the open position. In occupancies required to be equipped with a fire alarm system, the back flow preventer valves shall be electrically supervised by a tamper switch installed in accordance with NFPA 72 and separately annunciated.

903.4.2 Alarms. Approved audible devices shall be connected to every automatic sprinkler system. Such sprinkler water-flow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Alarm devices shall be provided on the exterior of the building in an approved location. Where a fire alarm system is installed, actuation of the automatic sprinkler system shall actuate the building fire alarm system.

903.4.3 Floor control valves. Approved supervised indicating control valves shall be provided at the point of connection to the riser on each floor in high-rise buildings.

903.5 Testing and maintenance. Sprinkler systems shall be tested and maintained in accordance with the New York City Fire Code.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.
903.2.1.5 amended L.L. 8/2008 § 105, eff. July 1, 2008.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 904: ALTERNATIVE AUTOMATIC FIRE-EXTINGUISHING SYSTEMS

NYC Administrative Code § 28-BC 904

904.1 General.

Automatic fire-extinguishing systems, other than automatic sprinkler systems, shall be designed, installed, inspected, tested and maintained in accordance with the provisions of this section, the New York City Fire Code, and the applicable referenced standards.

904.1.1 Construction documents. Construction documents for alternative automatic fire-extinguishing systems shall be approved by the Fire Department and shall contain plans that include at least the following data and information:

1. Commercial kitchen suppression systems:

1.1. Location of all surface, plenum and duct nozzles; surface dimensions and location of all cooking appliances; the location of automatic fuel shut-off and statement as to type (gas or electric); location and distance of the remote control or manual pull station;

1.2. Identification of the grease filters to be used in any kitchen hood; the dimensions of all hoods and all related ducts, including termination of duct at the exterior of the building;

1.3. Identification of: the fire suppression piping system; the make and model of the system; the type of extinguishing agent and number and size of agent containers; size, length, and type of all piping that will be used; the number and location of all fusible links or detectors and the temperature setting; any surface, plenum and duct nozzles.

2. For extinguishing agent systems, the plan should also include type and concentration of the extinguishing agent, the method of providing power supply to smoke or heat detectors, fire rating of partitions, location of all audible/visible alarms within and outside the location involved and the details of construction of the room to contain the extinguishing agent. If the area is not sprinklered, the following information is required:

2.1. The size and location of the reserve supply, and

3. The plans must note whether the proposed system is connected to the building's fire alarm system.

Exception: For that portion of a fire suppression piping system within an approved pre-engineered system, a schematic isometric diagram shall be acceptable in lieu of full plans, provided that the location and method of pressure relief must be indicated with areas and volumes to where said relief is taken.

904.2 Where required. Automatic fire-extinguishing systems installed as an alternative to the required automatic sprinkler systems of Section 903 shall be approved by the commissioner. Automatic fire-extinguishing systems shall not be considered alternatives for the purposes of exceptions or reductions permitted by other requirements of this code.

Exception: Automatic fire-extinguishing systems installed in Group H occupancies as an alternative to the required automatic sprinkler systems of Section 903 shall be approved by the Fire Commissioner.

904.2.1 Hood system suppression. Each required commercial kitchen exhaust hood and duct system required by the New York City Fire Code or the New York City Mechanical Code to have a Type I hood shall be protected with an approved automatic fire-extinguishing system installed in accordance with this code.

904.3 Installation. Automatic fire-extinguishing systems shall be installed in accordance with this section.

904.3.1 Electrical wiring. Electrical wiring shall be in accordance with the New York City Electrical Code.

904.3.2 Actuation. Automatic fire-extinguishing systems shall be automatically actuated and provided with a manual means of actuation in accordance with Section 904.11.1.

904.3.3 System interlocking. Automatic equipment interlocks with fuel shutoffs, ventilation controls, door closers, window shutters, conveyor openings, smoke and heat vents and other features necessary for proper operation of the fire-extinguishing system shall be provided as required by the design and installation standard utilized for the hazard.

904.3.4 Alarms and warning signs. Where alarms are required to indicate the operation of automatic fire-extinguishing systems, distinctive audible and visible alarms and warning signs shall be provided to warn of pending agent discharge. Where exposure to automatic-extinguishing agents poses a hazard to persons and a delay is required to ensure the evacuation of occupants before agent discharge, a separate warning signal shall be provided to alert occupants once agent discharge has begun. Audible signals shall be in accordance with Section 907.9.2.

904.3.5 Monitoring. Where a building fire alarm system is installed, automatic fire-extinguishing systems shall be monitored by the building fire alarm system in accordance with NFPA 72.

904.4 Inspection and testing. Automatic fire-extinguishing systems shall be inspected and tested in accordance with the provisions of this section prior to acceptance.

904.4.1 Inspection. Prior to conducting final acceptance tests, the following items shall be inspected:

1. Hazard specification for consistency with design hazard.
2. Type, location and spacing of automatic- and manual-initiating devices.
3. Size, placement and position of nozzles or discharge orifices.
4. Location and identification of audible and visible alarm devices.
5. Identification of devices with proper designations.
6. Operating instructions.

904.4.2 Alarm testing. Notification appliances, connections to fire alarm systems and connections to approved supervising stations shall be tested in accordance with this section and Section 907 to verify proper operation.

904.4.2.1 Audible and visible signals. The audibility and visibility of notification appliances signaling agent discharge or system operation, where required, shall be verified.

904.4.3 Monitor testing. Connections to protected premises and supervising station fire alarm systems shall be tested to verify proper identification and retransmission of alarms from automatic fire-extinguishing systems.

904.5 Wet-chemical systems. Wet-chemical extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with the New York City Fire Code.

904.6 Dry-chemical systems. Dry-chemical extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with the New York City Fire Code. New dry-chemical extinguishing systems are not permitted for the protection of kitchen equipment.

904.7 Foam systems. Foam-extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with the New York City Fire Code.

904.8 Carbon dioxide systems. Carbon dioxide extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with the New York City Fire Code.

904.9 Halon systems. Halogenated extinguishing systems shall not be permitted. However, existing systems shall be maintained, periodically inspected and tested in accordance with the New York City Fire Code.

904.10 Clean-agent systems. Clean-agent fire-extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with the New York City Fire Code.

904.11 Commercial cooking systems. The automatic fire-extinguishing system for commercial cooking systems shall be of a type recognized for protection of commercial cooking equipment and exhaust systems of the type and arrangement protected. Pre-engineered automatic wet-chemical extinguishing systems shall be approved by the Fire Commissioner, tested in accordance with UL 300, and listed and labeled for the intended application. The protected area shall include the area under the hood and over the cooking equipment, the area above or behind the filters and the opening of the hood into the branch duct. Where a pre-engineered system is installed and the size of the protected area exceeds that allowed for a single pre-engineered system, additional pre-engineered systems arranged for simultaneous operation shall be provided. Other types of automatic fire-extinguishing systems shall be listed and labeled for specific use as protection for commercial cooking operations. The system shall be installed in accordance with this code, its listing and the manufacturer's installation instructions. Automatic fire-extinguishing systems of the following types shall be installed in accordance with the New York City Fire Code and the referenced standard indicated, as shown:

1. Carbon dioxide extinguishing systems, in accordance with the New York City Fire Code.
2. Wet-chemical extinguishing systems, in accordance with the New York City Fire Code.

904.11.1 Manual system operation. A manual actuation device shall be located at or near a means of egress from the cooking areas, a minimum of 10 feet (3048 mm) and a maximum of 20 feet (6096 mm) from the kitchen exhaust system. The manual activation device shall be located at a minimum of 42 inches (1067 mm) and a maximum of 48 inches (1219 mm) above the floor at its center. The manual actuation device shall require a maximum force of 40 pounds (178 N) and a maximum movement of 14 inches (356 mm) to actuate the fire suppression system.

Exception: Automatic sprinkler systems shall not be required to be equipped with manual actuation means.

904.11.2 System interconnection. The actuation of the fire suppression system shall automatically shut down the fuel

or electrical power supply to the cooking equipment. The fuel and electrical supply reset shall be manual.

904.11.3 Carbon dioxide systems. When carbon dioxide systems are used, there shall be a nozzle at the top of the ventilating duct. Additional nozzles that are symmetrically arranged to give uniform distribution shall be installed within vertical ducts exceeding 20 feet (6096 mm) and horizontal ducts exceeding 50 feet (15 240 mm). Dampers shall be installed at either the top or the bottom of the duct and shall be arranged to operate automatically upon activation of the fire-extinguishing system. Where the damper is installed at the top of the duct, the top nozzle shall be immediately below the damper. Automatic carbon dioxide fire-extinguishing systems shall be sufficiently sized to protect against all hazards venting through a common duct simultaneously.

904.11.3.1 Ventilation system. Commercial-type cooking equipment protected by an automatic carbon dioxide-extinguishing system shall be arranged to shut off the ventilation system upon activation.

904.11.4 Special provisions for automatic sprinkler systems. [Repealed]

904.11.4.1 Listed sprinklers. [Repealed]

904.12 Water-mist systems. Water-mist fire-extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with the New York City Fire Code.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

904.11.4 repealed L.L. 8/2008 § 106, eff. July 1, 2008.

904.11.4.1 repealed L.L. 8/2008 § 106, eff. July 1, 2008.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 905: STANDPIPE SYSTEMS

NYC Administrative Code § 28-BC 905

905.1 General.

Standpipe systems shall be provided in buildings and structures in accordance with this section. Fire hose threads used in connection with standpipe systems shall be approved by the Fire Commissioner. The location of Fire Department hose connections shall be approved by the Fire Commissioner. Standpipe systems in buildings used for high-piled combustible storage shall be in accordance with the New York City Fire Code. Installation of standpipe systems shall comply with the special inspection requirements of Chapter 17.

Any space or room that contains equipment of such nature that the use of water would be ineffective in fighting a fire therein, or would be otherwise hazardous, shall have a conspicuous sign on each door opening on such space or room stating the nature of the use and the warning: "IN CASE OF FIRE, USE NO WATER".

905.1.1 Construction documents. Construction documents for standpipe systems shall contain plans that include at least the following data and information:

1. The locations and sizes of all risers, cross-connections, hose racks, valves, siamese connections, sources of water supply, piping, and other essential features of the system;
2. A floor plan for each group of floors that have typical riser locations and no special features within such group of floor levels, with the indication in title block of such plan indicating clearly the floors to which the arrangement is applicable;
3. A riser diagram showing the essential features of the system, including the risers, cross-connections, valves, siamese connections, tanks, pumps, sources of water supply, pipe sizes, capacities, floor heights, zone pressures, and other essential data and features of the system; and
4. The available water pressure at the top and bottom floors of each zone, and at each floor where the weight pipe

fittings change, shall be shown on the riser diagram.

5. For street pressure-fed systems and fire pumps, a statement from the New York City Department of Environmental Protection, giving the minimum water pressure in the main serving the building.

905.2 Installation standards. Standpipe systems shall be installed in accordance with this section and NFPA 14 as modified in Appendix Q.

905.3 Required installations. Standpipe systems shall be installed where required by Sections 905.3.1 through 905.3.6 and in the locations indicated in Sections 905.4, 905.5 and 905.6. Standpipe systems are permitted to be combined with automatic sprinkler systems.

Exception: Standpipe systems are not required in buildings occupied entirely by Group R-3.

905.3.1 Applicability. Class III standpipe systems shall be installed throughout the following buildings:

1. In buildings 2 stories or more in height with floor area of 10,000 square feet (929 m²) or greater on any story;
2. In buildings 3 stories or more in height with floor area of 7,500 square feet (697 m²) or greater on any story;
3. In buildings of any area with a floor level having an occupant load of 30 or more that is located 55 feet (16 764 mm) or more above the lowest level of fire department vehicle access.
4. In buildings of any area, constructed in accordance with Section 403, with occupied floors located 75 feet (22 860 mm) or more above the lowest level of fire department vehicle access.

Exceptions. The following exceptions are allowed as an alternative to the requirement of a Class III standpipe system:

1. Class I standpipes are allowed in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 provided that the following additional requirements are met:

1.1. A locked storage cabinet shall be provided on the main entrance floor in a location approved by the Fire Commissioner near the standpipe riser enclosure. Such cabinet shall contain at least three open nozzles, two 1.5 inch (38 mm) spanner wrenches, two 2.5 inch (64 mm) spanner wrenches, two 2.5 inch (64 mm) by 1.5 inch (38 mm) non-swivel reducing couplings, and 375 feet (114 m) of 1.5 inch (38 mm) hose. However, the hose may be omitted when serving Group R-2 occupancies.

1.1.1. A key for unlocking the storage cabinet shall be kept in a location where it is readily available to authorized persons, but not available to the general public. A sign shall be placed on the storage cabinet indicating the location of such key.

1.1.2. An additional labeled key shall be kept in a locked receptacle near the storage cabinet openable by a Fire Department standard key. Such receptacle shall be labeled, "FOR FIRE DEPARTMENT USE ONLY."

1.1.3. A metal sign shall be placed in each stair enclosure on the main entrance floor stating clearly where the storage cabinet is located.

1.2. Hose valves are capped with a hose valve cap fastened to the valve with a chain.

2. Class I manual standpipes are allowed in open parking garages where the highest floor is located not more than 150 feet (45 720 mm) above the lowest level of fire department vehicle access.

3. Class I manual dry standpipes are allowed in open parking garages that are subject to freezing temperatures, provided that the hose connections are located as required for Class II standpipes in accordance with Section 905.5.

4. Class I standpipes are allowed in below-grade stories equipped throughout with an automatic sprinkler system.

5. Standpipe outlets may be omitted in portions of first floors or basements that are completely separated from the entrance hall or enclosed stairways leading to the upper floors, provided that portable fire extinguishers are installed, subject to the approval of the Fire Commissioner.

905.3.2 Group A. Class I automatic wet standpipes shall be provided in nonsprinklered Group A buildings having an occupant load exceeding 1,000 persons.

Exceptions:

1. Open-air-seating spaces without enclosed spaces.

2. Class I automatic dry and semiautomatic dry standpipes or manual wet standpipes are allowed in buildings where the highest floor surface used for human occupancy is 75 feet (22 860 mm) or less above the lowest level of fire department vehicle access. Dry standpipes are permitted only where subject to freezing temperatures.

905.3.3 Covered mall buildings. Covered mall buildings and buildings connected thereto shall be equipped throughout with a Class I automatic wet standpipe system, except as permitted by Section 905.3.3.1 through 905.3.3.3.

905.3.3.1 Covered mall building height. Covered mall buildings where the highest occupied floor level is located not more than 30 feet (9144 mm) above the lowest level of the fire department vehicle access shall be permitted to be provided with Class I hose connections connected to the mall sprinkler system in accordance with NFPA 13 Section 8.16.5.2 regarding Hose Connections for Fire Department Use and under the following conditions:

1. Any individual outlet shall be capable of delivering water flow at a rate of 250 gallons per minute (946 L/m) while concurrently supplying the mall sprinkler demand; and

2. Each of the two most hydraulically remote outlets shall be capable of concurrently delivering 250 gallons per minute (946 L/m) at a pressure of 100 pounds per square inch (689.4 kPa) with no mall sprinkler demand, based on a supply pressure at the system Fire Department connection of not more than 175 pounds per square inch (1207 kPa). Adequacy of the water supply available to the Fire Department to meet the hydraulic calculations shall be demonstrated by the registered design professional.

905.3.3.2 Location of hose connections. Hose connections shall be provided in accordance with Section 905.4 and at each of the following locations:

1. Within the mall at the entrance to each exit passageway or exit.

2. At each floor-level landing within enclosed stairways opening directly on the mall.

3. At exterior public entrances to the mall.

905.3.3.3 Installation standard. Except as provided in Sections 905.3.3.1 and 905.3.3.2, the Class I hose connections and Fire Department connections shall be designed in conformance with NFPA 14.

905.3.4 Stages. Stages greater than 1,000 square feet in area (93 m²) shall be equipped with a Class III wet standpipe system with 1.5-inch and 2.5-inch (38 mm and 64 mm) hose connections on each side of the stage.

Exception: Where the building or area is equipped throughout with an automatic sprinkler system, the hose

connections are allowed to be supplied from the automatic sprinkler system in accordance with NFPA 13 Section 8.16.5.2 and shall have a flow rate of not less than that required by NFPA 14 for Class III standpipes.

905.3.4.1Hose and cabinet.The 1.5-inch (38 mm) hose connections shall be equipped with sufficient lengths of 1.5-inch (38 mm) hose to provide fire protection for the stage area. Hose connections shall be equipped with an approved adjustable fog nozzle and be mounted in a cabinet or on a rack.

905.3.5Underground buildings.Underground buildings shall be equipped throughout with a Class I automatic wet or manual wet standpipe system.

905.3.6Helistops and heliports.Buildings with a helistop or heliport that are equipped with a standpipe shall extend the standpipe to the roof level on which the helistop or heliport is located in accordance with the New York City Fire Code. All portions of the helistop and heliport area shall be within 150 feet (45 720 mm) of a 2.5 inch (64 mm) outlet on a Class I or III standpipe, in accordance with the New York City Fire Code.

905.4Location of Class I standpipe hose connections.Class I standpipe hose connections shall be provided in all of the following locations:

1. In every required stairway, a hose connection shall be provided for each floor level above or below grade. Hose connections shall be readily accessible and located at the riser on each floor level landing and on the entrance floor above the standpipe riser control valve. Non-required enclosed stairways are not required to have hose connections. Stairways without hose connections shall have a sign on the door to the stairway stating, "No standpipe connections in stairway".

2. On each side of the wall adjacent to the exit opening of a horizontal exit.

3. In every exit passageway at the entrance from the exit passageway to the other areas of a building.

4. In covered mall buildings, in accordance with Section 905.3.3.2.

5. Where the roof has a slope of less than four units vertical in 12 units horizontal (33.3-percent slope), each standpipe shall be provided with a hose connection located either on the roof or at the highest landing of stairways with stair access to the roof. An additional hose connection shall be provided at the top of the most hydraulically remote standpipe for testing purposes.

6. Where the most remote portion of a floor or story is more than 150 feet (45 720 mm) from a hose connection, additional hose connections shall be provided in approved locations. For the purposes of this section, a penthouse with an occupant load greater than 10 shall be considered a story.

905.4.1Protection.Risers and laterals of Class I standpipe systems not located within an enclosed stairway or pressurized enclosure shall be protected by a degree of fire resistance equal to that required for vertical enclosures in the building in which they are located. No standpipe riser shall be placed in any shaft containing a gas or fuel pipeline.Exception: In buildings equipped throughout with an approved automatic sprinkler system, laterals that are not located within an enclosed stairway or pressurized enclosure are not required to be enclosed in fire-resistance-rated construction.

905.4.2Interconnection.In buildings where more than one standpipe is provided, the standpipes shall be interconnected in accordance with NFPA 14.

905.5Location of Class II standpipe hose connections.Class II standpipe hose connections shall be accessible and located so that all portions of the building are within 30 feet (9144 mm) of a nozzle attached to 100 feet (30 480 mm) of hose.

905.5.1 Groups A-1 and A-2. In Group A-1 and A-2 occupancies with occupant loads of more than 1,000, hose connections shall be located on each side of any stage.

905.5.2 Protection. Fire-resistance-rated protection of risers and laterals of Class II standpipe systems is not required.

905.6 Location of Class III standpipe hose connections. Class III standpipe systems shall have hose connections located as required for Class I standpipes in Section 905.4 and shall have Class II hose connections as required in Section 905.5.

905.6.1 Protection. Risers and laterals of Class III standpipe systems shall be protected as required for Class I systems in accordance with Section 905.4.1.

905.6.2 Interconnection. In buildings where more than one standpipe is provided, the standpipes shall be interconnected in accordance with NFPA 14.

905.7 Cabinets. Cabinets containing fire-fighting equipment such as standpipes, fire hoses, fire extinguishers or Fire Department valves shall not be blocked from use or obscured from view.

905.7.1 Cabinet equipment identification. Cabinets shall be identified in an approved manner by a permanently attached sign with white letters not less than 2 inches (51 mm) high and a red background color, indicating the equipment contained therein.

Exception: Doors that have either an approved visual identification clear glass panel or a complete glass door panel are not required to be marked.

905.7.2 Locking cabinet doors. Cabinets shall be unlocked.

Exceptions:

1. Visual identification panels of glass or other approved transparent frangible material that is easily broken and allows access.

2. Approved locking arrangements.

3. Locking of cabinets shall be permitted in Group I-3.

905.8 Dry standpipes. Dry standpipes shall not be installed.

Exception: Where subject to freezing and in accordance with NFPA 14.

905.9 Valve supervision. Valves controlling water supplies shall be supervised in the open position so that a change in the normal position of the valve will generate a supervisory signal at the supervising station required by Section 903.4. Where a fire alarm system is provided, a signal shall also be transmitted to the control unit.

Exceptions:

1. Valves to underground key or hub valves in roadway boxes provided by the city or a public utility do not require supervision.

2. Valves locked in the normal position and inspected as provided in this code in buildings not equipped with a fire alarm system.

905.10 During construction. Standpipe systems required during construction, alteration and demolition operations shall be provided in accordance with Section 3303.8.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

905.3.1 amended L.L. 8/2008 § 107, eff. July 1, 2008.



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Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 906: PORTABLE FIRE EXTINGUISHERS

NYC Administrative Code § 28-BC 906

906.1 General.

Portable fire extinguishers shall be provided in occupancies and locations as required by the New York City Fire Code.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 907: FIRE ALARM AND DETECTION SYSTEMS

NYC Administrative Code § 28-BC 907

907.1 General.

This section covers the application, installation, performance and maintenance of fire alarm systems and their components. Systems shall be designed and installed in accordance with NFPA 72 as modified in Appendix Q and the New York City Electrical Code.

907.1.1 Construction documents. Construction documents for fire alarm systems shall be submitted for review and approval to the department and the Fire Department prior to system installation. Construction documents shall include, but not be limited to, all of the following:

1. A floor plan that indicates the use of all rooms.
2. Locations of alarm-initiating and notification appliances.
3. Alarm control and trouble signaling equipment.
4. Annunciation.
5. Power connection.
6. Fire alarm riser diagram and all fire alarm devices indicated on the floor plans. Quantities of devices on the floor plans shall match the quantities indicated on the riser diagram.
7. Copies of any variances granted by the department or the Fire Department.
8. Legend of all fire alarm symbols and abbreviations used.
9. Design criteria for fire alarm audibility in various occupancies indicated on plans.

10. Fire alarm sequence of operation for the fire alarm control panel and the central station transmitter.

11. The interface of fire safety control functions

907.1.2 Equipment. Systems and their components shall be listed for the purpose for which they are installed.

907.2 Where required. An approved manual, automatic or manual and automatic fire alarm system shall be provided in accordance with Sections 907.2.1 through 907.2.21. Where automatic sprinkler protection, installed in accordance with Section 903.3.1.1 or 903.3.1.2, is provided and connected to the building fire alarm system, automatic heat detection required by this section shall not be required. An approved automatic fire detection system shall be installed in accordance with the provisions of this code, the New York City Mechanical Code, and NFPA 72. Devices, combinations of devices, appliances and equipment shall comply with Section 907.1.2. The automatic fire detectors shall be smoke detectors, except that an approved alternative type of detector shall be installed in spaces such as boiler rooms where, during normal operation, products of combustion are present in sufficient quantity to actuate a smoke detector. All initiating devices related to fire or life safety, other than smoke alarms, shall be connected to the fire alarm system.

In all occupancies where an automatic fire alarm system is required by this section, selective coverage smoke detectors shall be located as follows, unless partial or total coverage automatic detection is specified.

1. In each mechanical equipment, electrical, transformer, telephone equipment or similar room, in elevator machine rooms, and in elevator lobbies.

2. In air distribution systems in accordance with Section 606 of the New York City Mechanical Code.

907.2.1 Group A. A manual and automatic fire alarm system shall be installed in accordance with NFPA 72 in Group A occupancies having an occupant load of 300 or more. Portions of Group E occupancies occupied for assembly purposes shall be provided with a fire alarm system as required for the Group E occupancy.

Exceptions:

1. Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system and the notification appliances will activate upon sprinkler water flow. This exception shall not apply to Group A-2 occupancies used as a cabaret.

2. A Group A-2 occupancy used as a cabaret with an occupant load of 75 or more, including associated stages, dressing rooms, and property rooms, shall be equipped with a manual fire alarm system. Such a Group A-2 occupancy with an occupant load of 300 or more shall also be equipped with an automatic fire alarm system.

907.2.1.1 System initiation in Group A occupancies. Activation of the fire alarm in Group A-1 occupancies with an occupant load of 300 or more, and in all other Group A occupancies with an occupant load of 1,000 or more, shall initiate a presignal system at a constantly attended location from which the Fire Department shall be notified and live voice evacuation instructions shall be initiated using an emergency voice/alarm communications system in accordance with NFPA 72.

907.2.1.2 Emergency power. Emergency voice/alarm communications systems where required by Section 907.2.1.1 shall be provided with an approved emergency power source and shall be designed and installed in accordance with NFPA 72 and the New York City Electrical Code.

907.2.2 Group B. A manual and automatic fire alarm system shall be installed in Group B occupancies having an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge. Where such occupancies are not protected by an automatic sprinkler system, a manual fire alarm and partial coverage

automatic smoke detection or automatic heat detection system shall be installed in accordance with NFPA 72.

907.2.2.1 High-Rise and large area buildings. In high-rise buildings constructed in accordance with Section 403, Group B occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access or having a total gross area exceeding 100,000 square feet (9290 m²) shall comply with the requirements of Section 907.2.12.

907.2.3 Group E. A manual and automatic fire alarm system shall be installed in Group E occupancies. When automatic sprinkler systems or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system.

907.2.4 Group F. A manual and automatic fire alarm system shall be installed in Group F occupancies that are two or more stories in height and have an occupant load of 100 or more, or when 25 persons or more are above or below the lowest level of exit discharge.

907.2.5 Group H. A manual and automatic fire alarm system shall be installed in Group H-5 occupancies and in occupancies used for the manufacture of organic coatings. In addition to the automatic fire alarm system requirements of Section 907.2, an automatic smoke detection system shall be installed for highly toxic gases, organic peroxides and oxidizers in accordance with the New York City Fire Code, and shall be connected to a central station.

Exceptions: A smoke detection system shall not be required in detached storage buildings equipped throughout with an approved automatic fire-extinguishing system and used only to store the following:

1. Organic peroxides.
2. Liquid or solid oxidizers.

907.2.6 Group I. A manual and automatic fire alarm system and an automatic fire detection system shall be installed in Group I occupancies. An electrically supervised, automatic smoke detection system shall be provided in waiting areas that are open to corridors.

907.2.6.1 Group I-2. Corridors in nursing homes (both intermediate-care and skilled nursing facilities), detoxification facilities and spaces open to the corridors shall be equipped with an automatic fire detection system.

907.2.6.2 Group I-3. Group I-3 occupancies shall be equipped with a manual and automatic fire alarm system installed for alerting staff.

907.2.6.2.1 System initiation. Actuation of an automatic fire-extinguishing system, a manual fire alarm box or a fire detector shall initiate an approved alarm signal that automatically notifies staff. Presignal systems shall not be used.

907.2.6.2.2 Manual fire alarm boxes. Manual fire alarm boxes are not required to be located in accordance with Section 907.3 where the fire alarm boxes are provided at staff-attended locations having direct supervision over areas where manual fire alarm boxes have been omitted. Manual fire alarm boxes shall be permitted to be locked in areas occupied by detainees, provided that staff members are present within the subject area and have keys readily available to operate the manual fire alarm boxes.

907.2.6.2.3 Smoke detectors. An approved automatic smoke detection system shall be installed throughout resident housing areas, including sleeping areas and contiguous day rooms, group activity spaces and other common spaces normally accessible to residents.

Exceptions:

1. Other approved smoke detection arrangements providing equivalent protection including, but not limited to,

placing detectors in exhaust ducts from cells or behind protective guards listed for the purpose are allowed when necessary to prevent damage or tampering.

2. Sleeping units in Use Conditions 2 and 3.

3. Smoke detectors are not required in sleeping units with four or fewer occupants in smoke compartments that are equipped throughout with an approved automatic sprinkler system.

907.2.7Group M.A manual and automatic fire alarm system shall be installed in Group M occupancies where any one of the following conditions exists:

1. Where a Group M fire area exceeds 12,000 square feet (1115 m²);
2. Where a Group M fire area is located more than three stories above grade;
3. Where the combined area of all Group M fire areas on all floors, including mezzanines, exceeds 24,000 square feet (2230 m²); or
4. Where a Group M fire area in a below-grade story exceeds 1,500 square feet (139 m²).

Where such occupancies are not protected by an automatic sprinkler system, a manual fire alarm and partial coverage automatic smoke detection or automatic heat detection system shall be installed in accordance with NFPA 72.

907.2.8Group R-1.Fire alarm systems shall be installed in Group R-1 occupancies as required in Sections 907.2.8.1 through 907.2.8.3.

907.2.8.1Manual fire alarm system.A manual fire alarm system shall be installed in Group R-1 occupancies.

Exception: A manual fire alarm system is not required in buildings not over two stories in height where all individual dwelling units and contiguous attic and crawl spaces are separated from each other and public or common areas by at least 1-hour fire partitions and each individual dwelling unit has an exit directly to a public way, exit court or yard.

907.2.8.2Automatic fire alarm system.An automatic fire alarm system shall be installed in Group R-1 occupancies. In addition to the automatic fire alarm system requirements of Section 907.2, smoke detectors shall be installed in all public corridors serving dwelling units and in accordance with Section 907.2.8.3.

Exception: An automatic fire detection system is not required in buildings that do not have public corridors serving dwelling units and each dwelling unit has a means of egress door opening directly to an exterior exit access that leads directly to an exit.

907.2.8.3Smoke detectors within dwelling units.Smoke detectors and audible notification appliances shall be installed in dwelling units and shall be annunciated by dwelling unit at a constantly attended location from which the fire alarm system is capable of being manually activated. Smoke detectors are required in the following areas:

1. In sleeping areas.
2. In every room in the path of the means of egress from the sleeping area to the door leading from the dwelling unit.
3. In each story within the unit, including below-grade stories. For dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level.

907.2.9Group R-2.An automatic fire alarm system without alarm notification appliances shall be provided in accordance with this section in Group R-2 occupancies, other than student apartments, where such occupancy satisfies any one of the following conditions:

1. Any dwelling unit is located three or more stories above the lowest level of exit discharge, including dwelling units in penthouses of any area;
2. Any dwelling unit is located more than one story below the highest level of exit discharge of exits serving the dwelling unit; or
3. The building contains more than 16 dwelling units.

Actuation of smoke detectors shall not initiate a signal to alarm notification appliances. The activation of any detector required by this section shall initiate a signal at a central station or a constantly attended location. Smoke detectors shall be located as follows:

1. In each mechanical equipment, electrical, transformer, telephone equipment or similar room, greater than 75 square feet (6.96 m²) in area.
2. In air distribution systems in accordance with Section 606 of the New York City Mechanical Code.
3. In elevator machine rooms and in elevator lobbies.

907.2.9.1Group R-2 student apartments.Where the main use or dominant occupancy of a building is classified as R-2 student apartments, as defined in Section 310.2, fire alarm systems shall be installed in accordance with Section 907.2.8. Where the main use or dominant occupancy of a building is not classified as R-2 student apartments and the building is occupied partially by Group R-2 student apartments, fire alarm systems shall be installed in accordance with Sections 907.2.9.1.1 through 907.2.9.1.3.

907.2.9.1.1Manual fire alarm system.A manual fire alarm system shall be installed throughout all public corridors serving student apartments and student related uses. Student related uses shall include common spaces such as recreation rooms, lounges, dining rooms, laundry rooms, and storage rooms.

Exceptions:

1. A manual fire alarm system is not required in buildings not over two stories in height where all individual dwelling units and contiguous attic and crawl spaces are separated from each other and public or common areas by at least 1-hour fire partitions and each individual dwelling unit has an exit directly to a public way, exit court or yard.
2. A manual fire alarm system is not required in buildings containing fewer than 15 student apartments.

907.2.9.1.2Automatic fire alarm system.An automatic fire alarm system without alarm notification appliances shall be installed in accordance with this section in Group R-2 student apartments and student related uses. The activation of any smoke detector required by this section shall initiate a signal at a central station or a constantly attended location. Smoke detectors shall be located as follows:

1. In each mechanical equipment, electrical, transformer, telephone equipment or similar room, in elevator machine rooms, and in elevator lobbies.
2. In air distribution systems in accordance with Section 606 of the New York City Mechanical Code.
3. Through out all public corridors serving student apartments and student related uses. Student related uses shall include common spaces such as recreation rooms, lounges, dining rooms, laundry rooms, and storage rooms. However,

smoke detectors shall not be required in such public corridors in buildings containing fewer than 15 student apartments.

Exception: An automatic fire alarm system is not required in buildings not over two stories in height where all individual dwelling units and contiguous attic and crawl spaces are separated from each other and public or common areas by at least 1-hour fire barriers and each individual dwelling unit has an exit directly to a public way, exit court or yard.

907.2.9.1.3Smoke alarms.Smoke alarms shall be installed as required by Section 907.2.10.

907.2.10Single- and multiple-station smoke alarms.Listed single- and multiple-station smoke alarms shall be installed in accordance with the provisions of this code and the household fire-warning equipment provisions of NFPA72.

907.2.10.1Where required.Single- or multiple-station smoke alarms shall be installed in the locations described in Sections 907.2.10.1.1.

907.2.10.1.1Smoke alarms in Groups R-2, R-3, and I-1.Single-or multiple-station smoke alarms shall be installed and maintained in Groups R-2, R-3, and I-1, regardless of occupant load at all of the following locations within a dwelling unit:

1. On the ceiling or wall outside of each room used for sleeping purposes within 15 feet (4572 mm) from the door to such room.

2. In each room used for sleeping purposes.

3. In each story within a dwelling unit, including below-grade stories and penthouses of any area, but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

907.2.10.2Power source.Required smoke alarms shall receive their primary power from a dedicated branch circuit or the unswitched portion of a branch circuit also used for power and lighting, and shall be equipped with a battery backup. Smoke alarms shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than as required for over-current protection.

907.2.10.3Interconnection.Where more than one smoke alarm or detector is required to be installed within an individual dwelling unit in Group R-2, R-3, or within an individual dwelling unit or sleeping unit in Group R-1, the smoke alarms or detectors shall be interconnected in such a manner that the activation of one alarm or detector will activate all of the alarms or detectors in the individual unit. The alarm or detector shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed.

907.2.10.4Acceptance testing.When the installation of the alarm devices is complete, each detector and interconnecting wiring for multiple-station alarm devices shall be tested in accordance with the household fire warning equipment provisions of NFPA 72.

907.2.10.5Group R-2 Occupancy.Smoke alarms shall be provided with the capability to support visible alarm notification appliances in accordance with ICC/ANSI A117.1.

907.2.11Special amusement buildings.An approved automatic smoke detection system shall be provided in special amusement buildings in accordance with this section.

Exception: In areas where ambient conditions will cause a smoke detection system to alarm, an approved alternative type of automatic detector shall be installed.

907.2.11.1 Alarm. Activation of any single smoke detector, the automatic sprinkler system or any other automatic fire detection device shall immediately sound an alarm at the building at a constantly attended location from which emergency action can be initiated, including the capability of manual initiation of requirements in Section 907.2.11.2.

907.2.11.2 System response. The following minimum system actuations and responses shall be required upon approval by the department and the Fire Department. The activation of two or more smoke detectors, a single smoke detector with alarm verification, the automatic sprinkler system or other approved fire detection device shall automatically:

1. Cause illumination of the means of egress with light of not less than 1 foot-candle (11 lux) at the walking surface level;

2. Stop any conflicting or confusing sounds and visual distractions; and

3. Activate an approved directional exit marking that will become apparent in an emergency. Such system response shall also include activation of a prerecorded message, clearly audible throughout the special amusement building, instructing patrons to proceed to the nearest exit. Alarm signals used in conjunction with the prerecorded message shall produce a sound that is distinctive from other sounds used during normal operation. The wiring to the auxiliary devices and equipment used to accomplish the above fire safety functions shall be monitored for integrity in accordance with NFPA 72.

907.2.11.3 Emergency voice/alarm communication system. An emergency voice/alarm communication system, which is also allowed to serve as a public address system, shall be installed in accordance with NFPA 72, and shall be audible throughout the entire special amusement building.

907.2.12 High-rise buildings. Buildings constructed in accordance with Section 403 and having floors used for human occupancy located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access shall be provided with automatic fire detection connected to an automatic fire alarm system in accordance with Section 907.2.12.1 and an emergency voice/alarm communication system in accordance with Section 907.2.12.2.

Exceptions:

1. Open parking garages in accordance with Section 406.3.

2. Buildings with an occupancy in Group A-5.

3. Low-hazard special occupancies in accordance with Section 503.1.2.

4. Buildings with an occupancy in Group H-1, H-2 or H-3 in accordance with Section 415.

907.2.12.1 Automatic fire detection. In addition to smoke detection otherwise required by this code, smoke detectors shall be provided in accordance with this section. Smoke detectors shall be connected to an automatic fire alarm system. The activation of any detector required by this section shall operate the emergency voice/alarm communication system. Smoke detectors shall be located as follows:

1. In each mechanical equipment, electrical, transformer, telephone equipment or similar room, in elevator machine rooms and in elevator lobbies.

2. In air distribution systems in accordance with Section 606 of the New York City Mechanical Code.

3. In Group R-1 occupancies a listed smoke detector is allowed to be used in each return air riser carrying not more than 5,000 cfm (2.4 m³/s) and serving not more than 10 air inlet openings.

Exception for Group R-2 occupancies: In R-2 occupancies, the activation of smoke detectors shall initiate a signal at a central station or a constantly attended location and shall not initiate a signal to an alarm notification appliance.

907.2.12.2Emergency voice/alarm communication system.The operation of any automatic fire detector, sprinkler water-flow device or manual fire alarm box shall automatically sound an alarm tone followed by live voice instructions giving approved information and directions on a general or selective basis to the following areas on a minimum of the alarming floor, the floor above and the floor below in accordance with the New York City Fire Code.

1. Elevator lobbies.
2. Corridors.
3. Rooms and tenant spaces exceeding 1,000 square feet (93 m²) in area.
4. Dwelling units in Group R-1 occupancies.
5. Areas of rescue assistance as defined in Section 1002.

Exceptions:

1. Group I-1 and I-2 occupancies. In Group I-1 and I-2 occupancies, the alarm shall sound in a constantly attended area and a general occupant notification shall be broadcast over the overhead page.

2. Group R-2 occupancies 125 feet or less in height. Emergency voice/alarm communication systems shall not be required in Group R-2 occupancies in buildings 125 feet (33 100 mm) or less in height.

3. Group R-2 occupancies greater than 125 feet in height. In Group R-2 occupied buildings greater than 125 feet (33 100 mm) in height, activation of any smoke detector or sprinkler water flow device shall initiate a signal at a central station or constantly attended location and shall not initiate a signal to an alarm notification appliance. An emergency voice/alarm communication system shall not be required. However, a one-way voice communication shall be provided between the fire command center for use by Fire Department personnel and the following terminal areas:

3.1. Within dwelling units. An intercom system may be utilized when provided with an override feature for use by Fire Department personnel. Such intercom system shall comply with rules promulgated by the commissioner establishing installation requirements.

3.2. Within required exit stairs. Annunciation devices shall be located at least on every other story. Such annunciation devices shall comply with rules promulgated by the commissioner establishing installation requirements.

907.2.12.2.1Manual override.A manual override for emergency voice communication shall be provided for all paging zones with all-call capability and feature.

907.2.12.2.2Live voice messages.The emergency voice/alarm communication system shall have multi-channel capability to allow live voice messages via independent audio channels to the stairs, to all or selected floors without automatic interruption of the alarm tones on the floor of incidence, floor above or floor below.

907.2.12.2.3Standard.The emergency voice/alarm communication system shall be designed and installed in accordance with NFPA 72 as modified in Appendix Q.

907.2.12.3Fire Department communication system.An approved two-way, fire department communication system designed and installed in accordance with NFPA 72 shall be provided for Fire Department use. It shall operate between a fire command center complying with Section 911 and elevators, elevator lobbies, emergency power rooms, fire pump rooms, areas of refuge and inside enclosed exit stairways. The Fire Department communication device shall be provided

at each floor level within each enclosed stairway.

Exceptions:

1. Fire Department radio systems where approved by the Fire Department may be installed in lieu of a two-way fire department communication system.

2. Group R-2 occupancy.

907.2.13Atriums connecting more than two stories.A fire alarm system shall be installed in occupancies with an atrium that connects more than two stories. The system shall be activated in accordance with Section 907.6. Such occupancies in Group A, E or M shall be provided with an emergency voice/alarm communication system complying with the requirements of Section 907.2.12.2.

907.2.14High-piled combustible storage areas.An automatic fire detection system shall be installed throughout high-piled combustible storage areas where required by the New York City Fire Code.

907.2.15Delayed egress locks.Where delayed egress locks are installed on means of egress doors in accordance with Section 1008.1.8.6, an automatic smoke or heat detection system shall be installed as required by that section.

907.2.16Aerosol storage uses.Aerosol storage rooms and general-purpose warehouses containing aerosols shall be provided with an approved manual fire alarm system where required by the New York City Fire Code.

907.2.17Lumber, plywood and veneer mills.Lumber, plywood and veneer mills shall be provided with a manual fire alarm system.

907.2.18Underground buildings with smoke exhaust system.Where a smoke exhaust system is installed in an underground building as required by Section 405, automatic fire detectors shall be provided in accordance with this section.

907.2.18.1Smoke detectors.A minimum of one smoke detector listed for the intended purpose shall be installed in the following areas:

1. Mechanical equipment, electrical, transformer, telephone equipment, elevator machine or similar rooms.

2. Elevator lobbies.

3. The main supply and return and exhaust air plenum of each air-conditioning system serving more than one story and located in a serviceable area downstream from filters on supply ducts and in return/exhaust ducts downstream of the last duct inlet.

4. Each connection to a vertical duct or riser serving two or more floors from return air ducts or plenums of heating, ventilating and air-conditioning systems, except that in Group R occupancies, a listed smoke detector is allowed to be used in each return air riser carrying not more than 5,000 cfm (2.4 m³/s) and serving not more than 10 air inlet openings.

907.2.18.2Alarm required.Activation of the smoke exhaust system shall activate an audible alarm at a constantly attended location.

907.2.19Underground buildings.In underground buildings complying with Section 405 where the lowest level of a structure is more than 30 feet (18 144 mm) below the lowest level of exit discharge, the structure shall be equipped throughout with a manual and automatic fire alarm system, including an emergency voice/alarm communication system installed in accordance with Section 907.2.12.2.

907.2.19.1Public address system.In underground buildings complying with Section 405 where a fire alarm system is not required by Section 907.2, a public address system shall be provided that shall be capable of transmitting voice communications to the highest level of exit discharge serving the underground portions of the structure and all levels below.

907.2.20Covered mall buildings.Covered mall buildings exceeding 50,000 square feet (4645 m²) in total floor area shall be provided with an emergency voice/alarm communication system. An emergency voice/alarm communication system serving a mall, required or otherwise, shall be accessible to the Fire Department. The system shall be provided in accordance with Section 907.2.12.2.

907.2.20.1Battery rooms.An approved automatic smoke detection system shall be installed in areas containing stationary lead-acid battery systems having a liquid capacity of more than 50 gallons (189.3 L). The detection system shall be supervised by an approved central, proprietary or remote station service or a local alarm that will sound an audible signal at a constantly attended location.

907.3Manual fire alarm boxes.Manual fire alarm boxes shall be installed in accordance with Sections 907.3.1 through 907.3.5.

907.3.1Location.Manual fire alarm boxes shall be located not more than 5 feet (1524 mm) from the entrance to each exit. Additional manual fire alarm boxes shall be located so that travel distance to the nearest box does not exceed 200 feet (60 960 mm).

907.3.2Height.The height of the manual fire alarm boxes shall be a minimum of 42 inches (1067 mm) and a maximum of 48 inches (1219 mm), measured vertically, from the floor level to the activating handle or lever of the box.

907.3.3Color.Manual fire alarm boxes shall be red in color.

907.3.4 Signs.Where fire alarm systems are not monitored by a supervising station, an approved permanent sign that reads: WHEN ALARM SOUNDS-CALL FIRE DEPARTMENT shall be installed adjacent to each manual fire alarm box.

Exception: Where the manufacturer has permanently provided this information on the manual fire alarm box.

907.3.5Protective covers.The Fire Department is authorized to require the installation of listed manual fire alarm box protective covers to prevent malicious false alarms or provide the manual fire alarm box with protection from physical damage. The protective cover shall be transparent or red in color with a transparent face to permit visibility of the manual fire alarm box. Each cover shall include proper operating instructions. A protective cover that emits a local alarm signal shall not be installed unless approved.

907.4Power supply.The primary and secondary power supplies for the fire alarm system shall be provided in accordance with NFPA 72.

907.5Wiring.Wiring shall comply with the requirements of the New York City Electrical Code and NFPA 72. Wireless protection systems utilizing radio-frequency transmitting devices shall comply with the special requirements for supervision of low-power wireless systems in NFPA 72.

907.6Activation.Where an alarm notification system is required by another section of this code, it shall be activated by:

1. A required automatic fire alarm system.
2. Sprinkler water-flow devices.

3. Required manual fire alarm boxes.

4. Other required types of automatic fire detection devices or suppression systems.

907.7 Presignal system. Presignal systems shall not be installed unless approved by the Fire Department. Where a presignal system is installed, 24-hour personnel supervision shall be provided at a location approved by the Fire Department. Where a connection to a supervising station is required, the transmission of the alarm signal to the supervising station shall activate upon the initial alarm signal.

907.8 Zones. Each floor shall be zoned separately and a zone shall not exceed 22,500 square feet (2090 m²). The length of any zone shall not exceed 300 feet (91 440 mm) in any direction.

Exception: Automatic sprinkler system zones shall not exceed the area permitted by NFPA 13.

907.8.1 Zoning indicator panel. A zoning indicator panel and the associated controls shall be provided at the main building entrance accessible to responding Fire Department personnel and in other locations approved by the department and the Fire Department. The visual zone indication shall lock in until the system is reset and shall not be canceled by the operation of an audible alarm-silencing switch.

907.8.2 High-rise buildings. In high-rise buildings constructed in accordance with Section 403 and used for human occupancy that have occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, a separate zone by floor shall be provided for all of the following types of alarm-initiating devices where provided:

1. Smoke detectors.
2. Sprinkler water-flow devices.
3. Manual fire alarm boxes.
4. Other approved types of automatic fire detection devices or suppression systems.

907.9 Alarm notification appliances. Alarm notification appliances listed for their purpose shall be provided.

907.9.1 Visible alarms. Visible alarm notification appliances shall be provided in accordance with Sections 907.9.1.1 through 907.9.1.3.

Exception: Visible alarm notification appliances shall not be required in exits.

907.9.1.1 Public and common areas. Visible alarm notification appliances shall be provided in public areas and common areas.

907.9.1.2 Employee work areas. Where employee work areas have audible alarm coverage, the wiring systems shall be designed so that visible alarm notification appliances can be integrated into the alarm system.

907.9.1.3 Groups R-1. Group R-1 dwelling units in accordance with Table 907.9.1.3 shall be provided with a visible alarm notification appliance, activated by both the in-room smoke detector and the building fire alarm system. [F] Table 907.9.1.3 Visible and Audible Alarms Number of Dwelling Units Dwelling Units With Visible and Audible Alarms 6 to 25 26 to 50 51 to 75 76 to 100 101 to 150 151 to 200 201 to 300 301 to 400 401 to 500 501 to 1,000 1,001 and over 50 plus 3 for each 100 over 1,000

907.9.2 Audible alarms. Audible alarm notification appliances shall be provided and shall sound a distinctive sound that is not to be used for any purpose other than that of a fire alarm. The audible alarm notification appliances shall

provide a sound pressure level of 15 decibels (dBA) above the average ambient sound level or 5 dBA above the maximum sound level having a duration of at least 60 seconds, whichever is greater, in every occupied space within the building. The minimum sound pressure levels shall be: 70 dBA in occupancies in Groups R and I-1; 90 dBA in mechanical equipment rooms and 60 dBA in other occupancies. The maximum sound pressure level for audible alarm notification appliances shall be 120 dBA at the minimum hearing distance from the audible appliance. Where the average ambient noise is greater than 105 dBA, visible alarm notification appliances shall be provided in accordance with NFPA72 and audible alarm notification appliances shall not be required to provide a maximum sound pressure level above 120 dBA.

Exception: Visible alarm notification appliances shall be allowed in lieu of audible alarm notification appliances in critical-care areas of Group I-2 occupancies.

907.10 Fire safety functions. Where a fire alarm system is required by Section 907.2, automatic fire detectors utilized for the purpose of performing fire safety functions shall be connected to the building's fire alarm control panel. Detectors shall, upon actuation, perform the intended function and activate the alarm notification appliances or a visible and audible supervisory signal at a constantly attended location. In buildings not required to be equipped with a fire alarm system, the automatic fire detector shall be powered by normal electrical service and, upon actuation, perform the intended function. The detectors shall be located in accordance with NFPA 72.

907.11 Duct smoke detectors. Where a fire alarm system is provided, duct smoke detectors shall be connected to the building's fire alarm control panel. Activation of a duct smoke detector shall initiate a visible and audible supervisory signal at a constantly attended location. Duct smoke detectors shall not be used as a substitute for required open-area detection.

Exceptions:

1. The supervisory signal at a constantly attended location is not required where duct smoke detectors activate the building's alarm notification appliances.

2. In occupancies not required to be equipped with a fire alarm system, actuation of a smoke detector shall activate a visible and audible signal in an approved location. Smoke detector trouble conditions shall activate a visible or audible signal in an approved location and shall be identified as air duct detector trouble.

907.12 Access. Access shall be provided to each detector for periodic inspection, maintenance and testing.

907.13 Fire-extinguishing systems. Where a fire alarm system is required by another section of this code or is otherwise installed, automatic fire-extinguishing systems shall be connected to the building fire alarm system.

907.14 Monitoring. Where required by this chapter or the New York City Fire Code, an approved supervising station in accordance with NFPA 72 shall monitor fire alarm systems.

Exception: Supervisory service is not required for:

1. Single- and multiple-station smoke alarms required by Section 907.2.10.
2. Smoke detectors in Group I-3 occupancies.
3. Automatic sprinkler systems in one- and two-family dwellings.

907.15 Automatic telephone-dialing devices. Automatic telephone-dialing devices used to transmit an emergency alarm shall not be connected to any Fire Department telephone number unless approved by the Fire Commissioner.

907.16 Acceptance tests. Upon completion of the installation of the fire alarm system, alarm notification appliances

and circuits, alarm-initiating devices and circuits, supervisory-signal initiating devices and circuits, signaling line circuits, and primary and secondary power supplies shall be tested in accordance with NFPA 72.

907.17Record of completion.A record of completion in accordance with NFPA 72 verifying that the system has been installed in accordance with the approved construction documents and specifications shall be provided.

907.18Instructions.Operating, testing and maintenance instructions, and record drawings ("as built") and equipment specifications shall be provided at an approved location.

907.19Inspection, testing and maintenance.The maintenance and testing schedules and procedures for fire alarm and fire detection systems shall be in accordance with the New York City Fire Code.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

907.2.1 amended L.L. 8/2008 § 108, eff. July 1, 2008.

907.2.10.5 added L.L. 8/2008 § 108, eff. July 1, 2008.

907.2.13 amended L.L. 8/2008 § 108, eff. July 1, 2008.

907.9.1.3 amended L.L. 8/2008 § 108, eff. July 1, 2008.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 908: EMERGENCY ALARM SYSTEMS

NYC Administrative Code § 28-BC 908

908.1 Group H occupancies.

Emergency alarms for the detection and notification of an emergency condition in Group H occupancies shall be provided in accordance with Section 414.7.

908.2Group H-5 occupancy.Emergency alarms for notification of an emergency condition in an HPM facility shall be provided as required in Section 415.9.4.6. A continuous gas-detection system shall be provided for HPM gases in accordance with Section 415.9.7.

908.3Highly toxic and toxic materials.A gas detection system shall be provided for indoor storage and use of highly toxic and toxic gases to detect the presence of gas at or below the permissible exposure limit (PEL) or ceiling limit of the gas for which detection is provided. The system shall be capable of monitoring the discharge from the treatment system at or below one-half the immediately dangerous to life and health (IDLH) limit.

Exception: A gas detection system is not required for toxic gases when the physiological warning properties are at a level below the accepted PEL for the gas.

908.3.1Alarms.The gas detection system shall initiate a local alarm and transmit a signal to a constantly attended control station when a short-term hazard condition is detected. The alarm shall be both visible and audible and shall provide warning both inside and outside the area where gas is detected. The audible alarm shall be distinct from all other alarms.

Exception: Signal transmission to a constantly attended control station is not required when not more than one cylinder of highly toxic or toxic gas is stored.

908.3.2Shutoff of gas supply.The gas detection system shall automatically close the shutoff valve at the source on gas supply piping and tubing related to the system being monitored for whichever gas is detected.

Exception: Automatic shutdown is not required for reactors utilized for the production of highly toxic or toxic compressed gases where such reactors are:

1. Operated at pressures less than 15 pounds per square inch gauge (psig) (103.4 kPa).
2. Constantly attended.
3. Provided with readily accessible emergency shutoff valves.

908.3.3 Valve closure. The automatic closure of shutoff valves shall be in accordance with the following:

1. When the gas-detection sampling point initiating the gas detection system alarm is within a gas cabinet or exhausted enclosure, the shutoff valve in the gas cabinet or exhausted enclosure for the specific gas detected shall automatically close.
2. Where the gas-detection sampling point initiating the gas detection system alarm is within a gas room and compressed gas containers are not in gas cabinets or exhausted enclosures, the shutoff valves on all gas lines for the specific gas detected shall automatically close.
3. Where the gas-detection sampling point initiating the gas detection system alarm is within a piping distribution manifold enclosure, the shutoff valve for the compressed container of specific gas detected supplying the manifold shall automatically close.

Exception: When the gas-detection sampling point initiating the gas-detection system alarm is at a use location or within a gas valve enclosure of a branch line downstream of a piping distribution manifold, the shutoff valve in the gas valve enclosure for the branch line located in the piping distribution manifold enclosure shall automatically close.

908.4 Ozone gas-generator rooms. Ozone gas-generator rooms shall be equipped with a continuous gas-detection system that will shut off the generator and sound a local alarm when concentrations above the PEL occur.

908.5 Repair garages. A flammable-gas detection system shall be provided in repair garages for vehicles fueled by enumerated gases in accordance with Section 406.6.6.

908.6 Refrigerant detector. Machinery rooms shall contain a refrigerant detector with an audible and visual alarm. The detector, or a sampling tube that draws air to the detector, shall be located in an area where refrigerant from a leak will concentrate. The alarm shall be actuated at a value not greater than the corresponding TLV-TWA values for the refrigerant classification indicated in the New York City Mechanical Code. Detectors and alarms shall be placed in approved locations. Refrigerant detectors shall initiate all functions as required by the New York City Mechanical Code and New York City Fire Code.

Exception: Detectors are not required in ammonia system machinery rooms equipped with a vapor detector in accordance with the New York City Mechanical Code.

908.7 Carbon monoxide alarms and detectors. Carbon monoxide alarms and detectors shall be provided and installed in accordance with Sections 908.7.1 through 908.7.4.

908.7.1 Group I-1 and R occupancies. Listed carbon monoxide alarms or detectors shall be installed as follows:

1. Group R-1. Carbon monoxide detectors and audible notification appliances shall be installed in affected dwelling units as per Section 908.7.1.1 and shall be annunciated by dwelling unit at a constantly attended location from which the fire alarm system is capable of being manually activated.
2. Groups I-1, R-2 and R-3. Carbon monoxide alarms shall be installed in affected dwelling units as per Section

908.7.1.1.

908.7.1.1 Affected dwelling units. Carbon monoxide alarms or detectors shall be required within the following dwelling units:

1. Units on the same story where carbon monoxide producing equipment or enclosed parking is located.
2. Units on the stories above and below the floor where carbon monoxide producing equipment or enclosed parking is located.
3. Units in a building containing a carbon monoxide producing furnace, boiler, or water heater as part of a central system.
4. Units in a building served by a carbon monoxide producing furnace, boiler, or water heater as part of a central system that is located in an adjoining or attached building.

908.7.1.1.1 Required locations within dwelling units. Carbon monoxide alarms or detectors shall be located within dwelling units as follows:

1. Outside of any room used for sleeping purposes, within 15 feet (4572 mm) of the entrance to such room.
2. In any room used for sleeping purposes.
3. On any story within a dwelling unit, including below-grade stories and penthouses of any area, but not including crawl spaces and uninhabitable attics.

908.7.1.1.2 Installation requirements. Carbon monoxide alarms or detectors shall comply with the power source, interconnection, and acceptance testing requirements as required for smoke alarms in accordance with Sections 907.2.10.2 through 907.2.10.4.

908.7.2 Group E, I-2 and I-4 occupancies. Listed carbon monoxide alarms or detectors shall be installed as follows:

1. Carbon monoxide alarms shall be installed within any occupied space containing carbon monoxide producing equipment and in all occupied spaces above and below the story where carbon monoxide producing equipment or enclosed parking is located.
2. Carbon monoxide detectors and audible notification appliances shall be installed within any unoccupied space containing carbon monoxide producing equipment. Such detector shall activate an audible alarm at a constantly attended location.

908.7.3 Installation. Carbon monoxide alarms and detectors shall be listed in accordance with UL 2034 and UL 2075.

908.8 Medical gas. Medical gas pressure monitoring and alarm systems shall be provided in accordance with NFPA 99 and NFPA 99C.

908.9 Flammable gas. Areas within buildings containing flammable gas distribution piping operating at levels above 15 pounds per square inch gauge (psig) (103.4 kPa) shall be provided with an approved flammable gas detection-alarm system.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 909: SMOKE CONTROL SYSTEMS

NYC Administrative Code § 28-BC 909

909.1 Scope and purpose.

This section applies to mechanical or passive smoke control systems when they are required by other provisions of this code. The purpose of this section is to establish minimum requirements for the design, installation and acceptance testing of smoke control systems that are intended to provide a tenable environment for the evacuation or relocation of occupants. These provisions are not intended for the preservation of contents, the timely restoration of operations or for assistance in fire suppression. Smoke control systems regulated by this section serve a different purpose than the smoke- and heat-venting provisions found in Section 910. Mechanical smoke control systems shall not be considered exhaust systems under Chapter 5 of the New York City Mechanical Code.

909.1.1 Definitions. These definitions are added for the purposes of Section 909 only.

POST-FIRE SMOKE PURGE SYSTEM. A mechanical or natural ventilation system intended to move smoke from the smoke zone to the exterior of the building.

PRESSURIZATION. Creation and maintenance of pressure levels in zones of a building, including elevator shafts and stairwells, that are higher than the pressure level at the smoke source, such pressure levels being produced by positive pressures of a supply of uncontaminated air; by exhausting air and smoke at the smoke source; or by a combination of these methods.

SMOKE. Airborne solid and liquid particulates and gases evolved when a material undergoes pyrolysis or combustion, including the quality of air that is entrained or otherwise mixed into the mass.

SMOKE BARRIER. See Section 702.1

SMOKE-CONTROL MODE. A predefined operational configuration of a system or device for the purpose of smoke control.

SMOKE-CONTROL SYSTEM, MECHANICAL. An engineered system that uses mechanical fans to produce pressure differences across smoke barriers or that establishes air flows to limit and direct smoke movement.

SMOKE-CONTROL SYSTEM, PASSIVE. A system of smoke barriers arranged to limit the migration of smoke.

SMOKE-CONTROL ZONE. A space within a building enclosed by smoke barriers.

SMOKE DAMPER. See Section 702.1.

STACK EFFECT. Vertical air flow within buildings caused by temperature differences.

TENABLE ENVIRONMENT. An environment in which the quality and location of smoke is limited or otherwise restricted to allow for ready evacuation through the space.

909.2 General design requirements. Buildings, structures or parts thereof required by this code to have a smoke control system or systems shall have such systems designed in accordance with the applicable requirements of Section 909 and the generally accepted and well-established principles of engineering relevant to the design. The construction documents shall include sufficient information and detail to adequately describe the elements of the design necessary for the proper implementation of the smoke control systems. These documents shall be accompanied by sufficient information and analysis to demonstrate compliance with these provisions.

909.3 Special inspection and test requirements. In addition to the ordinary inspection and test requirements that buildings, structures and parts thereof are required to undergo, smoke control systems subject to the provisions of Section 909 shall undergo special inspections and tests sufficient to verify the proper commissioning of the smoke control design in its final installed condition. The design submission accompanying the construction documents shall clearly detail procedures and methods to be used and the items subject to such inspections and tests. Such commissioning shall be in accordance with generally accepted engineering practice and, where possible, based on published standards for the particular testing involved. The special inspections and tests required by this section shall be conducted under the same terms in Section 1704.

909.3.1 Periodic testing. Smoke control systems shall be periodically tested to ensure proper operation. A record of each inspection and test shall be maintained on the premises by the owner or lessee, and the records for at least the last two years of operation shall be made available for inspection by the department and the Fire Commissioner.

909.4 Analysis. A rational analysis supporting the types of smoke control systems to be employed, their methods of operation, the systems supporting them and the methods of construction to be utilized shall accompany the submitted construction documents and shall include, but not be limited to, the items indicated in Sections 909.4.1 through 909.4.6. The basis of design and design analysis of the smoke control system shall be submitted to the department.

909.4.1 Stack effect. The system shall be designed such that the maximum probable normal or reverse stack effect will not adversely interfere with the system's capabilities. In determining the maximum probable stack effect, altitude, elevation, weather history and interior temperatures shall be used.

909.4.2 Temperature effect of fire. Buoyancy and expansion caused by the design fire in accordance with Section 909.9 shall be analyzed. The system shall be designed such that these effects do not adversely interfere with the system's capabilities.

909.4.3 Wind effect. The design shall consider the adverse effects of wind. Such consideration shall be consistent with the wind-loading provisions of Chapter 16.

909.4.4 HVAC systems. The design shall consider the effects of the heating, ventilating and air-conditioning (HVAC) systems on both smoke and fire transport. The analysis shall include all permutations of systems status. The

design shall consider the effects of the fire on the HVAC systems.

909.4.5Climate. The design shall consider the effects of low temperatures on systems, property and occupants. Air inlets and exhausts shall be located so as to prevent snow or ice blockage.

909.4.6Duration of operation. All portions of active or passive smoke control systems shall be capable of continued operation after detection of the fire event for not less than 20 minutes.

909.5Smoke barrier construction. Smoke barriers shall comply with Section 709, and shall be constructed and sealed to limit leakage areas exclusive of protected openings. The maximum allowable leakage area shall be the aggregate area calculated using the following leakage area ratios:

1. Walls: $A/A_w = 0.00100$
2. Exit enclosures: $A/A_w = 0.00035$
3. All other shafts: $A/A_w = 0.00150$
4. Floors and roofs: $A/A_F = 0.00050$

where:

A = Total leakage area, square feet (m²).

A_F = Unit floor or roof area of barrier, square feet (m²).

A_w = Unit wall area of barrier, square feet (m²).

The leakage area ratios shown do not include openings due to doors, operable windows or similar gaps. These shall be included in calculating the total leakage area.

909.5.1Leakage area. The total leakage area of the barrier is the product of the smoke barrier gross area multiplied by the allowable leakage area ratio, plus the area of other openings such as gaps and operable windows. Compliance shall be determined by achieving the minimum air pressure difference across the barrier with the system in the smoke control mode for mechanical smoke control systems. Passive smoke control systems tested using other approved means such as door fan testing shall be approved by the department and the Fire Commissioner.

909.5.2Opening protection. Openings in smoke barriers shall be protected by automatic-closing devices actuated by the required controls for the mechanical smoke control system. Door openings shall be protected by door assemblies complying with Section 715.3.3.

Exceptions:

1. Passive smoke control systems with automatic-closing devices actuated by spot-type smoke detectors listed for releasing service installed in accordance with Section 907.10.

2. Fixed openings between smoke zones that are protected utilizing the airflow method.

3. In Group I-2, where such doors are installed across corridors, a pair of opposite-swinging doors without a center mullion shall be installed having vision panels with approved fire-rated glazing materials in approved fire-rated frames, the area of which shall not exceed that tested. The doors shall be close fitting within operational tolerances and shall not have undercuts, louvers or grilles. The doors shall have head and jamb stops, astragals or rabbets at meeting edges, and automatic-closing devices. Positive-latching devices are not required.

4. Group I-3.

5. Openings between smoke zones with clear ceiling heights of 14 feet (4267 mm) or greater and bank-down capacity of greater than 20 minutes as determined by the design fire size.

909.5.2.1 Ducts and air transfer openings. Ducts and air transfer openings are required to be protected with a minimum Class II, 250(degrees)F (121(degrees)C) smoke damper complying with Section 716.

909.6 Pressurization method. The primary mechanical means of controlling smoke shall be by pressure differences across smoke barriers. Maintenance of a tenable environment is not required in the smoke control zone of fire origin.

909.6.1 Minimum pressure difference. The minimum pressure difference across a smoke barrier shall be 0.05-inch water gage (0.0124 kPa) in fully sprinklered buildings. In buildings permitted to be other than fully sprinklered, the smoke control system shall be designed to achieve pressure differences at least two times the maximum calculated pressure difference produced by the design fire, but in no case less than the values indicated in Table 909.6.1: Table 909.6.1 Minimum Pressure Differences Across Smoke Barriers Ceiling Height Minimum Design Pressure Difference Less than 15 feet (4572 mm) 0.10-inch water gage (0.0259 kPa) Equal to or greater than 15 feet (4572 mm), but less than 21 feet (6401 mm) 0.14-inch water gage (0.0349 kPa) Equal to or greater than 21 feet (6401 mm) 0.18-inch water gage (0.0448 kPa)

909.6.2 Maximum pressure difference. The maximum air pressure difference across a smoke barrier shall be determined by required door-opening or closing forces. The actual force required to open exit doors when the system is in the smoke control mode shall be in accordance with Section 1008.1.2. Opening and closing forces for other doors shall be determined by standard engineering methods for the resolution of forces and reactions. The calculated force to set a side-hinged, swinging door in motion shall be determined by:

$$F = F_{dc} + K(WADP)/2(W-d) \text{ (Equation 9-1)}$$

where:

A=Door area, square feet (m²).

d=Distance from door handle to latch edge of door, feet (m).

F=Total door opening force, pounds (N).

F_{dc}=Force required to overcome closing device, pounds (N).

K=Coefficient 5.2 (1.0).

W=Door width, feet (m).

DP=Design pressure difference, inches of water (Pa).

909.7 Air flow design method. When approved by the department, smoke migration through openings fixed in a permanently open position, which are located between smoke control zones by the use of the airflow method, shall be permitted. The design air flow shall be in accordance with this section. Air flow shall be directed to limit smoke migration from the fire zone. The geometry of openings shall be considered to prevent flow reversal from turbulent effects.

909.7.1 Velocity. The minimum average velocity through a fixed opening shall not be less than:

$$v = 217.2 [h(T_f; m s T_o)/(T_f; p l 460)]^{1/2} \text{ (Equation 9-2)}$$

For SI: $v = 119.9 [h(T_f - T_o)/T_f]^{1/2}$

where:

h =Height of opening, feet (m).

T_f =Temperature of smoke, (degrees)F ((degrees)K).

T_o =Temperature of ambient air, (degrees)F ((degrees)K).

v =Air velocity, feet per minute (m/minute).

909.7.2 Prohibited conditions. This method shall not be employed where either the quantity of air or the velocity of the airflow will adversely affect other portions of the smoke control system, unduly intensify the fire, disrupt plume dynamics or interfere with exiting. In no case shall airflow toward the fire exceed 200 feet per minute (1.02 m/s). Where the formula in Section 909.7.1 requires airflow to exceed this limit, the airflow method shall not be used.

909.8 Exhaust method. When approved by the department, mechanical smoke control for large enclosed volumes, such as in atriums or malls, shall be permitted to utilize the exhaust method. The design exhaust volumes shall be in accordance with this section.

909.8.1 Exhaust rate. The height of the lowest horizontal surface of the accumulating smoke layer shall be maintained at least 6 feet (1829 mm) above any walking surface that forms a portion of a required egress system within the smoke zone. The required exhaust rate for the zone shall be the largest of the calculated plume mass flow rates for the possible plume configurations. Provisions shall be made for natural or mechanical supply of air from outside or adjacent smoke zones to make up for the air exhausted. Makeup airflow rates, when measured at the potential fire location, shall not increase the smoke production rate beyond the capacity of the smoke control system. The temperature of the makeup air shall be such that it does not expose temperature-sensitive fire protection systems beyond their limits.

909.8.2 Axisymmetric plumes. The plume mass flow rate ($\dot{m}_p$), in pounds per second (kg/s), shall be determined by placing the design fire center on the axis of the space being analyzed. The limiting flame height shall be determined by:

$$z_t = 0.533 Q_c^{2/5} \text{ (Equation 9-3)}$$

$$\text{For SI: } z_t = 0.166 Q_c^{2/5}$$

where:

$\dot{m}_p$ =Plume mass flow rate, pounds per second (kg/s).

Q =Total heat output.

Q_c =Convective heat output, British thermal units per second (kW). (The value of Q_c shall not be taken as less than 0.70Q).

z =Height from top of fuel surface to bottom of smoke layer, feet (m).

z_t =Limiting flame height, feet (m). The z_t value must be greater than the fuel equivalent diameter (see Section 909.9).

for $z \leq z_t$

$$\dot{m}_p = 0.022 Q_c^{1/3} z^{5/3} ; \text{pl } 0.0042 Q_c$$

For SI: $m_p = 0.071 Q_c^{1/3} z^{5/3}$;pl $0.0018 Q_c$

for $z = z_t$

$m_p = 0.011 Q_c$

For SI: $m_p = 0.035 Q_c$

for z ;lt z_t

$m_p = 0.0208 Q_c^{3/5} z$

For SI: $m_p = 0.032 Q_c^{3/5} z$

To convert m_p from pounds per second of mass flow to a volumetric rate, the following equation shall be used:

$V = 60 m_p / \rho$ (Equation 9-4)

where:

V =Volumetric flow rate, cubic feet per minute (m^3/s).

ρ =Density of air at the temperature of the smoke layer, pounds per cubic feet (T: in (degrees)F) [kg/m^3 (T: in (degrees)C)].

909.8.3 Balcony spill plumes. The plume mass flow rate (m_p) for spill plumes shall be determined using the geometrically probable width based on architectural elements and projections in the following equation:

$m_p = 0.124 (QW^2)^{1/3} (z_b ; pl 0.25H)$ (Equation 9-5)

For SI: $m_p = 0.36 (QW^2)^{1/3} (z_b ; pl 0.25H)$

where:

H =Height above fire to underside of balcony, feet (m).

m_p =Plume mass flow rate, pounds per second (kg/s).

Q =Total heat output.

W =Plume width at point of spill, feet (m).

z_b =Height from balcony, feet (m).

909.8.4 Window plumes. The plume mass flow rate (m_p) shall be determined from:

$m_p = 0.077 (A_w H_w^{1/2})^{1/3} (z_w ; pl a)^{5/3} ; pl 0.18 A_w H_w^{1/2}$ (Equation 9-6)

For SI: $m_p = 0.68 (A_w H_w^{1/2})^{1/3} (z_w ; pl a)^{5/3} ; pl 1.5 A_w H_w^{1/2}$

where:

A_w =Area of the opening, square feet (m^2).

H_w =Height of the opening, feet (m).

$\dot{m}_p$ =plume mass flow rate, pounds per second (kg/s).

z_w =Height from the top of the window or opening to the bottom of the smoke layer, feet (m).

$a=2.4A_w^{2/5}H_w^{1/5}$; $m_s=2.1H_w$.

909.8.5 Plume contact with walls. When a plume contacts one or more of the surrounding walls, the mass flow rate shall be adjusted for the reduced entrainment resulting from the contact provided that the contact remains constant. Use of this provision requires calculation of the plume diameter, which shall be calculated by:

$$d = 0.48[(T_c - T_a)/(T_a + 460)]^{1/2} z \quad (\text{Equation 9-7})$$

For SI: $d = 0.48 (T_c/T_a)^{1/2} z$

where:

d =Plume diameter, feet (m).

T_a =Ambient air temperature, (degrees)F ((degrees)K).

T_c =Plume centerline temperature, (degrees)F ((degrees)K).

$T_c=0.60 (T_a + 460) Q_c^{2/3} z^{-5/3}$; $pl\ T_a$

z =Height at which T_c is determined, feet (m).

For SI: $T_c = 0.08 T_a Q_c^{2/3} z^{-5/3}$; $pl\ T_a$

909.9 Design fire. The design fire shall be based on a Q of not less than 5,000 Btu/s (5275 kW) unless a rational analysis is performed by the registered design professional and approved by the department. The design fire shall be based on the analysis in accordance with Section 909.4 and this section.

909.9.1 Factors considered. The engineering analysis shall include the characteristics of the fuel, fuel load, effects included by the fire and whether the fire is likely to be steady or unsteady.

909.9.2 Separation distance. Determination of the design fire shall include consideration of the type of fuel, fuel spacing and configuration. The ratio of the separation distance to the fuel equivalent radius shall not be less than 4. The fuel equivalent radius shall be the radius of a circle of equal area to floor area of the fuel package. The design fire shall be increased if other combustibles are within the separation distance as determined by:

$$R = [Q/(12pq'')]^{1/2} \quad (\text{Equation 9-8})$$

where:

q'' =Incident radiant heat flux required for nonpiloted ignition, Btu/ft²; $tb\ s(W/m^2)$.

Q =Heat release from fire, Btu/s (kW).

R =Separation distance from target to center of fuel package, feet (m).

909.9.3 Heat-release assumptions. The analysis shall make use of best available data from approved sources and shall not be based on excessively stringent limitations of combustible material.

909.9.4 Sprinkler effectiveness assumptions. A documented engineering analysis shall be provided for conditions

that assume fire growth is halted at the time of sprinkler activation.

909.10Equipment. Equipment such as, but not limited to, fans, ducts, automatic dampers and balance dampers, shall be suitable for its intended use, suitable for the probable exposure temperatures that the rational analysis indicates, and as approved by the department.

909.10.1Exhaust fans. Components of exhaust fans shall be rated and certified by the manufacturer for the probable temperature rise to which the components will be exposed. This temperature rise shall be computed by:

$$T_s = (Q_c/mc) ; pl (T_a) \text{ (Equation 9-9)}$$

where:

c=Specific heat of smoke at smoke layer temperature, Btu/lb(degrees)F (kJ/kg ;tb K).

m=Exhaust rate, pounds per second (kg/s).

Q_c=Convective heat output of fire, Btu/s (kW).

T_a=Ambient temperature, (degrees)F ((degrees)K).

T_s=Smoke temperature, (degrees)F ((degrees)K).

Exception: Reduced T_s as calculated based on the assurance of adequate dilution air.

909.10.2Ducts. Duct materials and joints shall be capable of withstanding the probable temperatures and pressures to which they are exposed as determined in accordance with Section 909.10.1. Ducts shall be constructed and supported in accordance with the York City Mechanical Code. Ducts shall be leak tested to 1.5 times the maximum design pressure in accordance with nationally accepted practices. Measured leakage shall not exceed 5 percent of design flow. Results of such testing shall be a part of the documentation procedure. Ducts shall be supported directly from fire-resistance-rated structural elements of the building by substantial, noncombustible supports.

Exception: Flexible connections (for the purpose of vibration isolation) complying with the New York City Mechanical Code, that are constructed of approved fire-resistance-rated materials.

909.10.3Equipment, inlets and outlets. Equipment shall be located so as not to expose uninvolved portions of the building to an additional fire hazard. Outside air inlets shall be located so as to minimize the potential for introducing smoke or flame into the building. Exhaust outlets shall be located so as to minimize reintroduction of smoke into the building and to limit exposure of the building or adjacent buildings to an additional fire hazard.

909.10.4Automatic dampers. Automatic dampers, regardless of the purpose for which they are installed within the smoke control system, shall be listed for their use.

909.10.5Fans. In addition to other requirements, belt-driven fans shall have 1.5 times the number of belts required for the design duty, but not less than two. Fans shall be selected for stable performance based on normal temperature and, where applicable, elevated temperature. Calculations and manufacturer's fan curves shall be part of the documentation procedures. Fans shall be supported and restrained by noncombustible devices in accordance with the requirements of Chapter 16. Motors driving fans shall not be operated beyond their nameplate horsepower (kilowatts), as determined from measurement of actual current draw, and shall have a minimum service factor of 1.15.

909.11Power systems. The smoke control system shall be supplied with two sources of power. Primary power shall be the normal building power systems. Secondary power shall be from an emergency source complying with the New York City Electrical Code. The emergency power source and its transfer switches shall be in a separate room from the

normal power transformers and switch gear and shall be enclosed in a room constructed of not less than 1-hour fire-resistance-rated fire barriers ventilated directly to and from the exterior. Power distribution from the two sources shall be by independent routes. Transfer to full emergency power shall be automatic and within 60 seconds of failure of the primary power. The systems shall comply with the New York City Electrical Code.

909.11.1Power sources and power surges.Elements of the smoke management system relying on volatile memories or similar systems shall be supplied with uninterruptable power sources of sufficient duration to span a 15-minute primary power interruption. Elements of the smoke management system susceptible to power surges shall be suitably protected by conditioners, suppressors or other approved means.

909.12Detection and control systems.Fire detection systems providing control input or output signals to mechanical smoke control systems or elements thereof shall comply with the requirements of Chapter 9 and NFPA 72. Such systems shall be equipped with a control unit complying with UL 864 and listed as smoke control equipment.

Control systems for mechanical smoke control systems shall include provisions for verification. Verification shall include positive confirmation of actuation, testing, manual override, the presence of power downstream of all disconnects and, through a preprogrammed weekly test sequence report, abnormal conditions audibly, visually and by printed report.

909.12.1Wiring.In addition to meeting requirements of the New York City Electrical Code, all wiring, regardless of voltage, shall be fully enclosed within continuous raceways.

909.12.2Activation.Smoke control systems shall be activated in accordance with this section.

909.12.2.1Pressurization, airflow or exhaust method.Mechanical smoke control systems using the pressurization, airflow or exhaust method shall have completely automatic control.

909.12.2.2Passive method.Passive smoke control systems actuated by spot-type detectors listed for releasing service shall be permitted.

909.12.3Automatic control.Where completely automatic control is required or used, the automatic-control sequences shall be initiated from an appropriately zoned automatic sprinkler system complying with Section 903.3.1.1, manual controls that are readily accessible to the Fire Department and any smoke detectors required by engineering analysis. See Section 909.16 for manual control requirements.

909.13Control air tubing.Control air tubing shall be of sufficient size to meet the required response times. Tubing shall be flushed clean and dry prior to final connections and shall be adequately supported and protected from damage. Tubing passing through concrete or masonry shall be sleeved and protected from abrasion and electrolytic action.

909.13.1Materials.Control air tubing shall be hard drawn copper, Type L, ACR in accordance with ASTM B 42, ASTM B 43, ASTM B 68, ASTM B 88, ASTM B 251 and ASTM B 280. Fittings shall be wrought copper or brass, solder type, in accordance with ASME B 16.18 or ASME B 16.22. Changes in direction shall be made with appropriate tool bends. Brass compression-type fittings shall be used at final connection to devices; other joints shall be brazed using a BCuP5 brazing alloy with solidus above 1,100(degrees)F (593(degrees)C) and liquids below 1,500(degrees)F (816(degrees)C). Brazing flux shall be used on copper-to-brass joints only.

Exception: Nonmetallic tubing used within control panels and at the final connection to devices, providing all of the following conditions are met:

1. Tubing shall be listed by an approved agency for flame and smoke characteristics.
2. Tubing and connected devices shall be completely enclosed within galvanized or paint-grade steel enclosure of

not less than 0.030 inch (0.76 mm) (No. 22 galvanized sheet gage) thickness. Entry to the enclosure shall be by copper tubing with a protective grommet of neoprene or teflon or by suitable brass compression to male-barbed adapter.

3. Tubing shall be identified by appropriately documented coding.

4. Tubing shall be neatly tied and supported within enclosure. Tubing bridging cabinet and door or moveable device shall be of sufficient length to avoid tension and excessive stress. Tubing shall be protected against abrasion. Tubing serving devices on doors shall be fastened along hinges.

909.13.2 Isolation from other functions. Control tubing serving other than smoke control functions shall be isolated by automatic isolation valves or shall be an independent system.

909.13.3 Testing. Control air tubing shall be tested at three times the operating pressure for not less than 30 minutes without any noticeable loss in gauge pressure prior to final connection to devices.

909.14 Marking and identification. The detection and control systems shall be clearly marked at all junctions, accesses and terminations. 909.15 Control diagrams. Identical control diagrams showing all devices in the system and identifying their location and function shall be maintained current and kept on file with the department, the Fire Department and in the fire command center in format and manner approved by the Fire Commissioner.

909.16 Fire-fighter's smoke control panel. A fire-fighter's smoke control panel for Fire Department emergency response purposes only shall be provided and shall include manual control or override of automatic control for mechanical smoke control systems. The panel shall be located in a fire command center complying with Section 911, and shall comply with Sections 909.16.1 through 909.16.3. Where required in Section 912, the post-fire smoke purge system shall be manually activated from the fire-fighter's control panel.

909.16.1 Panel indicators. Fans within the building shall be shown on the fire fighter's control panel. A clear indication of the direction of airflow and the relationship of components shall be displayed. Status indicators shall be provided for all smoke control equipment, annunciated by fan and zone, and by pilot-lamp-type indicators as follows:

1. Fans, dampers and other operating equipment in their normal status-WHITE.
2. Fans, dampers and other operating equipment in their off or closed status-RED.
3. Fans, dampers and other operating equipment in their on or open status-GREEN.
4. Fans, dampers and other operating equipment in a fault status-YELLOW/AMBER.

909.16.2 Panel controls. The fire fighter's control panel shall provide control capability over the complete smoke-control system equipment within the building as follows:

1. ON-AUTO-OFF control over each individual piece of operating smoke control equipment that can also be controlled from other sources within the building. This includes stairway pressurization fans; smoke exhaust fans; supply, return and exhaust fans; elevator shaft fans and other operating equipment used or intended for smoke control purposes.

2. OPEN-AUTO-CLOSE control over individual dampers relating to smoke control and that are also controlled from other sources within the building.

3. ON-OFF or OPEN-CLOSE control over smoke control and other critical equipment associated with a fire or smoke emergency and that can only be controlled from the fire-fighter's control panel. The fire fighter's control panel shall be configured as described in Section 911.

Exceptions:

1. Complex systems, where approved, where the controls and indicators are combined to control and indicate all elements of a single smoke zone as a unit.

2. Complex systems, where approved, where the control is accomplished by computer interface using approved, plain English commands.

909.16.3 Control action and priorities. The fire-fighter's control panel actions shall be as follows:

1. ON-OFF, OPEN-CLOSE control actions shall have the highest priority of any control point within the building. Once issued from the fire-fighter's control panel, no automatic or manual control from any other control point within the building shall contradict the control action. Where automatic means are provided to interrupt normal, nonemergency equipment operation or produce a specific result to safeguard the building or equipment (i.e., duct freeze stats, duct smoke detectors, high-temperature cutouts, temperature-actuated linkage and similar devices), such means shall be capable of being overridden by the fire-fighter's control panel. The last control action as indicated by each fire-fighter's control panel switch position shall prevail. In no case shall control actions require the smoke control system to assume more than one configuration at any one time.

Exception: Power disconnects required by the New York City Electrical Code.

2. Only the AUTO position of each three-position fire-fighter's control panel switch shall allow automatic or manual control action from other control points within the building. The AUTO position shall be the NORMAL, nonemergency, building control position. Where a fire-fighter's control panel is in the AUTO position, the actual status of the device (on, off, open, closed) shall continue to be indicated by the status indicator described above. When directed by an automatic signal to assume an emergency condition, the NORMAL position shall become the emergency condition for that device or group of devices within the zone. In no case shall control actions require the smoke control system to assume more than one configuration at any one time.

909.17 System response time. Smoke-control system activation shall be initiated immediately after receipt of an appropriate automatic or manual activation command. Smoke control systems shall activate individual components (such as dampers and fans) in the sequence necessary to prevent physical damage to the fans, dampers, ducts and other equipment. For purposes of smoke control, the fire-fighter's control panel response time shall be the same for automatic or manual smoke control action initiated from any other building control point. The total response time, including that necessary for detection, shutdown of operating equipment and smoke control system startup, shall allow for full operational mode to be achieved before the conditions in the space exceed the design smoke condition. The system response time for each component and their sequential relationships shall be detailed in the required rational analysis and verification of their installed condition reported in the required final report.

909.18 Acceptance testing. Devices, equipment, components and sequences shall be individually tested. These tests, in addition to those required by other provisions of this code, shall consist of determination of function, sequence and, where applicable, capacity of their installed condition.

909.18.1 Detection devices. Smoke or fire detectors that are a part of a smoke control system shall be tested in accordance with Chapter 9 in their installed condition. When applicable, this testing shall include verification of airflow in both minimum and maximum conditions.

909.18.2 Ducts. Ducts that are part of a smoke control system shall be traversed using generally accepted practices to determine actual air quantities.

909.18.3 Dampers. Dampers shall be tested for function in their installed condition.

909.18.4Inlets and outlets.Inlets and outlets shall be read using generally accepted practices to determine air quantities.

909.18.5Fans.Fans shall be examined for correct rotation. Measurements of voltage, amperage, revolutions per minute (rpm) and belt tension shall be made.

909.18.6Smoke barriers.Measurements using inclined manometers or other approved calibrated measuring devices shall be made of the pressure differences across smoke barriers. Such measurements shall be conducted for each possible smoke control condition.

909.18.7Controls.Each smoke zone, equipped with an automatic-initiation device, shall be put into operation by the actuation of one such device. Each additional device within the zone shall be verified to cause the same sequence without requiring the operation of fan motors in order to prevent damage. Control sequences shall be verified throughout the system, including verification of override from the fire-fighter's control panel and simulation of emergency power conditions.

909.18.8Special inspections for smoke control.Smoke control systems shall be tested by a special inspector in accordance with Chapter 17.

909.18.8.1Scope of testing.Special inspections shall be conducted in accordance with the following:

1. During erection of ductwork and prior to concealment for the purposes of leakage testing and recording of device location.

2. Prior to occupancy and after sufficient completion for the purposes of pressure-difference testing, flow measurements, and detection and control verification.

909.18.8.2Qualifications.Special inspectors for smoke control shall have a certification as air balancers and expertise in fire protection engineering or mechanical engineering.

909.18.8.3Reports.A complete report of testing shall be prepared by the special inspector or approved agency. The report shall include identification of all devices by manufacturer, nameplate data, design values, measured values and identification tag or mark. The report shall be reviewed by the responsible engineer and, when satisfied that the design intent has been achieved, the engineer shall seal, sign and date the report.

909.18.8.3.1Report filing.A copy of the final report and each inspection report shall be filed with the department and Fire Commissioner, and an identical copy shall be maintained in an approved location at the building.

909.18.9Identification and documentation.Charts, drawings and other documents identifying and locating each component of the smoke control system, and describing its proper function and maintenance requirements, shall be maintained on file at the building as an attachment to the report required by Section 909.18.8.3. Devices shall have an approved identifying tag or mark on them consistent with the other required documentation and shall be dated indicating the last time they were successfully tested and by whom.

909.18.10Re-acceptance testing.The smoke control system shall require a re-acceptance test after any modifications to the system or physical changes to the building that may affect system performance.

909.19System acceptance.Buildings, or portions thereof, required by this code to comply with this section shall not be issued a certificate of occupancy until such time that the department determines that the provisions of this section have been fully complied with, and that the Fire Department has received satisfactory instruction on the operation, both automatic and manual, of the system.

Exception: In buildings of phased construction, the department may issue a temporary certificate of occupancy

provided that those portions of the building to be occupied meet the requirements of this section and that the remainder does not pose a significant hazard to the safety of the proposed occupants or adjacent buildings.

909.20Smokeproof enclosures.Where required by Section 1019.1.8, a smoke proof enclosure shall be constructed in accordance with this section. Where access to the roof is required by the New York City Fire Code, such access shall be from the smoke proof enclosure where a smoke proof enclosure is required. Smokeproof enclosures shall consist of one of the following systems:

1. An enclosed interior exit stairway constructed in accordance with Section 1019.1 and accessed through an open exterior balcony.
2. An enclosed interior exit stairway constructed in accordance with Section 1019.1 and accessed through a naturally ventilated vestibule.
3. An enclosed interior exit stairway constructed in accordance with Section 1019.1 and accessed through a mechanically ventilated vestibule.
4. A pressurized interior exit stairway constructed in accordance with Section 1019.1

909.20.1Access.Access to the interior exit stairway shall be by way of a vestibule or an open exterior balcony, unless such stairway is pressurized in accordance with Section 909.20.5. The minimum dimension of the vestibule or open exterior balcony shall not be less than the required width of the corridor leading to the vestibule or open exterior balcony but shall not have a width of less than 44 inches (1118 mm) and shall not have a length of less than 72 inches (1829 mm) in the direction of egress travel.

909.20.2Construction.The smoke proof enclosure shall be separated from the remainder of the building by not less than a 2-hour fire-resistance-rated fire barrier without openings other than the required means of egress doors. The vestibule shall be separated from the stairway by not less than a 2-hour fire-resistance-rated fire barrier. The open exterior balcony shall be constructed in accordance with the fire-resistance-rating requirements for floor construction.

909.20.2.1Door closers.Doors in a smoke proof enclosure shall be self-closing or shall be automatic-closing by actuation of a smoke detector installed at the floor-side entrance to the smoke proof enclosure in accordance with Section 715.3.7. The actuation of the smoke detector on any door shall activate the closing devices on all doors in the smoke proof enclosure at all levels. Smoke detectors shall be installed in accordance with Section 907.10.

909.20.3Natural ventilation alternative.The provisions of Sections 909.20.3.1 through 909.20.3.3 shall apply to ventilation of smoke proof enclosures by natural means.

909.20.3.1Balcony doors.Where access to the stairway is by way of an open exterior balcony, the door assembly into the enclosure shall be a fire door in accordance with Section 715.3.

909.20.3.2Vestibule doors.Where access to the stairway is by way of a vestibule, the door assembly into the vestibule shall be a fire door complying with Section 715.3. The door assembly from the vestibule to the stairway shall have not less than a 90-minute fire protection rating complying with Section 715.3.

909.20.3.3Vestibule ventilation.Each vestibule shall have a minimum net area of 16 square feet (1.5 m²) of opening in a wall facing an outer court, yard or public way that is at least 20 feet (6096 mm) in width.

909.20.4Mechanical ventilation alternative.The provisions of Sections 909.20.4.1 through 909.20.4.4 shall apply to ventilation of smoke proof enclosures by mechanical means.

909.20.4.1Vestibule doors.The door assembly from the building into the vestibule shall be a fire door complying with Section 715.3. The door assembly from the vestibule to the stairway shall have not less than a 90-minute fire

protection rating in accordance with Section 715.3. The door from the building into the vestibule shall be provided with gaskets or other provisions to minimize air leakage.

909.20.4.2 Vestibule ventilation. The vestibule shall be supplied with not less than one air change per minute and the exhaust shall not be less than 150 percent of supply. Supply air shall enter and exhaust air shall discharge from the vestibule through separate, tightly constructed ducts used only for that purpose. Supply air shall enter the vestibule within 6 inches (152 mm) of the floor level. The top of the exhaust register shall be located at the top of the smoke trap but not more than 6 inches (152 mm) down from the top of the trap, and shall be entirely within the smoke trap area. Doors in the open position shall not obstruct duct openings. Duct openings with controlling dampers are permitted where necessary to meet the design requirements, but dampers are not otherwise required.

909.20.4.2.1 Engineered ventilation system. Where a specially engineered system is used, the system shall exhaust a quantity of air equal to not less than 90 air changes per hour from any vestibule in the emergency operation mode and shall be sized to handle three vestibules simultaneously. Smoke detectors shall be located at the floor-side entrance to each vestibule and shall activate the system for the affected vestibule. Smoke detectors shall be installed in accordance with Section 907.10.

909.20.4.3 Smoke trap. The vestibule ceiling shall be at least 20 inches (508 mm) higher than the door opening into the vestibule to serve as a smoke and heat trap and to provide an upward-moving air column. The height shall not be decreased unless approved and justified by design and test.

909.20.4.4 Stair shaft air movement system. The stair shaft shall be provided with a dampered relief opening and supplied with sufficient air to maintain a minimum positive pressure of 0.10 inch of water (25 Pa) in the shaft relative to the vestibule with all doors closed. The system shall maintain a maximum of 0.35 inch of water (87 Pa) in the shaft relative to the building measured with all stairway doors closed under maximum anticipated stack pressures.

909.20.4.5 Door Opening Force. Door opening force shall not exceed limits in Section 1008.1.2.

909.20.5 Stair pressurization alternative. Where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the vestibule is not required, provided that interior exit stairways are pressurized to a minimum of 0.15 inch of water (37 Pa) and a maximum of 0.35 inch of water (87 Pa) in the shaft relative to the building measured with all stairway doors closed under maximum anticipated stack pressures.

909.20.6 Ventilating equipment. The activation of ventilating equipment required by the alternatives in Sections 909.20.4 and 909.20.5 shall be by smoke detectors installed at each floor level at an approved location at the entrance to the smokeproof enclosure. When the closing device for the stair shaft and vestibule doors is activated by smoke detection or power failure, the mechanical equipment shall activate and operate at the required performance levels. Smoke detectors shall be installed in accordance with Section 907.10.

909.20.6.1 Ventilation systems. Smokeproof enclosure ventilation systems shall be independent of other building ventilation systems. The equipment and ductwork shall comply with one of the following:

1. Equipment and ductwork shall be located exterior to the building and directly connected to the smokeproof enclosure or connected to the smokeproof enclosure by ductwork enclosed by 2-hour fire-resistance-rated fire barriers.
2. Equipment and ductwork shall be located within the smokeproof enclosure with intake or exhaust directly from and to the outside or through ductwork enclosed by 2-hour fire-resistance-rated fire barriers.
3. Equipment and ductwork shall be located within the building if separated from the remainder of the building, including other mechanical equipment, by 2-hour fire-resistance-rated fire barriers.

909.20.6.2 Emergency power. Mechanical vestibule and stair shaft ventilation systems and automatic fire detection

systems shall be powered by an emergency power system conforming to Section 403.11 and Chapter 27.

909.20.6.3 Acceptance and testing. Before the mechanical equipment is approved, the system shall be tested in the presence of the department or approved agency to confirm that the system is operating in compliance with these requirements.

909.21 Underground building smoke exhaust system. Where required in accordance with Section 405.5 for underground buildings, a smoke exhaust system shall be provided in accordance with this section.

909.21.1 Exhaust capability. Where compartmentation is required, each compartment shall have an independent, automatically activated smoke exhaust system capable of manual operation. The system shall have an air supply and smoke exhaust capability that will provide a minimum of six air changes per hour.

909.21.2 Operation. The smoke exhaust system shall be operated in the compartment of origin by the following, independently of each other:

1. Two cross-zoned smoke detectors within a single protected area of a single smoke detector monitored by an alarm verification zone or an approved equivalent method.
2. The automatic sprinkler system.
3. Manual controls that are readily accessible to the Fire Department.

909.21.3 Alarm required. Activation of the smoke exhaust system shall activate an audible alarm at a constantly attended location.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

909.5.1 amended L.L. 8/2008 § 109, eff. July 1, 2008.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 910: SMOKE AND HEAT VENTS

NYC Administrative Code § 28-BC 910

910.1 General.

Where required by this code or otherwise installed, smoke and heat vents or mechanical smoke exhaust systems and draft curtains shall conform to the requirements of this section.

Exception: Frozen-food warehouses used solely for storage of Class I and II commodities where protected by an automatic sprinkler system in accordance with Section 903.3.1.1.

910.2 Where required. Smoke and heat vents designed in accordance with Section 910.3 shall be installed in the roofs of buildings or portions thereof occupied for the uses set forth in Sections 910.2.1 through 910.2.3. Vents shall be installed at the top of a closed shaft in accordance with Section 910.5.

910.2.1 Groups F-1 and S-1. Buildings and portions thereof used as a Group F-1 or S-1 occupancy having more than 50,000 square feet (4645 m²) in undivided area.

Exception: Group S-1 aircraft repair hangars.

910.2.2 Group H. Buildings and portions thereof used as a Group H occupancy as shown:

1. In occupancies classified as Group H-2 or H-3, any of which are over 15,000 square feet (1394 m²) in undivided area or area greater in depth than 100 feet (30 480 mm) from Fire Department apparatus access.

Exception: Buildings of noncombustible construction containing only noncombustible materials.

2. In areas of buildings in Group H used for storing Class 2, 3, and 4 liquid and solid oxidizers, Class 1 and unclassified detonable organic peroxides, Class 3 and 4 unstable (reactive) materials, or Class 2 or 3 water-reactive materials as required for a high-hazard commodity classification.

Exception: Buildings of noncombustible construction containing only noncombustible materials.

910.2.3 High-piled combustible storage. Buildings and portions thereof containing high-piled combustible stock or rack storage in any occupancy group in accordance with Section 413 and the New York City Fire Code.

910.3 Design and installation. The design and installation of smoke and heat vents and draft curtains shall be as specified in this section and Table 910.3.

910.3.1 Vent operation. Smoke and heat vents shall be listed and labeled and shall be capable of being operated by approved automatic and manual means. Automatic operation of smoke and heat vents shall conform to the provisions of this section.

910.3.1.1 Gravity-operated drop-out vents. Automatic smoke and heat vents containing heat-sensitive glazing designed to shrink and drop out of the vent opening when exposed to fire shall fully open within 5 minutes after the vent cavity is exposed to a simulated fire, represented by a time-temperature gradient that reaches an air temperature of 500(degrees)F (260(degrees)C) within 5 minutes.

910.3.1.2 Sprinklered buildings. Where installed in buildings provided with an automatic sprinkler system in accordance with Section 903.3.1.1, smoke and heat vents shall be designed to operate automatically.

910.3.1.3 Nonsprinklered buildings. Where installed in buildings not provided with an automatic sprinkler system, smoke and heat vents shall operate automatically by actuation of a heat-responsive device rated at between 100(degrees)F (38(degrees)C) and 220(degrees)F (104(degrees)C) above ambient.

Exception: Gravity-operated drop-out vents complying with Section 910.3.1.1

910.3.2 Vent dimensions. The effective venting area shall not be less than 16 square feet (1.5 m²) with no dimension less than 4 feet (1219 mm), excluding ribs or gutters having a total width not exceeding 6 inches (152 mm).

910.3.3 Vent locations. Smoke and heat vents shall be located 20 feet (6096 mm) or more from adjacent lot lines and fire walls and 10 feet (3048 mm) or more from fire barrier walls. Vents shall be uniformly located within the roof area above high-piled storage areas, with consideration given to roof pitch, draft curtain location, sprinkler location and structural members.

910.3.4 Draft curtains. Where required, draft curtains shall be provided in accordance with this section.

Exception: Where areas of buildings are equipped with early suppression fast-response (ESFR) sprinklers, draft curtains need not be provided within these areas. Draft curtains shall only be provided at the separation between the ESFR sprinklers and the conventional sprinklers.

910.3.4.1 Construction. Draft curtains shall be constructed of sheet metal, lath and plaster, gypsum board or other approved materials that provide equivalent performance to resist the passage of smoke. Joints and connections shall be smoke tight.

910.3.4.2 Location and depth. The location and minimum depth of draft curtains shall be in accordance with Table 910.3.

910.4 Mechanical smoke exhaust. Where approved by the department, engineered mechanical smoke exhaust shall be an acceptable alternate to smoke and heat vents.

910.4.1 Location. Exhaust fans shall be uniformly spaced within each draft-curtained area and the maximum distance between fans shall not be greater than 100 feet (30 480 mm).

910.4.2Size. Fans shall have a maximum individual capacity of 30,000 cfm (14.2 m³/s). The aggregate capacity of smoke exhaust fans shall be determined by the equation:

$$C = A \times 300 \text{ (Equation 9-10)}$$

where:

C=Capacity of mechanical ventilation required, in cubic feet per minute (m³/s).

A=Area of roof vents provided in square feet (m²) in accordance with Table 910.3.

910.4.3Operation. Mechanical smoke exhaust fans shall be automatically activated by the automatic sprinkler system or by heat detectors having operating characteristics equivalent to those described in Section 910.3.1. Individual manual controls of each fan unit shall also be provided.

910.4.4Wiring and control. Wiring for operation and control of smoke exhaust fans shall be connected ahead of the main disconnect and protected against exposure to temperatures in excess of 1,000(degrees)F (538(degrees)C) for a period of not less than 15 minutes. Controls shall be located so as to be immediately accessible to the fire service from the exterior of the building and protected against interior fire exposure by fire barriers having a fire-resistance rating not less than one hour. The location of manual controls is subject to the approval of the Fire Commissioner.

910.4.5Supply air. Supply air for exhaust fans shall be provided at or near the floor level and shall be sized to provide a minimum of 50 percent of required exhaust. Openings for supply air shall be uniformly distributed around the periphery of the area served.

910.4.6Interlocks. In combination comfort air-handling/smoke removal systems or independent comfort air-handling systems, fans shall be controlled to shut down in accordance with the approved smoke control sequence.

910.5Smoke venting of closed shafts. All closed shafts having a floor area exceeding four square feet (0.37 m²) shall be provided with a smoke vent in accordance with Section 910.5.1 through 910.5.3. Exception: Elevator and dumbwaiter shafts in accordance with Chapter 30.

910.5.1Smoke vent construction. Smoke vents may be constructed as windows, louvers, skylights, vent ducts, or similar devices. Where a vent duct is installed, such vent ducts shall be enclosed by construction having the same fire resistance rating as required for the shaft enclosure.

910.5.2Smoke vent dimensions. The effective venting area shall not be less than 3-1/2 percent of the maximum shaft area at any floor, but in no event less than 72 square inches (0.05 m²). Of the total required vent area, at least one-third shall be clear opening to the exterior in the form of fixed louvers, ridge vents, or hooded or goosenecked openings. The remaining portion of the required vent area may be a window or skylight glazed with plain glass not more than 1/8-inch (3.2 mm) thick or with plastic glazing.

Exception: The clear opening to the exterior may be constructed as a skylight or trapdoor arranged to open automatically by fusible link or other mechanical device when subjected to a temperature of 160(degrees)F (71(degrees)C) or to a rapid rise in temperature at a rate of 15(degrees)F (-9.4(degrees)C) to 20(degrees)F (-6.7(degrees)C) per minute.

910.5.3Smoke vent location. Smoke vents shall be located in accordance with 910.5.3.1 or 910.5.3.2 as applicable.

910.5.3.1Smoke vents located above the roof line. Where a closed shaft or smoke vent duct penetrates through the roof of the building, the vent shall be located as follows:

1. The vent shall be located at least 8 inches (203 mm) above a noncombustible roof assembly or at least 36 inches

(914 mm) above a combustible roof assembly.

2. The vent shall be located at least 10 feet (3048 mm) from any window, door, exterior stairway, or interior lot line. The vent may be located no less than 5 feet (1524 mm) from any window or door provided that the vent is located at a point higher than the top of such window or door.

3. Where the vent is constructed as a window or louver, the sill of the window or louver shall be located at least 36 inches (above the roof assembly).

910.5.3.2 Smoke vents located in an exterior wall. Where the exterior wall serves as part of a shaft enclosure or where a smoke vent duct penetrates the exterior wall of the building, the vent shall be located at least 30 feet above and 5 feet to the side of any other openings in the exterior wall.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 911: FIRE COMMAND CENTER

NYC Administrative Code § 28-BC 911

911.1 Features.

Where required by other sections of this code, a fire command center for Fire Department operations shall be provided. The fire command center shall be located in the lobby of the building on the entrance floor as part of the fire alarm control panel, elevator control panel or immediately adjacent thereto. The fire command center shall comply with NFPA 72 and shall contain the following features as applicable:

1. The emergency voice/alarm communication system unit.
2. The Fire Department communications unit.
3. Fire detection and alarm system annunciator unit.
4. Annunciator visually indicating the location of the elevators and whether they are operational.
5. Status indicators and controls for air-handling systems.
6. The fire-fighter's control panel required by Section 909.16 for smoke control systems installed in the building.
7. Controls for unlocking stairway doors simultaneously.
8. Sprinkler valve and water-flow detector display panels.
9. Emergency power status indicators.
10. A telephone for Fire Department use with controlled access to the public telephone system.
11. Fire pump status indicators.

12. Generator supervision devices, manual start and transfer features.
13. Public address system, where specifically required by other sections of this code.
14. Manual controls of Post-Fire Smoke Purge system in accordance with Section 912.2.3.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION 912: POST-FIRE SMOKE PURGE SYSTEMS

NYC Administrative Code § 28-BC 912

912.1 Scope and purpose.

The purpose of this section is to establish minimum requirements for the design and installation of post-fire smoke purge systems, which are intended for the timely restoration of operations and overhaul activities once a fire is extinguished. Post-fire smoke purge systems are not intended or designed as life safety systems and are not required to meet the provisions of Section 909. Post-fire smoke purge systems shall be required in:

1. High-rise buildings subject to Section 403.
2. Buildings with any story exceeding 50,000 square feet (4645 m²) in floor area.
3. Building with spaces exceeding 100 feet (30 480 mm) from natural ventilation openings. Natural ventilation openings shall consist of operable windows and doors of at least five percent of the floor area or roof vents per Section 910.
4. High piled stock or rack storage in accordance with the New York City Fire Code.

Exceptions: A post-fire smoke purge system is not required in R-2 occupancies where either of the following conditions exists:

1. Openable windows. A post-fire smoke purge system is not required where every habitable room located in dwelling units is provided with windows complying with Chapter 12 and all of the following:

1.1. Minimum window area. Each required window shall provide at least 12 square feet (1.1 m²) of glazed area. The total area of all such windows shall not be less than 10 percent of the floor area of the room or space served.

1.2. Minimum openable area. Each required window shall provide a minimum of 6 square feet (0.56 m²) of openable area. The total area of all such openings shall not be less than five percent of the floor area of the room or

space served. In addition, each required openable area shall be:

1.2.1. Located wholly at least 30 inches (762 mm) above the finished floor; and

1.2.2. Fully openable to the minimum 6 square feet (0.56 m²), at all times and without limiting stops or devices. Such openings may be achieved through the use of double-hung, sliding, or similar types of windows. However, in the event of the use of casement-, hopper-, pivot-, or awning-type windows, such windows shall satisfy the requirements of this section only when they open to at least 75 degrees.

2. Smokeproof enclosures. A post-fire smoke purge system is not required where all exits are constructed as smokeproof enclosures in accordance with Section 1019.1.8.

912.2 Post-fire smoke purge systems in occupancy groups other than R-2.

912.2.1 General design requirements. Post-fire smoke purge systems are permitted to use dedicated equipment, the normal building HVAC system or other openings and shall have the capability to exhaust smoke from occupied spaces. Smoke removal may be by either mechanical or natural ventilation, but shall be capable of removing cold smoke. Smoke removed from a space must be discharged to a safe location outside the building and shall not be recirculated into the building in accordance with the New York City Mechanical Code.

912.2.2 Exhaust capability. The system shall have an air supply and smoke exhaust capability that will provide a minimum of 6 air changes per hour or 1 cubic foot per minute per square foot (cfm/ft²) [0.00508 3/(s m²)], whichever is greater. The system need not exhaust from all areas at the same time, but is permitted to be zoned based on the largest fire area served. For the purpose of calculating system size, the height of a compartment shall be considered to run from slab to slab and include the volume above suspended ceilings. Provisions shall be made for sufficient make-up air. The provisions may include operable windows, doors, building leakage, or mechanical systems. In buildings having occupied floors located less than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, breakable windows may be utilized.

912.2.3 Operation. The post-fire smoke purge system shall be operated by manual controls that are part of the fire command center, in accordance with Section 911, or fire alarm panel when a fire command center is not required. Such control center or panel shall display a graphic indicating the portions of the building served by each post-fire smoke purge system. When a system is zoned into areas of operation less than the entire building, each zone shall have an individual control. Fire Department manual controls of post-fire smoke purge systems shall not override the manual or automatic operation of the smoke control system. Such Fire Department manual controls shall override the fire shutdown signal from the fire alarm system.

912.3 Post-fire smoke purge systems in occupancy Group R-2. Post-fire smoke purge systems in R-2 occupancies shall comply with either Section 912.3.1 or 912.3.2. Smoke removed must be discharged to a safe location outside the building and shall not be recirculated into the building in accordance with the New York City Mechanical Code.

912.3.1 Stair ventilation. The top of all enclosed exit stairs shall be provided with a reversible fan system capable of introducing fresh air or exhausting air at a rate of 6 air changes per hour or 1 cubic foot per minute per square foot (cfm/ft²) [0.00508 m³/(s; t m²)], whichever is greater, based on the area of the largest floor. Such system shall be operated by manual controls that are part of the fire command center, as per Section 911, or fire alarm panel when a fire command center is not required. Such control center or panel shall display a graphic indicating the portions of the building served by each post-fire smoke purge system. The operation of such system shall be controlled by Fire Department personnel by manually opening stair doors at the appropriate story.

912.3.2 Corridor ventilation. The ducts and fans that provide fresh air supply to the public corridors in accordance with the New York City Mechanical Code shall be provided with reversible fans and duct sizes capable of introducing

fresh air to or exhausting air from the corridor at a rate of 6 air changes per hour or 1 cubic foot per minute per square foot (cfm/ft²) [0.00508 m³/(s;tm²)], whichever is greater, based on the area of the largest apartment plus the area of the public corridor. Such system shall be operated by manual controls that are part of the fire command center, as per Section 911, or fire alarm panel when a fire command center is not required. Each floor to be ventilated shall be by individual controls. Such control center or panel shall display a graphic indicating the portions of the building served by each post-fire smoke purge system.

912.4Maintenance. The building owner shall maintain post-fire smoke exhaust systems in good operational condition. Records of testing shall be maintained on the premises for inspection by the department and Fire Department personnel.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Appendix D Fire Districts
SECTION BC D101: GENERAL

NYC Administrative Code § 28-BC D101

D101.1 Scope.

The provisions of this appendix shall regulate the division of the city of New York into geographical territories known as fire districts and control the occupancy groups and construction classes permitted in the fire districts. Wherever reference is made to the Fire District, it shall be construed to mean the fire districts designated and referred to in this appendix.

D101.2 Establishment of fire district. The following city areas are hereby established as being inside the fire districts:

1. All of the borough of Manhattan.
2. All of the borough of Bronx.
3. All of the borough of Brooklyn.
4. Such portions of the boroughs of Staten Island and Queens as are indicated on the "fire district maps" as per Section D106.



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NYC Administrative Code § 28-BC D102

D102.1 Types of construction permitted.

Every building hereafter erected within the fire district, or located partially in the fire district pursuant to Section D104.1, shall be either Type I, II, III or IV.

D102.2 Other specific requirements.

D102.2.1 Group H-1 prohibited. Group H-1 occupancies shall be prohibited from location within the fire district.

D102.2.2 Construction type. Every building, room, or space hereafter altered or erected shall be constructed as required based on the type of construction indicated in Chapter 6 except as provided in Section D102.2.4.

D102.2.3 Roof covering. Roof covering in the fire district shall conform to the requirements of Class A or B roof coverings as defined in Section 1505.

D102.2.4 Structural fire rating. The fire-resistance rating of bearing walls, floors, roofs and their supporting structural members shall comply with Table 601 of Chapter 6, but in no event shall such rating be less than 1-hour.

Exceptions. The following buildings or building elements may be constructed with fire-resistance rating in accordance with Table 601:

1. Buildings of Type IV construction.
2. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
3. Automobile parking structures.
4. Buildings surrounded on all sides by a permanently open space of not less than 30 feet (9144 mm).

5. Partitions complying with Section 603.1 (8).

D102.2.5R-1 and R-2 Occupancies.No building or space classified in occupancy group R-1 or R-2 may be located on a lot containing a building classified in construction Type IIB, VA or VB.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

D102.2.4 amended L.L. 8/2008 § 172, eff. July 1, 2008.



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SECTION BC D103: CHANGES TO BUILDINGS

NYC Administrative Code § 28-BC D103

D103.1 Existing buildings within the fire district.

An existing building shall not hereafter be increased in height or area unless it is of a type of construction permitted for new buildings within the fire district or is altered to comply with the requirements for such type of construction. Nor shall any existing building be hereafter extended on any side, nor square footage or floors added within the existing building unless such modifications are of a type of construction permitted for new buildings within the fire district.

D103.2 Other alterations. Nothing in Section D103.1 shall prohibit other alterations within the fire district provided there is no change of occupancy that is otherwise prohibited and provided the fire hazard is not increased by such alteration.

D103.3 Moving buildings. Buildings shall not hereafter be moved into the fire district or to another lot in the fire district unless the building is of a type of construction permitted in the fire district.



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Appendix D Fire Districts

SECTION BC D104: BUILDINGS LOCATED PARTIALLY IN THE FIRE DISTRICT

NYC Administrative Code § 28-BC D104

D104.1 General.

Any building located partially in the fire district, so that it is both inside and outside the district, shall be of a type of construction required for the fire district if more than 25 percent of the total floor area of the building is located inside the fire district.



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SECTION BC D105: EXCEPTIONS TO RESTRICTIONS IN FIRE DISTRICT

NYC Administrative Code § 28-BC D105

D105.1 General.

The preceding provisions of this appendix shall not apply in the following instances:

1. Temporary platforms, reviewing stands, and similar miscellaneous structures used for a limited period of time, subject to the approval of the com-missioner.
2. Fences not over 6 feet (1829 mm) high.
3. Water towers, tank structures, and trestles may be constructed of wood planking and timbers of dimensions not less than as required for Type IV construction when not over 35 feet (10 668 mm) high and having an exterior separation of at least 30 feet (9144 mm).
4. Detached greenhouses accessory to a one- or two-family dwelling located on the same lot at least 6 feet (1829 mm) from any lot line or building walls and not exceeding 14 feet (4267 mm) in height.
5. Porches on dwellings not over one story in height, and not over 10 feet (3048 mm) wide from the face of the building, provided such porch does not come within 5 feet (1524 mm) of any property line.
6. Sheds open on a long side not over 15 feet (4572 mm) high and 500 square feet (46 m2) in area.
7. Existing one- and two-family dwellings of a type of construction not permitted in the fire district can be extended 25 percent of the floor area existing at the time of inclusion in the fire district by any type of construction permitted by this code.
8. Wood decks less than 600 square feet (56 m2) where constructed of 2-inch (51 mm) nominal wood, pressure treated for exterior use.

9. One- or two-family detached or semi-detached dwellings of two stories or less in height and 2,500 square feet (232 m²) or less in area located within zoning Districts R-2 through R-5 may be constructed or reconstructed of construction Type VA, or if damaged for any cause only the damaged portions shall be required to be reconstructed to conform to Type VA construction. In addition, one-family dwellings located within zoning District R-1 anywhere in the city, may be constructed of Type VB construction in conformance with the area and height limits established by Table 503 of Chapter 5.

10. An accessory building or structure used as an office or similar use for an open parking lot located on the same lot, may be constructed of Type VA or VB construction provided its area shall be limited to 150 square feet (14 m²) and height of 10 feet (3048 mm) maximum. Such structure shall be located not less than 6 feet (1829 mm) from any lot line or buildings on the same lot.



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SECTION BC D106: FIRE DISTRICT MAPS FOR THE BOROUGH OF RICHMOND AND QUEENS

NYC Administrative Code § 28-BC D106

D106.1 Fire district maps.

Within the boroughs of Richmond and Queens, the fire districts shall comprise such areas indicated on the "fire district maps" as per Figures D106.1(1) and D106.1(2).

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SECTION BC E101: GENERAL

NYC Administrative Code § 28-BC E101

E101.1 Scope.

The provisions of this appendix shall control the supplementary requirements for the design and construction of facilities for accessibility to persons with physical disabilities.

E101.2Design. Technical requirements for items herein shall comply with this code and ICC A117.1.



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SECTION BC E102: DEFINITIONS

NYC Administrative Code § 28-BC E102

E102.1 General.

The following words and terms shall, for the purposes of this appendix, have the meanings shown herein.

CLOSED-CIRCUIT TELEPHONE. A telephone with a dedicated line such as a house phone, courtesy phone or phone that must be used to gain entrance to a facility.

MAILBOXES. Receptacles for the receipt of documents, packages or other deliverable matter. Mailboxes include, but are not limited to, post office boxes and receptacles provided by commercial mail-receiving agencies, apartment houses and schools.

TRANSIENT LODGING. A building, facility or portion thereof, excluding inpatient medical care facilities and long-term care facilities, that contains one or more dwelling units or sleeping units. Examples of transient lodging include, but are not limited to, resorts, group homes, hotels, motels, dormitories, homeless shelters, halfway houses and social service lodging.



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SECTION BC E103: ACCESSIBLE ROUTE

NYC Administrative Code § 28-BC E103

E103.1 Raised platforms.

In banquet rooms or spaces where a head table or speaker's lectern is located on a raised platform, an accessible route shall be provided to the platform.



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SECTION BC E104: SPECIAL OCCUPANCIES

NYC Administrative Code § 28-BC E104

E104.1 General.

Transient lodging facilities shall be provided with accessible features in accordance with Sections E104.2 and E104.3. Group I-3 occupancies shall be provided with accessible features in accordance with Sections E104.3 and E104.4.

E104.2 Accessible beds. In rooms or spaces having more than 25 beds, five percent of the beds shall have a clear floor space complying with Section 305 (Clear Floor Space) of ICC A117.1.

E104.2.1 Sleeping areas. A clear floor space complying with Section 305 (Clear Floor Space) of ICC A117.1 shall be provided on both sides of the accessible bed. The clear floor space shall be positioned for parallel approach to the side of the bed.

Exception: This requirement shall not apply where a single clear floor space complying with Section 305 (Clear Floor Space) of ICC A117.1 positioned for parallel approach is provided between two beds.

E104.3 Communication features. Communication features complying with Chapter 7 of ICC A117.1 shall be provided in accordance with Sections E104.3.1 through E104.3.3.

E104.3.1 Transient lodging. In transient lodging facilities, sleeping units with accessible communication features shall be provided in accordance with Table E104.3.1. Units required to comply with Table E104.3.1 shall be dispersed among the various classes of units.

E104.3.2 Group I-3. In Group I-3 occupancies at least 2 percent, but no fewer than one of the total number of general holding cells and general housing cells equipped with audible emergency alarm systems and permanently installed telephones within the cell, shall comply with Section E104.3.3.

E104.3.3 Notification devices. Visual notification devices shall be provided to alert room occupants of incoming telephone calls and a door knock or bell. Notification devices shall not be connected to visual alarm signal appliances.

Permanently installed telephones shall have volume controls and an electrical outlet complying with ICC A117.1, including Section 309 (Operable Parts), located within 48 inches (1219 mm) of the telephone to facilitate the use of a TTY.

E104.4Partitions.Solid partitions or security glazing that separates visitors from detainees in Group I-3 occupancies shall provide a method to facilitate voice communication. Such methods are permitted to include, but are not limited to, grilles, slats, talk-through baffles, intercoms or telephone handset devices. The method of communication shall be accessible to individuals who use wheelchairs and individuals who have difficulty bending or stooping. Hand-operable communication devices, if provided, shall comply with Section E106.3.

Table E104.3.1 Dwelling or Sleeping Units with Accessible Communication Features

Total Number of Dwelling or Sleeping Units	Minimum Required
1	1
2 to 25	2
26 to 50	4
51 to 75	7
76 to 100	9
101 to 150	12
151 to 200	14
201 to 300	17
301 to 400	20
401 to 500	22
501 to 1,000	5% of total
1,001 and over	50 plus 3 for each 100 over 1,000



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NYC Administrative Code § 28-BC E105

E105.1 Water coolers.

Where water coolers are provided, at least 50 percent, but not less than one, of such units provided on each floor shall comply with ICC A117.1.

E105.2 Portable toilets and bathing rooms. Where multiple single-user portable toilet or bathing units are clustered at a single location, at least 5 percent, but not less than one toilet unit or bathing unit at each cluster, shall comply with ICC A117.1, including Section 603 (Toilet and Bathing Rooms). Signs containing the International Symbol of Accessibility and complying with Section 703 (Signs) of ICC A117.1 shall identify accessible portable toilets and bathing units.

Exception: Portable toilet units provided for use exclusively by construction personnel on a construction site.

E105.3 Laundry equipment. Where provided in spaces required to be accessible, washing machines and clothes dryers shall comply with this section. Where laundry equipment is provided within a dwelling or sleeping unit, not for public use or common use, such equipment shall comply with Section 1107.2.8.

E105.3.1 Washing machines. Where three or fewer washing machines are provided, at least one shall comply with ICC A117.1, including Section 611 (Washing Machines and Clothes Dryers), and shall be front loading. Where more than three washing machines are provided, at least two shall comply with ICC A117.1, including Section 611 and shall be front loading.

E105.3.2 Clothes dryers. Where three or fewer clothes dryers are provided, at least one shall comply with ICC A117.1, including Section 611 (Washing Machines and Clothes Dryers), and shall be front loading. Where more than three clothes dryers are provided, at least two shall comply with ICC A117.1, including Section 611, and shall be front loading.

E105.4 Depositories, vending machines, change machines and similar equipment. Where provided, at least one of each type of depository, vending machine, change machine and similar equipment shall comply with ICC A117.1.

Exception: Drive-up-only depositories are not required to comply with this section.

E105.5 Mailboxes. Where mailboxes are provided in an interior location, at least five percent, but not less than one, of each type shall comply with ICC A117.1. In residential and institutional facilities, where mailboxes are provided for each dwelling unit or sleeping unit, mailboxes complying with ICC A117.1 shall be provided for each unit required to be an Accessible unit.

E105.6 Automatic teller machines and fare machines. Where automatic teller machines or self-service fare vending, collection or adjustment machines are provided, at least one machine of each type at each location where such machines are provided shall comply with ICC A117.1, including Section 707 (ATMs and Fare Machines). Where bins are provided for envelopes, wastepaper or other purposes, at least one of each type shall comply with ICC A117.1, including Section 905 (Storage Facilities).

E105.7 Two-way communication systems. Where two-way Communication systems are provided to gain admittance to a building or facility or to restricted areas within a building or facility, the system shall comply with ICC A117.1, including Section 708 (Two-Way Communication Systems).



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SECTION BC E106: TELEPHONES

NYC Administrative Code § 28-BC E106

E106.1 General.

Where coin-operated public pay telephones, coinless public pay telephones, public closed-circuit telephones, courtesy phones or other types of public telephones are provided, accessible public telephones shall be provided in accordance with Sections E106.2 through E106.5 for each type of public telephone provided. For purposes of this section, a bank of telephones shall be considered two or more adjacent telephones.

E106.2 Wheelchair-accessible telephones. Where public telephones are provided, wheelchair-accessible telephones complying with ICC A117.1, including Section 704 (Telephones) and shall be provided in accordance with Table E106.2. Table E106.2 Wheelchair-Accessible Telephones Number of Telephones Provided On a Floor, Level or Exterior Site Minimum Required Number of Wheelchair-Accessible Telephones 1 or more single unit 1 per floor, level and exterior site 1 bank 1 per floor, level and exterior site 2 or more banks 1 per bank

E106.3 Volume controls. All public telephones provided shall have volume control complying with Section 704.3 (Volume-Control Telephones) of ICC A117.1.

E106.4 TTYs. TTYs complying with ICC A117.1, including Section 704.4 through 704.7, shall be provided in accordance with Sections E106.4.1 through E106.4.9.

E106.4.1 Bank requirement. Where four or more public pay telephones are provided at a bank of telephones, at least one public TTY shall be provided at that bank.

Exception: TTYs are not required at banks of telephones located within 200 feet (60 960 mm) of, and on the same floor as, a bank containing a public TTY.

E106.4.2 Floor requirement. Where four or more public pay telephones are provided on a floor of a privately owned building, at least one public TTY shall be provided on that floor. Where at least one public pay telephone is provided on

a floor of a publicly owned building, at least one public TTY shall be provided on that floor.

E106.4.3Building requirement.Where four or more public pay telephones are provided in a privately owned building, at least one public TTY shall be provided in the building. Where at least one public pay telephone is provided in a publicly owned building, at least one public TTY shall be provided in the building.

E106.4.4Site requirement.Where four or more public pay telephones are provided on a site, at least one public TTY shall be provided on the site.

E106.4.5Rest stops, emergency road stops, and service plazas.Where a public pay telephone is provided at a public rest stop, emergency road stop or service plaza, at least one public TTY shall be provided.

E106.4.6Hospitals.Where a public pay telephone is provided in or adjacent to a hospital emergency room, hospital recovery room or hospital waiting room, at least one public TTY shall be provided at each such location.

E106.4.7Transportation facilities.Transportation facilities shall be provided with TTYs in accordance with Section E109.2.5 in addition to the TTYs required by Sections E106.4.1 through E106.4.4.

E106.4.8Detention and correctional facilities.In detention and correctional facilities, where a public pay telephone is provided in a secured area used only by detainees or inmates and security personnel, then at least one TTY shall be provided in at least one secured area.

E106.4.9Signs.Public TTYs shall be identified by the International Symbol of TTY complying with Section 703.6.3.2 (International Symbol of TTY) of ICC A117.1. Directional signs indicating the location of the nearest public TTY shall be provided at banks of public pay telephones not containing a public TTY. Additionally, where signs provide direction to public pay telephones, they shall also provide direction to public TTYs. Such signs shall comply with ICC A117.1, including Section 703.2 (Visual Characters) and shall include the International Symbol of TTY.

E106.5Shelves for portable TTYs.Where a bank of telephones in the interior of a building consists of three or more public pay telephones, at least one public pay telephone at the bank shall be provided with a shelf and an electrical outlet in accordance with Section 704.6 (TTY Shelf) of ICC A117.1.

Exceptions:

1. In secured areas of detention and correctional facilities, if shelves and outlets are prohibited for purposes of security or safety shelves and outlets for TTYs are not required to be provided.

2. The shelf and electrical outlet shall not be required at a bank of telephones with a TTY.



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SECTION BC E107: SIGNAGE

NYC Administrative Code § 28-BC E107

E107.1 Signs.

Required accessible portable toilets and bathing facilities shall be identified by the International Symbol of Accessibility.

E107.2 Designations. Interior and exterior signs identifying permanent rooms and spaces shall be tactile. Where pictograms are provided as designations of interior rooms and spaces, the pictograms shall have tactile text descriptors. Signs required to provide tactile characters and pictograms shall comply with Section 703.3 and 703.5 of ICC A117.1.

Exceptions:

1. Exterior signs that are not located at the door to the space they serve are not required to comply.
2. Building directories, menus, seat and row designations in assembly areas, occupant names, building addresses and company names and logos are not required to comply.
3. Signs in parking facilities are not required to comply.
4. Temporary (seven days or less) signs are not required to comply.

E107.3 Directional and informational signs. Signs that provide direction to, or information about, permanent interior spaces of the site and facilities shall contain visual characters complying with Section 703.2 (Visual Characters) of ICC A117.1.

Exception: Building directories, personnel names, company or occupant names and logos, menus and temporary (seven days or less) signs are not required to comply with ICC A117.1.

E107.4 Other signs. Signage indicating special accessibility provisions shall be provided at fixed facilities and

stations, signage must be provided in accordance with Sections E109.2.2 through E109.2.2.3.



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NYC Administrative Code § 28-BC E109

E109.1 General.

Fixed transportation facilities and stations shall comply with the applicable provisions of Section E109.2.

E109.2 New construction. New stations in rapid rail, light rail, commuter rail, intercity rail, high speed rail and other fixed guideway systems shall comply with Sections E109.2.1 through E109.2.8.

E109.2.1 Station entrances. Where different entrances to a station serve different transportation fixed routes or groups of fixed routes, all entrance serving each group or route shall comply with Section 1104 and ICC A117.1, including Section 404 (Doors and Doorways).

E109.2.2 Signs. Signage in fixed transportation facilities and stations shall comply with Sections E109.2.2.1 through E109.2.2.3.

E109.2.2.1 Tactile signs. Where signs are provided at entrances to stations identifying the station or the entrance, or both, at least one sign at each entrance shall be tactile. A minimum of one tactile sign identifying the specific station shall be provided on each platform or boarding area. Such signs shall be placed in uniform locations at entrances and on platforms or boarding areas within the transit system to the maximum extent practicable. Tactile signs shall comply with Section 703.3 (Tactile Characters) of ICC A117.1.

Exceptions:

1. Where the station has no defined entrance but signs are provided, the tactile signs shall be placed in a central location.

2. Signs are not required to be tactile where audible signs are remotely transmitted to hand-held receivers, or are user or proximity actuated.

E109.2.2.2 Identification signs. Stations covered by this section shall have identification signs containing visual characters complying with Section 703.2 (Visual Characters) of ICC A117.1. Signs shall be clearly visible and within the sightlines of a standing or sitting passenger from within the train on both sides when not obstructed by another train.

E109.2.2.3 Informational signs. Lists of stations, routes and destinations served by the station which are located on boarding areas, platforms or mezzanines shall provide visual characters complying with Section 703.2 (Visual Characters) of ICC A117.1. Signs covered by this provision shall, to the maximum extent practicable, be placed in uniform locations within the transit system.

E109.2.3 Fare machines. Self-service fare vending, collection and adjustment machines shall comply with Section 707 (ATMs and Fare Machines) of ICC A117.1. Where self-service fare vending, collection or adjustment machines are provided for the use of the general public, at least one accessible machine of each type provided shall be provided at each accessible point of entry and exit.

E109.2.4 Rail-to-platform height. Station platforms shall be positioned to coordinate with vehicles in accordance with the applicable provisions of 36 CFR, Part 1192. Low-level platforms shall be 8 inches (203 mm) minimum above top of rail.

Exception: Where vehicles are boarded from sidewalks or street level, low-level platforms shall be permitted to be less than 8 inches (203 mm).

E109.2.5 TTYs. Where a public pay telephone is provided in a transit facility (as defined by the Department of Transportation) at least one public TTY complying with Section 704.4 through 704.7 of ICC A117.1 shall be provided in the station. In addition, where one or more public pay telephones serve a particular entrance to a transportation facility, at least one TTY telephone complying with Section 704.4 through 704.7 of ICC A117.1 shall be provided to serve that entrance.

E109.2.6 Track crossings. Where a circulation path serving boarding platforms crosses tracks, an accessible route complying with ICC A117.1, including Section 402 (Accessible Routes) shall be provided.

Exception: Openings for wheel flanges shall be permitted to be 2 1/2 inches (64 mm) maximum.

E109.2.7 Public address systems. Where public address systems convey audible information to the public, the same or equivalent information shall be provided in a visual format.

E109.2.8 Clocks. Where clocks are provided for use by the general public, the clock face shall be uncluttered so that its elements are clearly visible. Hands, numerals and digits shall contrast with the background either light-on-dark or dark-on-light. Where clocks are mounted overhead, numerals and digits shall comply with Section 703.2 (Visual Characters) of ICC A117.1.

E109.3 Reserved.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Appendix E Supplementary Accessibility Requirements
SECTION BC E112: REFERENCED STANDARDS

NYC Administrative Code § 28-BC E112

E112.1 General.

This section lists the standards that are referenced in various sections of this appendix. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title and the section or sections of this document that reference the standard. E112.2 Subsequent additions, modifications, or deletions. Refer to the rules of the department for any subsequent additions, modifications or deletions that may have been made to these standards in accordance with Section 28-103.19 of the Administrative Code.

E112.3 Applicability. The application of the referenced standards shall be as specified in Section 102.4.

E112.4 Standards. DOJ 36CFR Part 1192 Americans with Disabilities Act (ADA) Accessibility Guidelines for Transportation Vehicles (ADAAG). Washington, D.C.: Department of Justice, 1991 E109.2.4, ICC A117.1-2003 Accessible and Usable Buildings and Facilities E101.2, et al.



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Appendix F Rodent Proofing
SECTION BC F101: GENERAL

NYC Administrative Code § 28-BC F101

F101.1 Scope.

The provisions of this appendix provide rodent-proofing design and construction requirements for the resistance of rodent ingress and infestation. For rodent extermination provisions related to demolition operations, see Section 3306.9.13. The New York City Health Code, The New York City Housing Maintenance Code, and The New York City Sanitation Code may contain additional provisions, as enforced by the New York City Department of Health and Mental Hygiene, the New York City Department of Housing Preservation and Development, and the New York City Sanitation Department.

F101.2General. Every structure, room, or space hereafter altered or erected in which persons live, sleep or work, or in which feed, food or foodstuffs are stored, prepared, processed, served or sold, shall be constructed in accordance with the provisions of this section. All metal or wire protection materials specified herein shall be noncorrosive.

F101.3Reserved.

F101.4Reserved.

F101.5Reserved.

F101.6Reserved.



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Appendix F Rodent Proofing
SECTION BC F102: PROTECTION

NYC Administrative Code § 28-BC F102

F102.1 Exterior walls and underground walls.

For walls or portions thereof within 2 feet (610 mm) of the outside ground level, and for walls below the outside ground level, all openings, including but not limited to annular spaces around pipes, electric cables, and conduits, shall be protected by closing such openings with cement mortar, concrete masonry, metal plates or screening designed to prevent the passage of rodents. Openings for doors, windows and vents shall be as provided for in Sections F102.3, F102.4 and F102.5, respectively.

F102.2 Floors on grade. Unless otherwise specified in this code, floors on grade, including but not limited to cellar floors and crawl space floors, shall be constructed of a minimum 2 inches (51 mm) thick continuous concrete slab. Gaps shall not be permitted between the slab and the abutting foundation walls or columns, except where expansion joints, thermal breaks, and control joints are located. All openings including but not limited to annular spaces around pipes, electric cables, and conduits in the slab shall be protected by closing such openings with cement mortar, concrete masonry, metal plates or screening designed to prevent the passage of rodents.

F102.3 Exterior doors. Where an exterior door is nonmetal or nonmetal-clad, such door shall be covered with a kick plate of a minimum thickness of 0.033 inch (0.84 mm), extending at least 8 inches (203 mm) from the bottom of the door, and covering the entire width of the door. When closed, the maximum clearance between any door, door jambs and sills shall not be greater than 3/8 inch (9.5 mm).

F102.4 Windows and other openings. Windows and other openings shall comply with Sections F102.4.1 and F102.4.2.

F102.4.1 Openings within two feet of ground level. Operable windows and other openings providing required or voluntary natural ventilation located with any portion within 2 feet (610 mm) above outside ground level immediately below such opening shall be covered for their entire height and width of the operable portion with hardware cloth of at least 0.035 inch (0.89 mm) wire or heavier. The openings in the hardware cloth shall not exceed 1/4 inch (6.4 mm).

F102.4.2 Rodent-accessible openings. Operable windows and other openings providing required or voluntary natural ventilation in the exterior located within 2 feet (610 mm) of exposed pipes, wires, conduits and other appurtenances, shall be covered with wire cloth of at least 0.035 inch (0.89 mm) wire. The openings in the hardware cloth shall not exceed 1/4 inch (6.4 mm).

Exception: In lieu of wire cloth covering, said pipes, wires, conduits and other appurtenances shall be blocked from rodent usage in accordance with one of the following:

1. Installation of solid sheet metal collars 0.024 inch (0.61 mm) thick or heavier. Such collars shall be fastened around the pipes, wires, conduits or other appurtenances, projecting a minimum distance of 12 inches (305 mm) beyond and on either side of the pipes, wires, conduits or appurtenances.

2. Installation of solid sheet metal guards fastened securely to the exterior wall, projecting 12 inches (305 mm) perpendicularly from the exterior wall for the length of the opening plus 2 feet (610 mm) beyond each end of the opening.

F102.5 Exterior wall ventilation openings. Exterior wall ventilator openings located with any portion within 2 feet (610 mm) of outside ground level shall be covered for their height and width with perforated sheet metal plates no less than 0.070 inch (1.8 mm) thick, expanded sheet metal plates not less than 0.047 inch (1.2 mm) thick, cast iron grills or grating, extruded aluminum load-bearing vents or with hardware cloth of 0.035 inch (0.89 mm) wire or heavier. The openings therein shall not exceed 1/4 inch (6.4 mm).



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SECTION BC G101: PURPOSE AND OBJECTIVES

NYC Administrative Code § 28-BC G101

G101.1 Purpose.

The purpose of this appendix is to promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific flood hazard areas through the establishment of comprehensive regulations for management of flood hazard areas designed to:

1. Prevent unnecessary disruption of commerce, access and public service during times of flooding;
2. Manage the alteration of natural flood plains, stream channels and shorelines;
3. Manage filling, grading, dredging and other development which may increase flood damage or erosion potential;
4. Prevent or regulate the construction of flood barriers which will divert floodwaters or which can increase flood hazards;
5. Contribute to improved construction techniques in the flood plain; and
6. Comply with and exceed the minimum standards of the National Flood Insurance Program as administered by the Federal Emergency Management Agency (FEMA).

G101.2 Objectives. The objectives of this appendix are to:

1. Protect human life;
2. Minimize the expenditure of public money for flood control projects;
3. Minimize the need for rescue and relief efforts associated with flooding;

4. Minimize prolonged business interruption;
5. Minimize damage to structures located in areas of special flood hazard;
6. Minimize damage to public facilities and utilities such as water, electricity, telephone and sewer lines, and streets and bridges located in areas of special flood hazard;
7. Help maintain a stable tax base by providing for the sound use and development of flood prone areas; and
8. Ensure that potential owners and occupants are notified that property is within areas of special flood hazard.

G101.3Reserved.

G101.4Reserved.



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SECTION BC G102: APPLICABILITY

NYC Administrative Code § 28-BC G102

G102.1 General.

This appendix, in conjunction with the New York City Construction Codes, provides minimum requirements for development located in areas of special flood hazard within the jurisdiction of New York City, including:

1. Subdivisions. This appendix shall apply to the subdivision of land;
2. Utilities. This appendix shall apply to the installation of utilities;
3. Site improvements. This appendix shall apply to site improvements, including but not limited to, temporary or permanent storage of materials, mining, dredging, filling, grading, paving, excavations, operations and other land disturbing activities;
4. Prefabricated buildings and manufactured homes. This appendix shall apply to placement and replacement of prefabricated buildings and manufactured homes;
5. Post-FIRM construction. This appendix shall apply to post-FIRM construction.;
6. Alterations to Post-FIRM construction. This appendix shall apply to repair, reconstruction, rehabilitation, or additions to post-FIRM construction;
7. Substantial improvement of Pre-FIRM construction. This appendix shall apply to substantial improvement of pre-FIRM buildings and structures, including restoration after damage, as if hereafter erected;
8. Horizontal enlargements of pre-FIRM construction. This appendix shall apply to horizontal enlargements of pre-FIRM buildings and structures to the extent of such horizontal enlargement, including but not limited to additions, decks, carports, or similar appendages. The existing portions of the structure shall not be required to comply, unless

otherwise required because the alteration is deemed a substantial improvement; and

9. Other alterations to pre-FIRM construction. This appendix shall apply to alterations or repairs to pre-FIRM buildings and structures, including installation of new components, materials, finishes and equipment, that increase the degree of noncompliance with this appendix. The following alterations or repairs, other than substantial improvements, shall not be deemed as an increase in the degree of noncompliance:

9.1. Where the alteration or repair comprises the replacement of pre-FIRM components, materials, finishes or equipment;

9.2. Where the alteration or repair comprises the installation of new components, materials, finishes or equipment in a space within the structure where similar pre-FIRM components, materials, finishes or equipment already exist; and

9.3. Where such alteration is a change in use, occupancy or how such space is used, provided that such change would not increase the degree of noncompliance with requirements of this appendix. The conversion of any space below the design flood elevation from non-habitable space into habitable space shall be deemed an increase in the degree of noncompliance.

G102.2 Establishment of areas of special flood hazard. The following flood hazard map and supporting data are adopted as referenced standards and declared to be a part of this appendix:

1. FEMA FIS 360497.
2. FEMA FIRMs 360497.

G102.3 Letters of map change. Map changes to FEMA FIRMs 360497 shall be administered in compliance with Sections G102.3.1 and G102.3.2.

G102.3.1 Letters of map amendment (LOMA). Where FEMA FIRMs 360497 indicates that a structure or tax lot is within a delineated area of special flood hazard, but the pre-FIRM ground elevations adjacent to the structure or throughout the tax lot are at or above the base flood elevation, the commissioner shall deem such structure or tax lot as being within the area of special flood hazard and shall not approve plans except in compliance with this appendix, unless a letter of map amendment (LOMA) is issued by FEMA removing such structure or tax lot from the area of special flood hazard.

G102.3.2 Letter of map revision based on fill (LOMR-F). Where FEMA FIRMs 360497 indicates that a structure or tax lot is within a delineated area of special flood hazard, but post-FIRM compacted fill is proposed to be added adjacent to the structure or throughout the tax lot to an elevation at or above the base flood elevation, the commissioner shall deem such structure or tax lot as being within the area of special flood hazard and shall not approve plans except in compliance with this appendix, unless a conditional or final letter of map revision based on fill (LOMR-F) is issued by FEMA removing such structure or tax lot from the area of special flood hazard. The commissioner shall promulgate rules establishing procedures for processing letters of map revision based on fill (LOMR-F).

G102.3.3 Certificates of occupancy. Certificates of occupancy shall indicate that the structure or tax lot is subject to a letter of map amendment (LOMA) or letter of map revision based on fill (LOMR-F) as per Section G106.3.



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SECTION BC G103: ADMINISTRATION

NYC Administrative Code § 28-BC G103

G103.1 Permit applications.

The commissioner is hereby designated as the floodplain administrator for the City of New York and shall review permit applications to determine that:

1. Proposed development sites will be reasonably safe from flooding;
2. All site development activities, including grading, filling, utility installation and drainage modification, and all new construction and substantial improvements (including the placement of prefabricated buildings and manufactured homes) are designed and constructed with methods, practices and materials that minimize flood damage and that are in accordance with this code and ASCE 24; and
3. All other required state and federal permits have been obtained.

G103.2 Reserved.

G103.3 Determination of base flood elevations. Where the proposed development is within an area of special flood hazard but the base flood elevations are not specified in the FEMA FIRMs 360497, the commissioner shall require the applicant to request base flood elevation data from the New York State Department of Environmental Conservation (DEC); and

1. Submit to the commissioner either:
 - 1.1. A letter from DEC making such a determination of base flood elevation; or
 - 1.2. A letter from the DEC indicating that the data are not available. When such a letter from DEC indicates that the data are not available, the base flood elevation shall be equal to 3 feet (914 mm) above the highest adjacent pre-FIRM

grade.

Exception: Large lots. Where the base flood elevation is not specified, the applicant shall submit a detailed engineering study establishing the base flood elevation, performed by an engineer in accordance with accepted hydrologic and hydraulic engineering techniques, in sufficient detail to allow review by the commissioner for any of the following conditions:

1. For a development which is located on a tax lot greater than 5 acres (2.02 hectares), or is located on property that was part of a tax lot that was greater than 5 acres (2.02 hectares) at the time of the adoption of the FIRM (October 1, 1984), or at any subsequent applicable map change thereto; or

2. For subdivisions resulting in 50 or more tax lots, including all tax lots previously subdivided from the same tax lot since the adoption of the FIRM (October 1, 1984), or since any subsequent applicable map changes thereto.

G103.4Reserved.

G103.5Floodway encroachment.Prior to issuing a permit for any floodway encroachment, including fill, new construction, substantial improvements and other development or land-disturbing activity, the commissioner shall require submission of a certification, along with supporting technical data, demonstrating that such development will not cause any increase of the level of the base flood. However, a floodway encroachment that increases the level of the base flood may be authorized if the applicant has:

1. Applied for a conditional Letter of Map Revision; and
2. Received the approval of the Federal Emergency Management Agency (FEMA).

G103.6Watercourse alteration.Prior to issuing a permit for any alteration or relocation of any watercourse within an area of special flood hazard, the commissioner shall require the applicant to:

1. Notify any affected adjacent municipalities or government jurisdictions;
2. Notify the DEC;
3. Submit evidence of such notifications to the commissioner and the Regional Director, Region II, the Federal Emergency Management Agency (FEMA);
4. Submit to the commissioner evidence of all such notifications;
5. Submit an engineering analysis demonstrating that the flood-carrying capacity of the altered or relocated portion of the watercourse will not be decreased; and
6. Submit evidence that such watercourses will be maintained in a manner which preserves the channel's flood-carrying capacity.

G103.7Sand dune alterations in V-Zones.Prior to issuing a permit for any alteration of sand dunes in a V-Zone, the commissioner shall require submission of an engineering analysis demonstrating that the proposed alteration will not increase the potential for flood damage.

G103.8Records.The commissioner shall maintain records of the following:

1. Applications and supporting documents for development in areas of special flood hazard;
2. Permits issued in areas of special flood hazard;

3. Inspection reports;
4. Certifications required in this appendix; and
5. Certificate of occupancy where applicable.

G103.9Violations.See Chapter 2 of Title 28 of the Administrative Code.



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SECTION BC G104: PERMITS

NYC Administrative Code § 28-BC G104

G104.1 Permit required.

Any person, owner or authorized agent who intends to conduct any development, as applicable pursuant to Section G102.1, within an area of special flood hazard, shall first apply to the commissioner and shall obtain the required permit.

G104.2 Permit application requirements. The applicant shall file an application in writing on a form furnished by the commissioner. The commissioner shall not approve such application unless the applicant submits all plans, details, data and documents demonstrating that the development complies with Section G104 and all other provisions of this appendix.

G104.3 Site plan. The permit application shall include a site plan. The site plan shall include plans and drawings, shall be sealed by a registered design professional and shall include the following information and any other data as may be required by the department:

1. A delineation of the flood hazard areas, including identification of the base and design flood and elevations;
2. If applicable, the location of the regulatory floodway;
3. For all proposed structures, spot ground elevations at building corners and in 20-foot (6096 mm) or smaller intervals along the foundation footprint, or 1 foot (305 mm) contour elevations throughout the building site;
4. Proposed locations of water supply, sanitary sewer, and utilities;
5. Drainage patterns and facilities; and
6. Foundation design details, including but not limited to:

6.1. Proposed elevation of the lowest floor including basement (for flood zone purposes) of all structures;

6.2. For a crawl-space, parking, storage, building access and other wet floodproofed enclosures below the design flood elevation, location and total net area of foundation openings in accordance with ASCE 24;

6.3. For dry floodproofed enclosures in buildings or structures that are nonresidential (for flood zone purposes), the proposed elevation to which the enclosure will be dry floodproofed in accordance with ASCE 24; and

6.4. Any proposed fill and excavation details.

Exception: Applications for subdivisions shall comply with Section G302.

G104.4 Water course alteration. The permit application shall include, if applicable, a description of the extent to which any watercourse will be altered or relocated as a result of proposed development, and any documentation required by Section G103.6.

G104.5 Certifications. The permit application shall include the applicable certifications in accordance with Section G104.5.1 through G104.5.3.

G104.5.1 A-Zones. For construction in A-Zones, the permit application shall include the following certifications, as applicable:

1. Wet floodproofing certification. For wet floodproofed enclosures below the design flood elevation, construction documents shall include a certification by the applicant that the design provides for the automatic entry and exit of floodwaters for equalization of hydrostatic flood forces in accordance with Section 2.6.1.2, ASCE 24.

2. Dry floodproofing certification for nonresidential buildings. For dry floodproofed buildings and structures that are nonresidential (for flood zone purposes), construction documents shall include a certification by the applicant that the dry floodproofing is designed in accordance with ASCE 24.

3. Utility certifications. For all applications involving utility or mechanical work, including applications where such work is to be filed in a separate, related application, construction documents shall include a certification by the applicant that "all heating, ventilation, air conditioning, plumbing, electrical and other services facilities and equipment within the structure or site will be located or constructed so as to prevent water from entering or accumulating within the components during conditions of flooding in accordance with ASCE 24."

G104.5.2 V-Zones. For construction in V-Zones the permit application shall include the following certifications, as applicable:

1. Structural design certification. Construction documents shall include a certification by the applicant that the "entire structure is designed in accordance with ASCE 24, including that the pile or column foundation and building or structure to be attached thereto is designed to be anchored to resist flotation, collapse and lateral movement due to the effects of wind and flood loads acting simultaneously on all building components, and other load requirements of Chapter 16 of the New York City Building Code."

2. Breakaway wall certification. Where breakaway walls are provided, construction documents shall include a certification by applicant that "the breakaway walls meet the load requirements of Section 5.3.2.3 of ASCE 7, are designed in accordance with ASCE 24, and are of an open lattice type construction only."

3. Utility certifications. For all applications involving utility or mechanical work, including applications where such work it to be filed in a separate, related application, construction documents shall include a certification by the applicant that "all heating, ventilation, air conditioning, plumbing, electrical and other services facilities and equipment within the structure or site will be located or constructed so as to prevent water from entering or accumulating within the

components during conditions of flooding, in accordance with ASCE 24."

G104.5.3 Floodway encroachment certification. For any floodway encroachment, including fill, new construction, substantial improvements and other development or land-disturbing activity, the applicant shall submit a certification, along with supporting technical data, demonstrating that such development will not cause any increase of the level of the base flood in accordance with the requirements of Section G103.5.

G104.6 Validity of permit. The issuance of a permit under this appendix shall not be construed to be a permit for, or approval of, any violation of this appendix or any other provision of this code. The issuance of a permit based on submitted documents and information shall not prevent the commissioner from requiring the correction of errors. The commissioner is authorized to prevent occupancy or use of a structure or site which is in violation of this appendix or other provisions of this code.

G104.7 Permit expiration. A permit shall become invalid if the proposed development:

1. Is not commenced within 180 days after its issuance; or
2. If the work authorized is suspended or abandoned for a period of 180 days after the work commences.

G104.8 Permit reinstatement. Permit reinstatements shall be requested in writing. The commissioner is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each subject to the limitations of Section 28-105.

G104.9 Permit suspension or revocation. The commissioner is authorized to suspend or revoke a permit issued under this appendix wherever the permit is issued in error or on the basis of incorrect, inaccurate or incomplete information, or in violation of this code, in accordance with Section 28-105.



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SECTION BC G105: SPECIAL INSPECTIONS REQUIREMENTS

NYC Administrative Code § 28-BC G105

G105.1 General.

Special inspections shall be performed in accordance with this section.

G105.2 All work applications. All work applications, regardless of the extent of the scope of work, shall be subject to the following special inspection:

1. Flood zone compliance inspection. Prior to sign off of work, a registered design professional shall certify that: "the structure was constructed" or "alterations were performed," "with methods and practices that minimize flood damage and that are in accordance with approved plans, and with any applicable provisions of Appendix G of the New York City Building Code and ASCE 24."

2. Reserved.

G105.3 New buildings and substantial improvements. In addition to the flood zone compliance inspection required by Section G105.2, all applications for new buildings or substantial improvements shall be subject to the following special inspections:

1. Elevation progress inspection. Upon placement of the lowest floor, including the basement (for flood zone purposes), an engineer or licensed professional surveyor shall inspect the site and verify the elevation of such lowest floor. The inspection report verifying the elevation shall be submitted to the commissioner prior to further vertical construction. The commissioner shall be permitted to issue a stop work order if such inspection report is not submitted.

2. Final elevation inspection. The final elevations shall comprise either of the following, as applicable:

2.1. Elevation certificate. Prior to sign off of work, an engineer or licensed professional surveyor shall submit to the commissioner a certification of the elevation of the lowest floor, including the basement (for flood zone purposes). Such

certification shall be made utilizing FEMA Form 81-31 entitled, "Elevation Certificate."

2.2. Dry floodproofing certificate. Prior to sign off of work, an engineer or licensed professional surveyor shall submit to the commissioner a dry floodproofing certificate. Such certification shall be made utilizing FEMA Form 81-65 entitled, "Floodproofing Certification."

G105.3.1Flood shield inspection.Where floodshields or other flood control devices are installed as part of a dry floodproofing system in buildings and structures that are nonresidential (for flood zone purposes), a registered design professional shall inspect the shields or devices in their stored positions or locations, witness their activation or transportation to their installed positions, and witness their deactivation or transportation back to their stored locations. The registered design professional shall also confirm the installation of signage required by ASCE 24, Section 6.2.3, Item 3.

G105.4Reserved.

G105.5Reserved.

G105.6Reserved.

G105.7Reserved.



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SECTION BC G106: CERTIFICATES OF OCCUPANCY

NYC Administrative Code § 28-BC G106

G106.1 Applicability.

This section shall apply to post-FIRM construction and substantial improvements where the work results in the issuance of a new or amended certificate of occupancy.

G106.2 Spaces subject to flooding in A-Zones. The certificate of occupancy shall describe all non-dry-floodproofed spaces below the design flood elevation as "subject to flooding," including but not limited to wet floodproofed spaces usable solely for parking, storage, building access or crawl spaces.

G106.3 Spaces subject to flooding in V-Zones. The certificate of occupancy shall describe all spaces below the design flood elevation as "subject to flooding," including but not limited to spaces usable solely for parking, storage, building access or crawl spaces.

G106.4 Dry floodproofed spaces. The certificate of occupancy shall describe any dry floodproofed spaces as "dry floodproofed". For such buildings containing dwelling units, the certificate of occupancy shall also provide notations as required by Section G304.1.2, Item 2.2.5. Where flood shields or other flood control devices are installed, the certificate of occupancy shall also provide notations describing these features.

G106.5 Letters of map change. Where applicable, the certificate of occupancy shall indicate that "the structure is exempted from the area of special flood hazard pursuant to FEMA Letter of Map Amendment (LOMA); ns ()," or that "the structure is exempted from the area of special flood hazard pursuant to FEMA Letter of Map Revision Based on Fill (LOMR-F); ns ()."



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Chapter G1 General provisions
SECTION BC G107: VARIANCES

NYC Administrative Code § 28-BC G107

G107.1 General.

The Board of Standards and Appeals shall hear and decide requests for variances from the requirements of this appendix. The Board of Standards and Appeals shall base its determination on technical justifications, and has the right to attach such conditions to variances as it deems necessary to further the purposes and objectives of this appendix.

G107.2 Conditions for variance.

G107.2.1 Historic structures. The Board of Standards and Appeals is authorized to issue a variance for the repair or rehabilitation of a historic structure provided that:

1. The application has received approval from the Landmark Preservation Committee and/or the New York State Historical Preservation Office, as applicable;
2. The proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure; and
3. The variance is the minimum necessary to preserve the historic character and design of the structure.

G107.2.2 Floodway restrictions. The Board of Standards and Appeals shall not issue a variance for any proposed development in a floodway if any increase in flood levels would result during the base flood discharge.

G107.2.3 General conditions for variance. Except for historic structures as provided for in Section G107.2.1, the Board of Standards and Appeals is authorized to issue a variance only upon:

1. A determination that the new construction, substantial improvement, or other proposed development is located on a tax lot that, on November 18, 1983, was no more than 1/2 acre (0.2 hectare) in size. However, where the tax lot has

been determined to be larger than 1/2 acre (0.2 hectare), the technical justification required for issuing the variance increases with the lot size;

2. Showing of good and sufficient cause;
3. Determination that failure to grant the variance would result in exceptional hardship to the applicant;
4. Determination that the granting of a variance will not result in:
 - a. Increased flood heights;
 - b. Additional threats to public safety, provided, however, that the variance is permitted to increase risks to life and property for the subject structure;
 - c. Extraordinary public expense;
 - d. Nuisances;
 - e. Fraud on or victimization of the public; or
 - f. Conflict with existing local laws or ordinances; and
5. Determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

G107.2.4Functionally dependent facilities.The Board of Standards and Appeals is authorized to issue a variance for the construction or substantial improvement of a functionally dependent facility provided that:

1. The criteria for Sections G107.2.1 through G107.2.3 are met; and
2. All methods and materials utilized minimize flood damage during the base flood and create no additional threats to public safety.

G107.3Standards for variance.In reviewing applications for variances, the Board of Standards and Appeals shall consider all technical evaluations, all relevant factors, all other portions of this appendix and the following:

1. The danger that materials and debris may be swept onto other lands resulting in injury or damage;
2. The danger to life and property due to flooding or erosion damage;
3. The susceptibility of the proposed development, including contents, to flood damage and the effect of such damage on current and future owners;
4. The importance of the services provided by the proposed development to the community;
5. The availability of alternate locations for the proposed development that are not subject to flooding or erosion;
6. The relationship of the proposed development to the comprehensive plan and flood plain management program for that area;
7. The safety of access to the property in times of flood for ordinary and emergency vehicles;
8. The expected heights, velocity, duration, rate of rise and debris and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site; and

9. The costs of providing governmental services during and after flood conditions including maintenance and repair of public utilities and facilities such as sewer, gas, electrical and water systems, streets and bridges.

G107.4Notification of risks.Upon issuance of a variance, the Executive Director of the Boards of Standards and Appeals shall provide written notice to the owner and the applicant that:

1. The issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance; and
2. That such construction below the base flood level increases risks to life and property.

G107.5Records.The Board of Standards and Appeals shall:

1. Maintain a record of all variance actions, including justification for their issuance; and
2. Report such variances issued in its biennial report submitted to the Federal Emergency Management Agency.

CHAPTER G2DEFINITIONSSection BC G201 Definitions



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SECTION BC G201: DEFINITIONS

NYC Administrative Code § 28-BC G201

G201.1 General.

The following words and terms shall, for the purposes of this appendix, have the meanings shown herein.

G201.2 Definitions.

A-ZONE. An area of special flood hazard without high velocity wave action. When not shown on the FIRMs, the water surface elevation may be determined from available data by the registered design professional of record in accordance with Section G103.3. See also "Area of special flood hazard."

AREA OF SPECIAL FLOOD HAZARD. The land in the flood plain delineated as subject to a one percent or greater chance of flooding in any given year. Such areas are designated on the Flood Insurance Rate Map (FIRM) as A-Zones or V-Zones. Such areas are also known as the base flood plain or one hundred year flood plain. Areas designated as X-Zones shall not be deemed areas of special flood hazard for the purposes of this Appendix.

BASE FLOOD. The flood having a 1-percent chance of being equaled or exceeded in any given year.

BASE FLOOD ELEVATION. The elevation of the base flood, including wave height, as specified on FEMA FIRMs 360497 or as determined in accordance with Section G103.3, relative to the National Geodetic Vertical Datum (NGVD).

BASEMENT (FOR FLOOD ZONE PURPOSES). The portion of a building having its floor subgrade (below ground level) on all sides.

BREAKAWAY WALL. An open lattice wall that is not part of the structural support of the building to which it is attached and that is intended through its design and construction to collapse under specific later loading forces without causing damage to the elevated portion of the building or the supporting foundation system.

DESIGN FLOOD ELEVATION. The applicable elevation specified in ASCE 24, Tables 2-1, 4-1, 5-1, 6-1, or 7-1, depending on the structural occupancy category designated in ASCE 24, Table 1-1

DEVELOPMENT. Any man-made change to improved or unimproved real estate, including but not limited to, buildings or other structures, temporary or permanent storage of materials, mining, dredging, filling, grading, paving, excavations, operations and other land disturbing activities.

EXISTING CONSTRUCTION. See "PRE-FIRM DEVELOPMENT."

EXISTING STRUCTURE. See "PRE-FIRM DEVELOPMENT".

FLOOD or FLOODING. A general and temporary condition of partial or complete inundation of normally dry land from:

1. The overflow of inland or tidal waters.
2. The unusual and rapid accumulation or runoff of surface waters from any source.

FLOOD-DAMAGE-RESISTANT MATERIALS. Any construction material, including finishes, capable of withstanding direct and prolonged contact with floodwaters without sustaining any damage that requires more than cosmetic repair.

FLOOD INSURANCE RATE MAP (FIRM). The official map on which the Federal Emergency Management Agency (FEMA) has delineated areas of special flood hazard, base flood elevations, and the flood boundary and floodways.

FLOOD INSURANCE STUDY (FIS). The official report provided by the Federal Emergency Management Agency (FEMA) containing the Flood Insurance Rate Map (FIRM), the water surface elevation of the base flood and supporting technical data.

FLOODPROOFING, DRY. For buildings and structures that are nonresidential (for flood zone purposes), a combination of design modifications that results in the building's or structure's being water tight to the design flood elevation, including the attendant utility and sanitary facilities, with walls substantially impermeable to the passage of water and with structural components having the capacity to resist loads as identified in ASCE 7.

FLOODPROOFING, WET. A floodproofing method designed to permit parts of the structure below the design flood elevation that are used for parking, storage, building access, or crawl space to intentionally flood, by equalizing hydrostatic pressures and by relying on the use of flood-damage-resistant materials and construction techniques.

FLOODWAY. The channel of the river, creek or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Floodways are mapped only in the Boroughs of the Bronx and Staten Island.

FUNCTIONALLY DEPENDENT FACILITY. A facility that cannot be used for its intended purpose unless it is located or carried out in close proximity to water, such as a docking or port facility necessary for the loading or unloading of cargo or passengers, shipbuilding or ship repair. The term does not include long-term storage, manufacture, sales or service facilities.

HISTORIC STRUCTURE. A pre-FIRM building or structure:

1. Designated as a landmark or located within an historic district designated by the New York City Landmarks Preservation Commission; or

2. Listed or preliminarily determined to be eligible for listing in the National or State Register of Historic Places; or

3. Determined by the Secretary of the U.S. Department of the Interior or the New York State Department of Parks and Recreation as contributing to the historical significance of a registered historic district or a district preliminarily determined to qualify as an historic district.

LETTER OF MAP AMENDMENT (LOMA). An official amendment to the FIRM, issued and approved by the Federal Emergency Management Agency (FEMA), removing structures or tax lots from areas of special flood hazard, resulting from a demonstration that the Pre-FIRM ground elevations are at or above the base flood elevation.

LETTER OF MAP REVISION BASED ON FILL (LOMR-F). An official amendment to the FIRM, issued and approved by the Federal Emergency Management Agency (FEMA), removing structures or tax lots from areas of special flood hazard, resulting from the Post-FIRM placement of compacted fill, such that the new ground elevation is at or above the base flood elevation.

LOWEST FLOOR. The floor of the lowest enclosed area, including crawl spaces and basements (for flood zone purposes).

Exception: The lowest floor shall not include any wet floodproofed spaces usable solely for vehicle parking, building access, storage or crawl space, provided that such enclosure is not built so as to render the structure in violation of this appendix, including that:

1. Such enclosure shall allow for the automatic entry and exit of floodwaters;
2. Such enclosure shall be constructed solely of flood resistant materials and finishes;
3. Such enclosure shall have a floor elevation equal to or higher than the outside adjacent grade on at least one side; and
4. Such outside adjacent grade shall slope down, towards the source of flooding, providing positive drainage by gravity, thus preventing accumulations of water under or in the structure after the floodwaters recede without the use of pumps, pipes or drains.

MANUFACTURED HOME. A structure that is transportable in one or more sections, built on a permanent chassis, designed for use with or without a permanent foundation when attached to the required utilities, and constructed to the Federal Mobile Home Construction and Safety Standards and rules and regulations promulgated by the U.S. Department of Housing and Urban Development. The term also includes mobile homes, park trailers, travel trailers and similar transportable structures that are placed on a site for 180 consecutive days or longer.

MANUFACTURED HOME PARK OR SUBDIVISION. A parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

MARKET VALUE OF STRUCTURE. The price that a buyer is willing, but is not under any duty, to pay for a particular structure to an owner who is willing, but not obligated, to sell, exclusive of the value of the land, or of other buildings or structures on the same tax lot. The market value of a structure shall be determined in accordance with rules promulgated by the commissioner.

NATIONAL GEODETIC VERTICAL DATUM (NGVD). The national vertical datum standard established in 1929, used as a reference for establishing elevations within a flood plain.

NEW CONSTRUCTION. See "POST-FIRM DEVELOPMENT."

NONRESIDENTIAL (FOR FLOOD ZONE PURPOSES). A building or structure that either:

1. Contains no space classified in Groups I-1, R-1, R-2, or R-3, and contains no space that is accessory, as such term is defined in the New York City Zoning Resolution, to any I-1, R-1, R-2, or R-3 occupancy; or

2. Contains such space(s), but also contains space on the lowest floor that is not accessory, as such term is defined in the New York City Zoning Resolution, to an I-1, R-1, R-2, or R-3 occupancy.

PRE-FIRM DEVELOPMENT. Any development:

1. Completed prior to November 13, 1983;

2. Under construction on November 13, 1983 provided that the start of construction was prior to said date; or

3. Completed on or after November 13, 1983 but that:

3.1. Was not located within an area of special flood hazard at the start of construction; and

3.2. Is now located within an area of special flood hazard as a result of a subsequent change to the FIRM.

PRE-FIRM STRUCTURE. See "PRE-FIRM DEVELOPMENT."

POST-FIRM DEVELOPMENT. Any development that is not pre-FIRM development.

POST-FIRM STRUCTURE. See "POST-FIRM DEVELOPMENT."

RECREATIONAL VEHICLE. A vehicle that is built on a single chassis, 400 square feet (37.16 m²) or less when measured at the largest horizontal projection, designed to be self-propelled or permanently towable by a light-duty truck, and designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel or seasonal use. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect-type utilities and security devices and has no permanently attached additions.

RESIDENTIAL (FOR FLOOD ZONE PURPOSES). A building or structure containing any space that is either:

1. Classified in Groups I-1, R-1, R-2, or R-3; or

2. Accessory, as such term is defined in the New York City Zoning Resolution, to any I-1, R-1, R-2, or R-3 occupancy.

Exception: Such a building or structure shall be considered nonresidential (for flood zone purposes) when also containing space on the lowest floor that is not accessory, as such term is defined in the New York City Zoning Resolution, to an I-1, R-1, R-2, or R-3 occupancy.

SAND DUNES. Naturally occurring accumulations of sand in ridges or mounds landward of a beach.

SPECIAL FLOOD HAZARD AREA. See "Area of Special Flood Hazard."

START OF CONSTRUCTION. The date of permit issuance for: (i) post-FIRM developments; (ii) substantial improvements to pre-FIRM structures; and (iii) those pre-FIRM developments that, at the time of permit issuance, were not within an area of special flood hazard but that, prior to completion, were within an area of special flood hazard as a result of map change; provided the actual commencement of construction, repair, reconstruction, rehabilitation, addition, placement or other improvement is within 180 days after the date of permit issuance and such construction activity is not thereafter suspended or abandoned for 180 days or more. For the purposes of this definition:

1. The actual commencement of construction means the first placement of permanent construction of a building

(including a manufactured home or prefabricated building) on a site, such as the pouring of a slab or footings, installation of pilings or construction of columns.

2. Permanent construction does not include land preparation (such as clearing, excavation, grading or filling), the installation of streets or walkways, excavation for a basement (for flood zone purposes), footings, piers or foundations, the erection of temporary forms or the installation of accessory buildings such as garages or sheds not occupied as dwelling units or not part of the main building.

3. For a substantial improvement, the actual commencement of construction means the first alteration of any wall, ceiling, floor or other structural part of a building, regardless of whether that alteration affects the external dimensions of the building.

SUBSTANTIAL DAMAGE. Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

SUBSTANTIAL IMPROVEMENT. Any repair, reconstruction, rehabilitation, addition or improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or repair is started. If the structure has sustained substantial damage, any repairs are considered substantial improvement regardless of the actual repair work performed. The term does not, however, include either:

1. Any project for improvement of a building required to correct pre-FIRM health, sanitary or safety code violations identified by the commissioner, the Fire Commissioner, the Commissioner of Housing Preservation and Development, or the Commissioner of Health and Mental Hygiene, and that are the minimum necessary to assure safe living conditions; or

2. Any alteration of a historic structure provided that the alteration will not preclude the structure's continued designation as a historic structure.

V-ZONE. An area of special flood hazard subject to high velocity wave action.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

Design Flood Elevation amended L.L. 8/2008 § 173, eff. July 1, 2008.

CHAPTER G3 CONSTRUCTION STANDARDS Section BC G301 GeneralBC G302 SubdivisionsBC G303 Site improvementBC G304 Post-firm construction and substantial improvementsBC G305 Manufactured homesBC G306 Recreational vehiclesBC G307 Tanks



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SECTION BC G301: GENERAL

NYC Administrative Code § 28-BC G301

G301.1 All Developments.

To the extent required by Section G102.1, all developments, including but not limited to utility installation, site improvements, placement of prefabricated buildings and manufactured homes, new building construction, alterations and repairs, shall be designed and constructed to resist the effects of flood hazards and flood loads in accordance with this appendix and ASCE 24.

G301.1.1 Multiple flood zones. For a structure that is located in more than one zone (for instance both an A-Zone and an X-Zone, or both an A-Zone and a V-Zone), the provisions associated with the most restrictive area of special flood hazard shall apply to the entire structure.

G301.2 Reserved.



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SECTION BC G302: SUBDIVISIONS

NYC Administrative Code § 28-BC G302

G302.1 General.

Any subdivision proposal, including proposals for manufactured home parks and subdivisions, or other proposed new development within an area of special flood hazard shall demonstrate that:

1. All such proposals are consistent with the need to minimize flood damage;
2. All public utilities and facilities, such as sewer, gas, electric and water systems are located and constructed to minimize or eliminate flood damage; and
3. Adequate drainage is provided to reduce exposure to flood hazards.

G302.2 Subdivision requirements. The following requirements shall apply to any proposed subdivision, including proposals for manufactured home parks and subdivisions, any portion of which lies within an area of special flood hazard:

1. The area of special flood hazard, including floodways and V-Zones, as appropriate, shall be delineated on tentative and final subdivision plats;
2. Base flood elevations shall be shown on tentative and final subdivision plats;
3. Building lots shall be provided with adequate buildable area, in accordance with the New York City Zoning Resolution, outside the floodway; and
4. The design criteria for any utilities and facilities, as set forth in this appendix and appropriate New York City Construction Codes, shall be met.



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SECTION BC G303: SITE IMPROVEMENT

NYC Administrative Code § 28-BC G303

G303.1 Development in floodways.

Development or land disturbing activity is prohibited in floodways unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment will not result in any increase in the level of the base flood, in accordance with Section G103.5.

G303.2Sewer facilities.All new and replaced sanitary sewer facilities, private sewage treatment plants (including all pumping stations and collector systems) and on-site waste disposal systems shall be designed in accordance with Chapter 8, ASCE 24, to minimize or eliminate infiltration of floodwaters into the facilities and discharge from the facilities into floodwaters, or impairment of the facilities and systems.

G303.3Water facilities.All new and replacement water facilities shall be designed in accordance with the provisions of Chapter 8, ASCE 24, to minimize or eliminate infiltration of floodwaters into the systems.

G303.4Storm drainage.Storm drainage shall be designed to convey the flow of surface waters to minimize or eliminate damage to persons or property and shall meet the requirements of ASCE 24.

G303.5Streets and sidewalks.Streets and sidewalks shall be designed to minimize potential for increasing or aggravating flood levels and shall meet the requirements of Section G303.7.

G303.6Retaining walls and driveways.Retaining walls and driveways shall meet the requirements of Section G303.7.

G303.7Grading and fill.In areas of special flood hazard grading and/or fill shall not be approved:

1. Unless such fill is placed, compacted and sloped to minimize shifting, slumping and erosion during the rise and fall of flood water and, as applicable, wave action, in accordance with ASCE 24.

2. In floodways, unless it has been demonstrated through hydrologic and hydraulic analyses performed by an engineer in accordance with standard engineering practice that the proposed grading or fill, or both will not result in any increase in the flood levels during the occurrence of the design flood, in accordance with Section G103.5.

3. In V-Zones, unless such fill is conducted and or placed to avoid diversion of water and waves towards any building or structure.



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SECTION BC G304: POST-FIRM CONSTRUCTION AND SUBSTANTIAL IMPROVEMENTS

NYC Administrative Code § 28-BC G304

G304.1 A-Zone construction standards.

The following standards shall apply to post-FIRM construction and substantial improvements located within A-Zones.

G304.1.1 Residential. For buildings or structures that are residential (for flood zone purposes), all post-FIRM new buildings and substantial improvements shall comply with the applicable requirements in Chapter G3 and ASCE 24, and shall be elevated as follows:

1. Lowest floor. The lowest floor, including the basement (for flood zone purposes), shall be elevated to at or above the design flood elevation specified in ASCE 24, Table 2-1;
2. Enclosures below the design flood elevation. Enclosed spaces below the design flood elevation specified in ASCE 24, Table 2-1 shall be useable solely for parking of vehicles, building access, storage, or crawlspace, and shall be wet floodproofed in accordance with ASCE 24. Breakaway walls are not required in A-Zones.
3. Materials. Only flood-damage-resistant materials and finishes shall be utilized below the design flood elevation specified in ASCE 24, Table 5-1;
4. Utilities and equipment. Utilities and attendant equipment shall be located at or above the design flood elevation specified in ASCE 24, Table 7-1, or shall be constructed so as to prevent water from entering or accumulating within the components during conditions of flooding in accordance with ASCE 24;
5. Certifications. Applications shall contain applicable certifications in accordance with Section G104.5; and
6. Special inspections. Special inspections shall be as required by Section G105.

G304.1.2 Nonresidential. For buildings or structures that are nonresidential (for flood zone purposes), all post-FIRM

new buildings and substantial improvements shall comply with the applicable requirements in Chapter G3 and ASCE 24, and shall comply with either of the following:

1. Elevation option. The structure shall comply with Items 1 through 6 of Section G304.1.1; or

2. Dry floodproofing option. The structure shall comply with the following:

2.1. Elevation of dry floodproofing. The structure shall be dry floodproofed to at or above the design flood elevation specified in ASCE 24, Table 6-1;

2.2. Dwelling units. Where dwelling units are located in a building utilizing the dry floodproofing option, the following additional requirements shall be met:

2.2.1. All rooms and spaces within dwelling units shall be located at or above the design flood elevation;

2.2.2. No more than one toilet and one sink shall be located below the design flood elevation. Any such toilet room shall not be located within a dwelling unit and shall be no larger than required by Chapter 11; and no roughing therein shall be permitted to accommodate additional fixtures;

2.2.3. No more than one two-compartment laundry tray shall be permitted below the design flood elevation;

2.2.4. No kitchens or kitchenettes shall be permitted below the design flood elevation;

2.2.5. A restrictive declaration noting the above restrictions shall be filed with the City Register or County Clerk, and the page number and liber number shall be identified in the permit application and on the certificate of occupancy.

2.3. Utilities and equipment. Utilities and attendant equipment shall be located within the dry floodproofed enclosure, or may be located outside the dry floodproofed enclosure provided that they are located at or above the design flood elevation specified in ASCE 24, Table 7-1 or are constructed so as to prevent water from entering or accumulating within the components during conditions of flooding in accordance with ASCE 24.

2.4. Certifications. Applications shall contain applicable certifications in accordance with Section G104.5; and

2.5. Special inspections. Special inspections shall be as required by Section G105.

G304.2V-Zone construction standards. In addition to the requirements of ASCE 24, the following standards shall apply to post-FIRM construction and substantial improvements located within V-Zones.

1. Foundation. The lowest floor shall be elevated on adequately anchored pilings or columns and securely anchored to such piles or columns to prevent floatation, collapse and lateral movement resulting from wind and flood loads acting simultaneously on all building components, and other load requirements of Chapter 16 and this appendix.

2. Lowest horizontal member. The lowest portion of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) shall be at or above the design flood elevation specified in ASCE 24, Table 4-1.

3. Below the lowest horizontal member. Spaces below the lowest horizontal member shall be either:

3.1. Free of obstructions; or

3.2. Enclosed with breakaway walls providing unconditioned space useable solely for parking of vehicles, building access, storage or crawl space. Such breakaway walls shall:

3.2.1. Be of an open lattice type construction only;

3.1.1. Meet the load requirements of Section 5.3.2.3 of ASCE 7; and

3.2.3. Meet the additional requirements of ASCE 24.

4. Materials. Only flood-damage-resistant materials and finishes shall be utilized below the design flood elevation specified in ASCE 24, Table 5-1;

5. Utilities and equipment. Utilities and attendant equipment shall be located at or above the design flood elevation specified in ASCE 24, Table 7-1, or shall be constructed so as to both resist the wave action and prevent water from entering or accumulating within the components during conditions of flooding in accordance with ASCE 24;

6. Prohibitions. The following shall be prohibited in V-Zones:

6.1. Development, including land disturbing activities, seaward of the reach of mean high tide;

6.2. Use of fill for structural support of buildings; and

6.3. Man-made alterations of sand dunes that would increase potential damage to buildings.

7. Certifications. Applications shall contain applicable certifications in accordance with Section G104.5; and

8. Special inspections. Special inspections shall be as required by Section G105.



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SECTION BC G305: MANUFACTURED HOMES.

NYC Administrative Code § 28-BC G305

G305.1 General.

Manufactured homes shall be prohibited in V-Zones. Within A-Zones, all new, replaced or substantially improved manufactured homes shall be:

1. Installed using methods and practices that minimize flood damage;
2. Elevated to or above the design flood elevation specified in ASCE 24, Table 2-1;
3. Placed on a permanent, reinforced foundation that is designed in accordance with ASCE 24;
4. Securely anchored to a foundation system designed to resist floatation, collapse and lateral movement. Methods of anchoring are authorized to include, but are not limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable state and local anchoring requirements for resisting wind forces.



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SECTION BC G306: RECREATIONAL VEHICLES

NYC Administrative Code § 28-BC G306

G306.1 General.

The following shall apply to placement of all recreational vehicles within areas of special flood hazard:

1. Placement in V-Zones and floodways prohibited. The placement of recreational vehicles is prohibited in V-Zones and floodways.
2. Temporary placement in A-Zones. Within A-Zones, recreational vehicles shall be fully licensed and ready for highway use, and shall be placed on a site for less than 180 consecutive days.
3. Permanent placement in A-Zones. Within A-Zones, recreational vehicles that are not fully licensed and ready for highway use, or that are to be placed on a site for 180 or more consecutive days, shall meet the requirements of Section G305 for manufactured homes.



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Chapter G3 Construction Standards
SECTION BC G307: TANKS

NYC Administrative Code § 28-BC G307

G307.1 Underground tanks.

Underground tanks in areas of special flood hazard shall be designed, constructed, installed, and anchored to prevent flotation, collapse and lateral movement resulting from hydrostatic loads, including the effects of buoyancy, during conditions of flooding to the design flood elevation, in accordance with ASCE 24.

G307.2 Above-ground tanks. Above-ground tanks in areas of special flood hazard shall be:

1. Elevated to or above the design flood elevation specified in ASCE 24, Table 7-1; or
2. Designed, constructed, installed, and anchored to prevent flotation, collapse and lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of flooding to the design flood elevation, in accordance with ASCE 24.

G307.3 Tank inlets and vents. In areas of special flood hazard, tank inlets, fill openings, outlets and vents shall be:

1. Installed at or above the design flood elevation specified in ASCE 24, Table 7-1, or fitted with covers designed to prevent the inflow of floodwater and outflow of the contents of the tanks during conditions of flooding to the design flood elevation, in accordance with ASCE 24; and
2. Anchored to prevent lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of flooding to the design flood elevation, in accordance with ASCE 24.



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SECTION BC G308: OTHER DEVELOPMENT

NYC Administrative Code § 28-BC G308

G308.1 Accessory structures.

Accessory structures shall be anchored to prevent flotation, collapse and lateral movement resulting from hydrostatic loads, including the effects of buoyancy, during conditions of flooding to the design flood elevation. Enclosed accessory structures usable solely for parking or storage shall be wet floodproofed and shall have flood openings to allow for the automatic entry and exit of flood waters designed in accordance with ASCE 24.

G308.2 Fences in floodways. Fences in floodways that may block the passage of floodwaters, such as stockade fences and wire mesh fences, shall meet the requirement of Section G103.5.

G308.3 Oil derricks. Oil derricks located in areas of special flood hazard shall be designed in conformance with ASCE 24.

G308.4 Prefabricated swimming pools in floodways. Prefabricated swimming pools in floodways shall meet the requirements of Section G103.5. CHAPTER G4 REFERENCED STANDARDS Section BC G401 General BC G402 Standards



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Chapter G4 Reference Standards
SECTION BC G401: GENERAL

NYC Administrative Code § 28-BC G401

G401.1 General.

This chapter lists the standards that are referenced in various sections of this appendix. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title and the section or sections of this document that reference the standard.

G401.2 Subsequent additions, modifications, or deletions. Refer to the rules of the department for any subsequent additions, modifications or deletions that may have been made to these standards in accordance with Section 28-103.19 of the Administrative Code.

G401.3 Applicability. The application of the referenced standards shall be as specified in Section 102.4.

G401.4 Reserved.

G401.5 Reserved.

G401.6 Reserved.



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SECTION 1.3: DEFINITIONS

NYC Administrative Code § 28-BC H1.3

1.3 Add or revise the following definitions to section 1.3 as follows:

Delete and revise the definition "Designated Level" to read as follows:

Designated Level: For the purpose of applying Section 2.27.3, designated level shall mean the street floor or other level that best serves the needs of emergency personnel for fire fighting or rescue purposes.

Add new definition "Elevator Classification" to read as follows:

Elevator Classification: Elevator is classified as freight or passenger.

Add new definition "Elevator, Service Car" to read as follows:

Elevator, Service Car: A passenger or freight elevator, located in an Interim Multiple Dwelling registered with the New York City Loft Board, in accordance with Article 7-C of the Multiple Dwelling Law.

Delete and revise the definition "Hospital Emergency Service" to read as follows:

Hospital Emergency Service: A special operating control function that may be provided for elevators in occupancy group I-2 (Hospital) or other applicable medical facility used to transport a patient in a life or death situation.

Delete and revise the definition "Installation Placed Out of Service" to read as follows:

Installation Placed Out of Service (Dismantled): An installation whose power feed lines have been disconnected from the main line disconnect switch and:

(a) An electric elevator, dumbwaiter, sidewalk elevator or material lift whose suspension ropes have been removed, whose car and counterweight rest at the bottom of the hoistway, and whose hoistway doors have been permanently barricaded or sealed in the closed position on the hoistway side.

(b) A hydraulic elevator, dumbwaiter, sidewalk elevator or material lift whose car rests at the bottom of the hoistway; whose pressure piping has been disassembled and a removed from the premises; whose hoistway doors have been permanently barricaded or sealed in the closed position.

(c) An escalator or moving walk whose entrances have been permanently barricaded.

Add new definition "Patient Elevator" to read as follows:

Patient Elevator: An elevator located in a building classified in occupancy group I-2 (Hospital) reserved for the "sole" use of vertical transportation of non-ambulatory patients who are incapable of self-preservation because of age, physical or mental disability. Hospital staff or other passengers transporting a patient are permitted to ride with the patient. Such elevators must be operated by a designated attendant and shall meet the requirements of § 2.27.4 and § 2.27.5.3.

Add new definition "Sky Lobby" to read as follows:

Sky Lobby: The lowest landing of an elevator or a group of elevators located above the street level.

Add new definition "Smoke Hole" to read as follows:

Smoke Hole: An opening for an elevator hoistway venting at the top of the elevator hoistway(s).

Add new definition "Zero Clearance Vestibule" to read as follows:

Zero Clearance Vestibule. A space on the elevator lobby between the exterior of the hoistway door and the security door attached to the elevator hoistway.



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SECTION 6.1: ESCALATORS

NYC Administrative Code § 28-BC H6.1

6.1.1 Protection of Floor Openings.

Delete and revise section 6.1.3.3.5 it to read as follows:

6.1.3.3.5 Clearance Between Skirt and Step. The clearance on either side of the steps between the step and the adjacent skirt panel shall not be more than 4 mm (0.16 in.), and the sum of the clearances on both sides shall be not more than 7 mm (0.28 in.).

Add new text to sub-section (c) of 6.1.3.3.6 to read as follows:

6.1.3.3.6 Skirt Panels:

(c) The exposed surfaces of the skirt panels adjacent to the steps shall be smooth and made from a low friction material, or permanently treated with a friction-reducing material. Untreated surfaces, such as porcelain, enameled steel bronze, or stainless steel, are not acceptable.

Delete section 6.1.3.3.7 in its entirety:

6.1.3.3.7 Reserved.

Delete and revise section 6.1.3.3.8 to read as follows:

6.1.3.3.8 Skirt Deflector Devices. Deflector Devices shall be required. Deflector Devices shall extend from skirt panels parallel to the escalator path of travel. Means to secure such deflector devices are required to be on the exposed surface of the skirt. Any exposed fastener heads shall be of the tamper resistant type and flush to within 1 mm (0.04 in.).

Revise section 6.1.3.5.4 to read as follows:

6.1.3.5.4 Clearance Between Step Threads. The maximum clearance between step treads on the horizontal run shall be 6 mm (0.25 in.). (See Appendix I, Fig. I7 [I6]).

Delete and revise section 6.1.6.3.3 to read as follows:

6.1.6.3.6 Skirt Obstruction Device. Means shall be provided to cause the electric power to be removed from the escalator driving machine motor and brake, if an object becomes caught between the step and the skirt as the step approaches the upper combplate, intermediate device or lower comb plate. On units having a run of 6096 mm (20 ft.) or more, intermediate devices shall be provided on both sides of the escalator with devices located at intervals of 3048 mm (10 ft.) or less. The activation of an intermediate device shall stop the escalator at a rate not greater than 914 mm (3 ft.) per second square in the direction of travel. The upper and lower comb plate devices shall be located so that the escalator will stop before that object reaches the comb plate. The activation of any skirt device shall stop the escalator when a load equal to the brake rated load is applied while the escalator is running.

Revise section 6.1.6.3.13 to read as follows:

6.1.6.3.13 Comb-Step Impact Devices. Devices shall be provided that will cause the opening of the power circuit to the escalator driving machine motor and brake if either:

(a) A horizontal force not greater than 1 780 N (400 lbf) in the direction of travel is applied at either side, or not greater than 3 560 N (800 lbf) applied at the center of the front edge of the comb plate; or

(b) A resultant vertical force not greater than [670 N (150 lbf)] 268 N (60 lbf) in the upward direction is applied at the center of the front of the comb plate.

Revise section 6.2.6.3.11 to read as follows:

6.2.6.3.11 Comb-Pallet Impact Devices. Devices shall be provided that will cause the opening of the power circuit to the moving walk driving-machine motor and brake if either:

(a) A horizontal force not greater than 1 780 N (400 lbf) in the direction of travel is applied at either side, or not greater than 3 560 N (800 lbf) applied at the center of the front edge of the combplate; or

(b) A resultant vertical force not greater than [670 N (150 lbf)] 268 N (60 lbf) in the upward direction is applied at the center of the front of the combplate. These devices shall be of the manual-reset type.



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SECTION 8.1: SECURITY

NYC Administrative Code § 28-BC H8.1

8.1.2 Group 1: Restricted.

Add new Note (p) to 8.1.2 to read as follows:

(p) The requirements of § 2.14.1.10 and § 5.1.11.1.2(d), side emergency exit doors apply.

8.1.4 Group 3: Emergency Operation.

Delete and revise section 8.1.4 to read as follows:

8.1.4 Group 3: Emergency Operation. Group 3 covers access or operation of equipment by firefighters and emergency personnel. This key shall be a citywide standard key 2642 as defined by the New York City Fire Department.



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NYC Administrative Code § 28-BC H8.6

8.6.4.10 Refastening or Resocketing of Car Hoisting Ropes on Winding-Drum Machines.

Delete and revise section 8.6.4.10.1 to read as follows:

8.6.4.10.1

(1) The hoisting ropes of elevators having winding-drum driving-machines with 1:1 roping, if of the babbitted rope socket type, shall be resocketed at intervals no longer than:

- (a) 1 year, for machines located over the hoistway;
- (b) 2 years, for machines located below or at the side of the hoistway;
- (c) 4 years, for all counterweight cable ends of drum machines;

(2) In addition to the foregoing requirements, rope fastenings shall be resocketed when an inspection reveals any evidence of failure at the shackle regardless of the period of time since last re-shackling.

(3) Where auxiliary rope-fastening devices conforming to the requirements of § 2.20.10 or where car hoist ropes with an additional approved type emergency clamping devices are installed, refastening at the period specified is not required provided that, where such devices are installed, all hoisting ropes shall be refastened on the failure or indication of failure of any rope fastening. Wedge clamp shackles shall not be used on drum machines.

(4) Where the elevator is equipped with a drum counterweight, the fastenings shall be examined for fatigue or damage at the socket. Where fatigue or damage is detected, the ropes shall be refastened in conformance with § 8.6.4.10.2.

Delete and revise section 8.6.4.10.3 to read as follows:

8.6.4.10.3 Tags. A legible metal tag shall be securely attached through one of the tapered rope sockets during each resocketing, (as shown in the diagram below) and shall bear the following information:

(a) The name of the person or firm who performed the resocketing and;

(b) The date on which the rope was resocketed. The material and marking of the tags shall conform to § 2.16.3.3, except that the height of the letters and figures shall be not less than 1.5 mm (0.0625 in.).
[SEE graphical material in printed version]

8.6.8.3Step/Skirt Performance Index.

Delete section 8.6.8.3 in its entirety.

Section 8.6.8.3 Reserved.



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SECTION 8.7: ALTERATIONS

NYC Administrative Code § 28-BC H8.7

8.7.2 Alterations to Electric Elevators.

Delete and revise section 8.7.2.13, sub-section (c) to read as follows:

8.7.2.13 Door Reopening Device.

(c) When firefighters' emergency operation is provided, door reopening devices and door closing during Phase I and Phase II shall comply with the requirements applicable at the time of installation or alteration.

8.7.2.14 Car Enclosures, Car Doors, and Gates, and Car Illumination.

Revise section 8.7.2.14.1 to read as follows:

8.7.2.14.1 Where an alteration consists of the installation of a new car, the installation shall conform to § 2.12.6, § 2.14, § 2.15, and § 2.17 (see also § 8.7.2.15.1).

Delete and revise sub-section (e) of 8.7.2.14.2 to read as follows:

8.7.2.14.2

(e) Side emergency exits may be permanently fixed in the closed position provided that the corresponding side emergency exit on an adjacent car shall also be fixed in the closed position. The installation shall conform to § 2.12.6.

Revise section 8.7.2.14.3, sub-section (b)(2) to read as follows:

8.7.2.14.3

(b)(2) Smoke development of 0 to 100 [450].

8.7.2.17 Change in Travel or Rated Speed.

Add new sub-section (4) to 8.7.2.17.1(c) to read as follows:

8.7.2.17.1 Increase or Decrease in Travel.

(4) Where the only hoistway alteration is the decrease in travel at the upper end of the travel, the installation shall be modified as follows:

(i) Terminal stopping devices shall be provided based on the new top terminal landing location and the final limit switch shall be of the manual reset type.

(ii) A key controlled switch shall be provided in accordance with § 8.1.5 (i.e. Group 4) requirements to by-pass the new top terminal stopping devices, when the elevator transfer switch is placed in the Top-of-Car Inspection Operation position, for access to the hoistway above the terminal landing.

The switch shall be manually operated, be labeled "Terminal By-Pass", and shall have two positions; By-Pass and Normal.

The switch shall be located in the hoistway, in the vicinity of the terminal limits and shall be accessible to a person standing on the car top. The car transfer switch shall not be removed from the Top-of-Car Inspection Operation position until the terminal limit By-Pass switch is placed in the Normal position.

(iii) Existing terminal stopping devices shall remain functional. The hoistway door electro-mechanical safety interlocks shall remain in the safety circuit and locked with door panel(s) separately secured in closed position on the hoistway side.

(iv) The car operating panel shall be removed with associated labeling and signaling.

8.7.2.25 Driving Machines and Sheaves.

Delete and revise sub-section (a) of 8.7.2.25.1 to read as follows:

8.7.2.25.1 Alterations to Driving Machines and Sheaves

(a) Where a driving machine is installed as part of an alteration, the installation shall conform to § 2.7.2.2, § 2.9, § 2.10.1, § 2.19, § 2.20, § 2.24, and § 2.26.8. The requirements of § 2.7.2.2 and § 2.19 shall apply only to the extent that the existing installation permits.

8.7.2.27 Operating Devices and Control Equipment.

Revise sub-section (a) of 8.7.2.27.4 to read as follows:

8.7.2.27.4 Controllers.

(a) Where a controller is installed as part of an alteration, it shall conform to § 2.22, § 2.25, § 2.26.1.4, § 2.26.1.5, 2§ 2.26.4 through § 2.26.9, and § 2.27.2 through § 2.27.8.

Revise subsection 8.7.2.27.5(e) to read as follows:

8.7.2.27.5 Change in Type of Motion Control.

(e) Car overspeed protection and unintended movement protection shall conform to § 2.19 to the extent that the existing installation permits. Where hoisting machinery is retained or altered in such a way that makes the installation of an emergency braking system per 2.19.3 impossible, conformance with § 2.19 is not required.



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SECTION 8.8: WELDING8

NYC Administrative Code § 28-BC H8.8

8.8.1 Qualification of Welders.

Revise section 8.8.1 read as follows:

8.8.1 Qualification of Welders. Where required elsewhere in this code, welding of parts, except for tack welds later incorporated into finished welds, shall be undertaken:

(a) by welders qualified in accordance with the requirements of Section 5 of ANSI/AWS D1.1, whereby the welders shall be qualified by the manufacturer or contractor; a professional consulting engineer; or a recognized testing laboratory; or

(b) by a fabricator qualified to the requirements of CSA W47.1, whichever is applicable (see Part 9), and

(c) as per department rules.



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SECTION 8.11: PERIODIC INSPECTIONS AND TESTS

NYC Administrative Code § 28-BC H8.11

K201.1 General.

As referenced in section 3001.2 of the New York City Building Code, the provisions of ASME B20.1-03 shall be modified in accordance with this chapter. The section numbers correlate to those in the referenced ASME standard. Refer to the rules of the department for any subsequent additions, modifications or deletions that may have been made to this standard in accordance with Section 28-103.19 of the Administrative Code.

1

SCOPE

Revise the text of section 1 to read as follows:

This Standard applies to the design, construction, installation, maintenance, inspection, and operation of conveyors and conveying systems in relation to hazards. The conveyors may be of the bulk material, package, or unit handling types where the installation is designed for permanent, temporary, or portable operation.

This standard shall apply, with the exceptions noted below, to all conveyor installations.

This standard specifically excludes any conveyor designed for, installed for, or used [primarily] for the movement of human beings. This standard does, however, apply to certain conveying devices that incorporate within their supporting structure, work stations or operator's stations specifically designed for authorized personnel.

This standard does not apply to conveyors such as underground mine conveyors for which specific standards are already in effect, or to equipment such as industrial trucks, tractors, trailers, automatic guided vehicles, tiering machines (except pallet load tierers), cranes, hoists, power shovels, power scoops, bucket drag lines, trenchers, platform elevators designed to carry passengers or operator, manlifts, moving walks, moving stairways (escalators), highway or railroad

vehicles, cableways, tramways, dumbwaiters, pneumatic conveyors, robots or integral machine transfer devices. Some of the foregoing have specific standards.

The provisions of this Standard shall apply to equipment installed one year after the standard's date of issuance.

4

DEFINITIONS

Revise the definition Vertical Reciprocating Conveyor in section 4 to read as follows:

Conveyor, vertical reciprocating: a permanent reciprocating power or gravity actuated unit (not designed to carry passengers or an operator) that receives objects on a carrier and transmits these objects vertically between two or more levels.

6

SPECIFIC SAFETY STANDARDS

6.21 Vertical Reciprocating Conveyors.

6.21.1 Add new sub-sections d, e, f, g, h, i, j and k to section 6.21.1 to read as follows:

6.21.1 Safety Considerations

(d) Travel distance shall be limited to less than 22 860 mm (75 ft.) with a maximum of four (4) landings served.

(e) Conveyor(s) shall be enclosed in a two- (2) hour fire rated hoistway, equipped with a minimum 1 1/2 hour fire rated entrance at each landing served.

(f) Access at landings shall be a restricted area for authorized personnel with no public access.

(g) Where there is an occupied space or an unoccupied space not secured against unauthorized access under the hoistway, the conveyor shall be equipped with a safety designed to stop and hold the conveyor with the rated full load capacity independent of the hoisting or driving mechanism.

(h) The operating device shall not be located inside the conveyor enclosure and must be external to the hoistway at each landing served.

(i) The system shall incorporate a position indicator at each floor landing to register the location of the conveyor.

(j) The rated load capacity shall not be less than 239 kg/m² (49 lbs. per sq. ft.) with a maximum capacity of 9072 kg (20,000 lbs.).

(k) The rated speed shall not exceed 406 mm/sec. (80 FPM).

(l) VRCs are permitted only in commercial and industrial occupancies.

6.21.2 Revise sub-sections (c) and (d) of 6.21.2 to read as follows:

6.21.2 Guarding.

(c) Vertical reciprocating conveyors designed to automatically receive and discharge material [may] shall have interlocked doors as in (b) above or, as an alternative, may be guarded by a suitable enclosure extending from the path

of the moving carrier.

(d) Where the application requires that personnel walk onto the carrier to load or unload material, the carriers shall be provided with a conveyor enclosure securely fastened to the conveyor platform. The enclosure walls shall be of solid, grille or perforated construction; and shall be of such strength and support that when subjected to a leaning or falling rated load on the conveyor, the enclosure walls will not deflect or deform in a way that reduces running clearances to less than 13mm (0.5 in.). Enclosure entrance(s) shall be provided with solid doors or gates; and shall guard the full width opening with a minimum height of 2030mm (80 in.). Grille or perforated portions of conveyor enclosures and entrance gates shall reject a ball 38mm (1.5 in.) in diameter. [with standard railings, snap chains, or equivalent across the loading/unloading side(s). Snap chains shall be at least 39 in. at their lowest point.]



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Appendix H Outdoor Signs
SECTION BC H101: GENERAL

NYC Administrative Code § 28-BC H101

H101.1 General.

An outdoor sign shall not be erected in a manner that would confuse or obstruct the view of or interfere with exit signs required by Chapter 10 or with official traffic signs, signals or devices. Signs and sign support structures, together with their supports, braces, guys and anchors, shall be kept in repair and in proper state of preservation. The display surfaces of signs shall be kept neatly painted or posted at all times. No sign shall project beyond the street line except as permitted by Chapter 32.

H101.2 Signs exempt from permits. The signs specified in Section 28-105.4.5 are exempt from the requirements to obtain a permit before erection. The changing of moveable parts of an approved sign that is designed for such changes, or the repainting or repositioning of display matter shall not be deemed an alteration requiring a separate permit.



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SECTION BC H102: DEFINITIONS

NYC Administrative Code § 28-BC H102

H102.1 General.

Unless otherwise expressly stated, the following words and terms shall, for the purposes of this appendix, have the meanings shown herein. Refer to Chapter 2 of this code for general definitions.

COMBINATION SIGN. A sign incorporating any combination of the features of pole, projecting and roof signs.

DISPLAY SIGN. The area made available by the sign structure for the purpose of displaying the sign.

GROUND SIGN. A billboard or similar type of sign which is supported by one or more uprights, poles or braces in or upon the ground other than a combination sign or pole sign, as defined by this code.

POLE SIGN. A sign wholly supported by a sign structure in the ground.

PROJECTING SIGN. A sign other than a wall sign, which projects from and is supported by a wall of a building or structure.

ROOF SIGN. A sign erected upon or above a roof or parapet of a building or structure.

SIGN. Any letter, figure, character, mark, plane, point, marquee sign, design, poster, pictorial, picture, stroke, stripe, line, trademark, reading matter or illuminated service, which shall be constructed, placed, attached, painted, erected, fastened or manufactured in any manner whatsoever, so that the same shall be used for the attraction of the public to any place, subject, person, firm, corporation, public performance, article, machine or merchandise, whatsoever, which is displayed in any manner outdoors. Every sign shall be classified and conform to the requirements of that classification as set forth in this chapter.

SIGN STRUCTURE. Any structure which supports or is capable of supporting a sign as defined in this code. A sign structure is permitted to be a single pole and is not required to be an integral part of the building.

TEMPORARY SIGN. A sign, with display area 500 square feet (46.5 m²) or less, erected for a period of 30 days or less.

WALL SIGN. Any sign attached to or erected against the wall of a building or structure, projecting no more than 15 inches (381 mm) from the face of the wall, with the exposed face of the sign in a plane parallel to the plane of said wall.



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SECTION BC H103: LOCATION

NYC Administrative Code § 28-BC H103

H103.1 Location restrictions.

Signs shall not be erected, constructed or maintained so as to obstruct any fire escape or any window or door or opening used as a means of egress or so as to prevent free passage from one part of a roof to any other part thereof. A sign shall not be attached in any form, shape or manner to a fire escape or exterior stair, nor be placed in such manner as to interfere with any opening required for natural light or natural ventilation.

H103.2 Fire Department access. Signs erected to cover doors or windows required by Section 501.3.2 for Fire Department access to existing buildings shall be provided with access panels to such openings.



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SECTION BC H104: IDENTIFICATION

NYC Administrative Code § 28-BC H104

H104.1 Identification.

Every outdoor advertising display sign hereafter erected, constructed or maintained, for which a permit is required, shall be marked in accordance with Section 28-502.4.



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SECTION BC H105: DESIGN AND CONSTRUCTION

NYC Administrative Code § 28-BC H105

H105.1 General requirements.

Signs shall be designed and constructed to comply with the provisions of this code for use of materials, loads and stresses.

H105.2 Permits, drawings and specifications. Where a permit is required, as provided in Chapter 1, construction documents shall be required. These documents shall show the dimensions, material and required details of construction, including loads, stresses and anchors. Every sign for which a permit is required shall be inspected at least once every calendar year.

H105.3 Wind load. Signs shall be designed and constructed to withstand wind pressure as provided for in Chapter 16.

H105.4 Seismic load. Signs designed to withstand wind pressures shall be considered capable of withstanding earthquake loads, except as provided for in Chapter 16.

H105.5 Working stresses. In outdoor advertising display signs, the allowable working stresses shall conform to the requirements of Chapter 16. The working stresses of wire rope and its fastenings shall not exceed 25 percent of the ultimate strength of the rope or fasteners.

Exceptions:

1. The allowable working stresses for steel and wood shall be in accordance with the provisions of Chapters 22 and 23.
2. The working strength of chains, cables, guys or steel rods shall not exceed one-fifth of the ultimate strength of such chains, cables, guys or steel.

H105.6Attachment. Signs attached to masonry, concrete or steel shall be safely and securely fastened by means of metal anchors, bolts or approved expansion screws of sufficient size and anchorage to safely support the loads applied.



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SECTION BC H106: ELECTRICAL

NYC Administrative Code § 28-BC H106

H106.1 Illumination.

A sign shall not be illuminated by other than electrical means, and electrical devices and wiring shall be installed in accordance with the requirements of the New York City Electrical Code. Any open spark or flame shall not be used for display purposes unless specifically approved.

H106.1.1 Internally illuminated signs. Wiring for electric lighting shall be entirely enclosed in the sign cabinet with a clearance of not less than 2 inches (51 mm) from the facing material.

H106.2 Electrical service. Signs that require electrical service shall comply with the New York City Electrical Code.

H106.3 Material limitations. All sign structures for signs requiring electric service shall be constructed of noncombustible materials, except as permitted by Section H107.

H106.4 Projecting reflectors. Lighting reflectors may project beyond the top or face of all signs provided that every part of such reflector is at least 10 feet (3048 mm) above the ground or sidewalk level. Reflectors shall be constructed, attached, and maintained so that they shall not be, or become, a hazard to the public.



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MATERIAL LIMITATIONS

NYC Administrative Code § 28-BC H107

H107.1 Use of combustibles.

In all signs required to be constructed of noncombustible materials pursuant to the provisions of Sections H109 through H116, the following materials may be used for moldings, cappings, nailing blocks, letters and latticing, or other purely ornamental features of signs, unless otherwise directed by the commissioner: wood, approved plastic or plastic veneer panels as provided for in Chapter 26, or other materials of combustible characteristics similar to wood. In all signs permitted to be constructed of combustible materials pursuant to the provisions of Sections H107 through H116, wood and other materials of combustible characteristics similar to wood shall be permitted, pursuant to the provisions of Sections H109 through H116, on the display surface without limit, except that approved plastic shall be limited in area by the provisions of Section H107.1.3.

H107.1.1 Approved plastic materials. Plastic materials which burn at a rate no faster than 2.5 inches per minute (64 mm/s) when tested in accordance with ASTM D 635 shall be deemed approved plastics and can be used as the display surface material and for the letters, decorations and facings on signs, subject to the area limitations of Sections H107.1.2 through H107.1.3.

Exception: Flexible vinyl signs shall comply with the requirements of Section H114.

H107.1.2 Plastic area limitations for internally illuminated signs. Except as provided for in Sections 402.14 and 2611 of this code, approved plastic used on the display surface of internally illuminated signs shall be permitted up to 200 square feet (18.6 m²) in area on signs required to be of noncombustible construction and on signs permitted to be of combustible construction.

H107.1.3 Plastic area limitations for all other signs. Approved plastic used on the display surface of ground signs, walls signs, roof signs, projecting signs, and marquee signs shall be limited in area as provided by Sections H107.1.3.1

through H107.1.3.4.

H107.1.3.1 Plastic area limitations on noncombustible ground signs and wall signs. On ground signs and wall signs required to be constructed of noncombustible materials, if the display surface does not exceed 150 square feet (13.9 m²), the entire display surface shall be permitted to be covered by approved plastic. If the area of a display surface exceeds 150 square feet (13.9 m²), the area occupied or covered by approved plastics shall be limited to 150 square feet (13.9 m²) plus 50 percent of the difference between 150 square feet (13.9 m²) and the total area of display surface. The area of plastic on a display surface shall not in any case exceed 1,050 square feet (97.5 m²), unless approved by the commissioner.

H107.1.3.2 Plastic area limitations on combustible ground signs and wall signs. On ground signs and wall signs permitted to be constructed of combustible materials, if the display surface does not exceed 300 square feet (27.9 m²), 50 percent of the display surface shall be permitted to be covered by approved plastic. If the area of a display surface exceeds 300 square feet (27.9 m²), the area occupied or covered by approved plastics shall be limited to 150 square feet (13.9 m²) plus 25 percent of the difference between 150 square feet (13.9 m²) and the total area of display surface. The area of plastic on a display surface shall not in any case exceed 575 square feet (53.4 m²), unless approved by the commissioner.

H107.1.3.3 Plastic area limitations on noncombustible roof signs, projecting signs, and marquee signs. On roof signs, projecting signs, and marquee signs required to be constructed of noncombustible materials, if the display surface does not exceed 150 square feet (13.9 m²), the entire display surface shall be permitted to be covered by approved plastic. If the area of a display surface exceeds 150 square feet (13.9 m²), the area occupied or covered by approved plastics shall be limited to 150 square feet (13.9 m²) plus 25 percent of the difference between 150 square feet (13.9 m²) and the total area of display surface. The area of plastic on a display surface shall not in any case exceed 575 square feet (53.4 m²), unless approved by the commissioner.

H107.1.3.4 Plastic area limitations on combustible roof signs. On roof signs permitted to be constructed of combustible materials, if the display surface does not exceed 1,000 square feet (92.9 m²), 25 percent of the display surface shall be permitted to be covered by approved plastic. If the area of a display surface exceeds 1,000 square feet (92.9 m²), the area occupied or covered by approved plastics shall be limited to 250 square feet (23.2 m²) plus 10 percent of the difference between 250 square feet (23.2 m²) and the total area of display surface. The area of plastic on a display surface shall not in any case exceed 350 square feet (32.5 m²), unless approved by the commissioner.

H107.2 Glass panels. Glass panels used in display areas of signs shall be limited in size, thickness and type of glass as provided by Table H107.2. Table H107.2 Size, Thickness and Type of Glass Panels in Signs

Maximum Size of Exposed Panel	Any dimension (inches)	Area (square inches)	Minimum Thickness of Glass (inches)	Type of Glass
30	500	1/8	Plain, plate or wired	45
700	3/16	Plain, plate or wired	144	3,600
1/4	Plain, plate or wired	mt144	mt3,600	1/4

Wired glass For SI: 1 inch = 25.4 mm, 1 square inch = 645 mm².



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SECTION BC 2505: SHEAR WALL CONSTRUCTION

NYC Administrative Code § 28-BC 2505

2505.1 Resistance to shear (wood framing).

Wood-framed shear walls sheathed with gypsum board, lath and plaster shall be designed and constructed in accordance with Section 2306.4 and are permitted to resist wind and seismic loads. Walls resisting seismic loads shall be subject to the limitations in Section 1617.6.

2505.2 Resistance to shear (steel framing). Cold-formed steel framed shear walls sheathed with gypsum board and constructed in accordance with the materials and provisions of Sections 2211.1, 2211.2, 2211.2.1 and 2211.2.2.3 are permitted to resist wind and seismic loads. Walls resisting seismic loads shall be subject to the limitations in Section 1617.6.



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SECTION BC 2506: GYPSUM BOARD MATERIALS

NYC Administrative Code § 28-BC 2506

2506.1 General.

Gypsum board materials and accessories shall be identified by the manufacturer's designation to indicate compliance with the appropriate standards referenced in this section and stored to protect such materials from the weather.

2506.2 Standards. Gypsum board materials shall conform to the appropriate standards listed in Table 2506.2 and Chapter 35 and, where required for fire protection, shall conform to the provisions of Chapter 7.

2506.2.1 Other materials. Metal suspension systems for acoustical and lay-in panel ceilings shall conform with Section 803.9.3] Table 2506.2 Gypsum Board Materials and Accessories Material Standard 1] Material Standard 2] Accessories for gypsum board ASTM C 1047 Gypsum sheathing ASTM C 79 Gypsum wallboard ASTM C 36 Joint reinforcing tape and compound ASTM C 474; C 475 Nails for gypsum boards ASTM C 514, F 547, F 1667 Steel screws ASTM C 954; C 1002 Steel studs, nonload bearing ASTM C 645 Steel studs, load bearing ASTM C 955 Water-resistant gypsum backing board ASTM C 630 Exterior soffit board ASTM C 931 Fiber-reinforced gypsum panels ASTM C 1278 Gypsum backing board and gypsum shaftliner board ASTM C 442 Gypsum ceiling board ASTM C 1395 Standard specification for gypsum board ASTM C 1396 Predecorated gypsum board ASTM C 960 Adhesives for fastening gypsum wallboard ASTM C 557 Testing gypsum and gypsum products ASTM C 22; C 472; C 473 Glass mat gypsum substrate ASTM C 1177 Glass mat gypsum backing panel ASTM C 11784]



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SECTION BC 2507: LATHING AND PLASTERING

NYC Administrative Code § 28-BC 2507

2507.1 General.

Lathing and plastering materials and accessories shall be marked by the manufacturer's designation to indicate compliance with the appropriate standards referenced in this section and stored in such a manner to protect them from the weather.

2507.2 Standards. Lathing and plastering materials shall conform to the standards listed in Table 2507.2 and Chapter 35 and, where required for fire protection, shall also conform to the provisions of Chapter 7.3] Table 2507.2 Lath, Plastering Materials and Accessories Material Standard 1] Material Standard 2] Accessories for gypsum veneer base ASTM C 1047 Exterior plaster bonding compounds ASTM C 932 Gypsum base for veneer plasters ASTM C 588 Gypsum casting and molding plaster ASTM C 59 Gypsum Keene's cement ASTM C 61 Gypsum lath ASTM C 37 Gypsum plaster ASTM C 28 Gypsum veneer plaster ASTM C 587 Interior bonding compounds, gypsum ASTM C 631 Lime plasters ASTM C 5; C 206 Masonry cement ASTM C 91 Metal lath ASTM C 847 Plaster aggregates

Sand ASTM C 35; C 897

Perlite ASTM C 35

Vermiculite ASTM C 35 Plastic cement ASTM C 1328 Blended cement ASTM C 595 Portland cement ASTM C 150 Steel studs and track ASTM C 645; C 995 Steel screws ASTM C 1002; C 954 Welded wire lath ASTM C 933 Woven wire plaster base ASTM C 10324]



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SECTION BC 2508: GYPSUM CONSTRUCTION

NYC Administrative Code § 28-BC 2508

2508.1 General.

Gypsum board and gypsum plaster construction shall be of the materials listed in Tables 2506.2 and 2507.2. These materials shall be assembled and installed in compliance with the appropriate standards listed in Tables 2508.1 and 2511.1, and Chapter 35. Table 2508.1 Installation of Gypsum Construction Material Standard Gypsum sheathing ASTM C 1280 Gypsum veneer base ASTM C 844 Gypsum board GA-216; ASTM C 840 Interior bathing and furring ASTM C 841 Steel framing for gypsum boards ASTM C 754; C 1007

2508.2 Limitations. Gypsum wallboard or gypsum plaster shall not be used in any exterior surface where such gypsum construction will be exposed directly to the weather. Gypsum wallboard shall not be used where there will be direct exposure to water or continuous high humidity conditions. Gypsum sheathing shall be installed on exterior surfaces in accordance with ASTM C 1280.

2508.2.1 Weather protection. Gypsum wallboard, gypsum lath or gypsum plaster shall not be installed until weather protection for the installation is provided.

2508.3 Single-ply application. Edges and ends of gypsum board shall occur on the framing members, except those edges and ends that are perpendicular to the framing members. Edges and ends of gypsum board shall be in moderate contact except in concealed spaces where fire-resistance-rated construction, shear resistance or diaphragm action is not required.

2508.3.1 Floating angles. Fasteners at the top and bottom plates of vertical assemblies, or the edges and ends of horizontal assemblies perpendicular to supports, and at the wall line are permitted to be omitted except on shear resisting elements or fire-resistance-rated assemblies. Fasteners shall be applied in such a manner as not to fracture the face paper with the fastener head.

2508.4 Joint treatment. Gypsum board fire-resistance-rated assemblies shall have joints and fasteners treated.

Exception: Joint and fastener treatment need not be provided where any of the following conditions occur:

1. Where the gypsum board is to receive a decorative finish such as wood paneling, battens, acoustical finishes or any similar application that would be equivalent to joint treatment.
2. On single-layer systems where joints occur over wood framing members.
3. Square edge or tongue-and-groove edge gypsum board (V-edge), gypsum backing board or gypsum sheathing.
4. On multilayer systems where the joints of adjacent layers are offset from one to another.
5. Assemblies tested without joint treatment.

[SEE graphical material in printed version]

2508.5 Horizontal gypsum board diaphragm ceilings. Gypsum board shall be permitted to be used on wood joists to create a horizontal diaphragm ceiling in accordance with Table 2508.5.

2508.5.1 Diaphragm proportions. The maximum allowable diaphragm proportions shall be 11/2:1 between shear resisting elements. Rotation or cantilever conditions shall not be permitted.

2508.5.2 Installation. Gypsum board used in a horizontal diaphragm ceiling shall be installed perpendicular to ceiling framing members. End joints of adjacent courses of gypsum board shall not occur on the same joist.

2508.5.3 Blocking of perimeter edges. All perimeter edges shall be blocked using a wood member not less than 2-inch by 6-inch (51 mm by 152 mm) nominal dimension. Blocking material shall be installed flat over the top plate of the wall to provide a nailing surface not less than 2 inches (51 mm) in width for the attachment of the gypsum board.

2508.5.4 Fasteners. Fasteners used for the attachment of gypsum board to a horizontal diaphragm ceiling shall be as defined in Table 2508.5. Fasteners shall be spaced not more than 7 inches (178 mm) on center (o.c.) at all supports, including perimeter blocking, and not more than 3/8 inch (9.5 mm) from the edges and ends of the gypsum board.

2508.5.5 Lateral force restrictions. Gypsum board shall not be used in diaphragm ceilings to resist lateral forces imposed by masonry or concrete construction.



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SECTION BC 2509: GYPSUM BOARD IN SHOWERS AND WATER CLOSETS

NYC Administrative Code § 28-BC 2509

2509.1 Wet areas.

Showers and public toilet walls shall conform to Sections 1210.2 and 1210.3.

2509.2 Base for tile. When gypsum board is used as a base for tile or wall panels for tubs, shower or water closet compartment walls, water-resistant gypsum backing board shall be used as a substrate. Regular gypsum wallboard is permitted under tile or wall panels in other wall and ceiling areas when installed in accordance with GA-216 or ASTM C 840.

2509.3 Limitations. Water-resistant gypsum backing board shall not be used in the following locations:

1. Over a vapor retarder in shower or bathtub compartments.
2. Where there will be direct exposure to water or in areas subject to continuous high humidity.
3. On ceilings where frame spacing exceeds 12 inches (305 mm) o.c. for 1/2-inch-thick (12.7 mm) water-resistant gypsum backing board and more than 16 inches (406 mm) o.c. for 5/8-inch-thick (15.9 mm) water-resistant gypsum backing board.



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SECTION BC 2510: LATHING AND FURRING FOR CEMENT PLASTER (STUCCO)

NYC Administrative Code § 28-BC 2510

2510.1 General.

Exterior and interior cement plaster and lathing shall be done with the appropriate materials listed in Table 2507.2 and Chapter 35.

2510.2Weather protection.Materials shall be stored in such a manner as to protect such materials from the weather.

2510.3Installation.Installation of these materials shall be in compliance with ASTM C 926 and ASTM C 1063.

2510.4Corrosion resistance.Metal lath and lath attachments shall be of corrosion-resistant material.

2510.5Backing.Backing or a lath shall provide sufficient rigidity to permit plaster applications.

2510.5.1Support of lath.Where lath on vertical surfaces extends between rafters or other similar projecting members, solid backing shall be installed to provide support for lath and attachments.

2510.5.2Use of gypsum backing board.

2510.5.2.1Use of gypsum board as a backing board.Gypsum lath or gypsum wallboard shall not be used as a backing for cement plaster.

Exception: Gypsum lath or gypsum wallboard is permitted, with a weather-resistant barrier, as a backing for self-furred metal lath or self-furred wire fabric lath and cement plaster where either of the following conditions occur:

1. On horizontal supports of ceilings or roof soffits.
2. On interior walls.

2510.5.2.2 Use of gypsum sheathing backing. Gypsum sheathing is permitted as a backing for metal or wire fabric lath and cement plaster on walls. A weather-resistant barrier shall be provided in accordance with Section 2510.6.

2510.5.3 Backing not required. Wire backing is not required under expanded metal lath or paperbacked wire fabric lath.

2510.6 Weather-resistant barriers. Weather-resistant barriers shall be installed as required in Section 1404.2 and, where applied over wood-based sheathing, shall include a weather-resistant vapor-permeable barrier with a performance at least equivalent to two layers of Grade D paper.

2510.7 Preparation of masonry and concrete. Surfaces shall be clean, free from efflorescence, sufficiently damp and rough for proper bond. If the surface is insufficiently rough, approved bonding agents or a portland cement dash bond coat mixed in proportions of not more than two parts volume of sand to one part volume of portland cement or plastic cement shall be applied. The dash bond coat shall be left undisturbed and shall be moist cured not less than 24 hours.



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SECTION BC 2511: INTERIOR PLASTER

NYC Administrative Code § 28-BC 2511

2511.1 General.

Plastering gypsum plaster or cement plaster shall not be less than three coats where applied over metal lath or wire fabric lath and not less than two coats where applied over other bases permitted by this chapter.

Exception: Gypsum veneer plaster and cement plaster specifically designed and approved for one-coat applications. Table 2511.1 Installation of Plaster Construction Material Standard Gypsum plaster ASTM C 842 Gypsum veneer plaster ASTM C 843 Interior lathing and furring (gypsum plaster) ASTM C 841 Lathing and furring (cement plaster) ASTM C 1063 Portland cement plaster ASTM C 926 Steel framing ASTM C 754; C 1007

2511.1.1 Installation. Installation of lathing and plaster materials shall conform with Table 2511.1 and Section 2507.

2511.2 Limitations. Plaster shall not be applied directly to fiber insulation board. Cement plaster shall not be applied directly to gypsum lath or gypsum plaster except as specified in Sections 2510.5.1 and 2510.5.2.

2511.3 Grounds. Where installed, grounds shall ensure the minimum thickness of plaster as set forth in ASTM C 842 and ASTM C 926. Plaster thickness shall be measured from the face of lath and other bases.

2511.4 Interior masonry or concrete. Condition of surfaces shall be as specified in Section 2510.7. Approved specially prepared gypsum plaster designed for application to concrete surfaces or approved acoustical plaster is permitted. The total thickness of base coat plaster applied to concrete ceilings shall be as set forth in ASTM C 842 or ASTM C 926. Should ceiling surfaces require more than the maximum thickness permitted in ASTM C 842 or ASTM C 926, metal lath or wire fabric lath shall be installed on such surfaces before plastering.

2511.5 Wet areas. Showers and public toilet walls shall conform to Sections 1210.2 and 1210.3. When wood frame walls and partitions are covered on the interior with cement plaster or tile of similar material and are subject to water splash, the framing shall be protected with an approved moisture barrier.



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SECTION BC 2512: EXTERIOR PLASTER

NYC Administrative Code § 28-BC 2512

2512.1 General.

Plastering with cement plaster shall not be less than three coats where applied over metal lath or wire fabric lath and not less than two coats where applied over masonry, concrete or gypsum board backing as specified in Section 2510.5. If the plaster surface is to be completely covered by veneer or other facing material, or is completely concealed by another wall, plaster application need be only two coats, provided the total thickness is as set forth in ASTM C 926.

2512.1.1 On-grade floor slab. On wood framed or steel stud construction with an on-grade concrete floor slab system, exterior plaster shall be applied in such a manner as to cover, but not to extend below, the lath and paper. The application of lath, paper and flashing or drip screeds shall comply with ASTM C 1063.

2512.1.2 Weep screeds. A minimum 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage), corrosion-resistant weep screed with a minimum vertical attachment flange of 3 1/2 inches (89 mm) shall be provided at or below the foundation plate line on exterior stud walls in accordance with ASTM C 926. The weep screed shall be placed a minimum of 4 inches (102 mm) above the earth or 2 inches (51 mm) above paved areas and be of a type that will allow trapped water to drain to the exterior of the building. The weather-resistant barrier shall lap the attachment flange. The exterior lath shall cover and terminate on the attachment flange of the weep screed.

2512.2 Plasticity agents. Only approved plasticity agents and approved amounts thereof shall be added to portland cement. When plastic cement or masonry cement is used, no additional lime or plasticizers shall be added. Hydrated lime or the equivalent amount of lime putty used as a plasticizer is permitted to be added to cement plaster or cement and lime plaster in an amount not to exceed that set forth in ASTM C 926.

2512.3 Limitations. Gypsum plaster shall not be used on exterior surfaces.

2512.4 Cement plaster. Plaster coats shall be protected from freezing for a period of not less than 24 hours after set has occurred. Plaster shall be applied when the ambient temperature is higher than 40(degrees)F (4(degrees)C), unless

provisions are made to keep cement plaster work above 40(degrees)F (4(degrees)C) during application and 48 hours thereafter.

2512.5Second-coat application.The second coat shall be brought out to proper thickness, rodded and floated sufficiently rough to provide adequate bond for the finish coat. The second coat shall have no variation greater than 1/4 inch (6.4 mm) in any direction under a 5-foot (1524 mm) straight edge.

2512.6Curing and interval.First and second coats of cement plaster shall be applied and moist cured as set forth in ASTM C 926 and Table 2512.6.Table 2512.6 Cement Plastersa Coat Minimum Period Moist Curing Minimum Interval Between Coats First48 hoursa 48 hoursb Second48 hours 7 daysc Finish- Note c a. The first two coats shall be as required for the first coats of exterior plaster, except that the moist-curing time period between the first and second coats shall not be less than 24 hours. Moist curing shall not be required where job and weather conditions are favorable to the retention of moisture in the cement plaster for the required time period.b. Twenty-four-hour minimum interval between coats of interior cement plaster. For alternate method of application, see Section 2512.8.c. Finish coat plaster is permitted to be applied to interior portland cement base coats after a 48-hour period.

2512.7Application to solid backings.Where applied over gypsum backing as specified in Section 2510.5 or directly to unit masonry surfaces, the second coat is permitted to be applied as soon as the first coat has attained sufficient hardness.

2512.8Alternate method of application.The second coat is permitted to be applied as soon as the first coat has attained sufficiently rigidity to receive the second coat.

2512.8.1Admixtures.When using this method of application, calcium aluminate cement up to 15 percent of the weight of the portland cement is permitted to be added to the mix.

2512.8.2Curing.Curing of the first coat is permitted to be omitted and the second coat shall be cured as set forth in ASTM C 926 and Table 2512.6.

2512.9Finish coats.Cement plaster finish coats shall be applied over base coats that have been in place for the time periods set forth in ASTM C 926. The third or finish coat shall be applied with sufficient material and pressure to bond and to cover the brown coat and shall be of sufficient thickness to conceal the brown coat.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 25: GYPSUM BOARD AND PLASTER
SECTION BC 2513: EXPOSED AGGREGATE PLASTER

NYC Administrative Code § 28-BC 2513

2513.1 General.

Exposed natural or integrally colored aggregate is permitted to be partially embedded in a natural or colored bedding coat of cement plaster or gypsum plaster, subject to the provisions of this section.

2513.2Aggregate. The aggregate shall be applied manually or mechanically and shall consist of marble chips, pebbles or similar durable, moderately hard (three or more on the Mohs hardness scale), nonreactive materials.

2513.3Bedding coat proportions. The bedding coat for interior or exterior surfaces shall be composed of one-part portland cement, one-part Type S lime and a maximum of three parts of graded white or natural sand by volume. The bedding coat for interior surfaces shall be composed of 100 pounds (45.4 kg) of neat gypsum plaster and a maximum of 200 pounds (90.8 kg) of graded white sand. A factory-prepared bedding coat for interior or exterior use is permitted. The bedding coat for exterior surfaces shall have a minimum compressive strength of 1,000 pounds per square inch (psi) (6895 kPa).

2513.4Application. The bedding coat is permitted to be applied directly over the first (scratch) coat of plaster, provided the ultimate overall thickness is a minimum of 7/8 inch (22 mm), including lath. Over concrete or masonry surfaces, the overall thickness shall be a minimum of 1/2 inch (12.7 mm).

2513.5Bases. Exposed aggregate plaster is permitted to be applied over concrete, masonry, cement plaster base coats or gypsum plaster base coats installed in accordance with Section 2511 or 2512.

2513.6Preparation of masonry and concrete. Masonry and concrete surfaces shall be prepared in accordance with the provisions of Section 2510.7.

2513.7Curing of base coats. Cement plaster base coats shall be cured in accordance with ASTM C926. Cement plaster bedding coats shall retain sufficient moisture for hydration (hardening) for 24 hours minimum or, where

necessary, shall be kept damp for 24 hours by light water spraying.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**

CHAPTER 7: THE NEW YORK CITY BUILDING CODE

Chapter 26: PLASTIC

SECTION BC 2601: GENERAL

NYC Administrative Code § 28-BC 2601

2601.1 Scope.

These provisions shall govern the materials, design, application, construction and installation of foam plastic, foam plastic insulation, plastic veneer, interior plastic finish and trim, and light-transmitting plastics. See Chapter 14 for requirements for exterior wall finish and trim.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 26: PLASTIC
SECTION BC 2602: DEFINITIONS

NYC Administrative Code § 28-BC 2602

2602.1 General.

The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

FOAM PLASTIC INSULATION. A plastic that is intentionally expanded by the use of a foaming agent to produce a reduced-density plastic containing voids consisting of open or closed cells distributed throughout the plastic for thermal insulating or acoustical purposes and that has a density less than 20 pounds per cubic foot (pcf) (320 kg/m3).

LIGHT-DIFFUSING SYSTEM. Construction consisting in whole or in part of lenses, panels, grids or baffles made with light-transmitting plastics positioned below independently mounted electrical light sources, skylights or light-transmitting plastic roof panels. Lenses, panels, grids and baffles that are part of an electrical fixture shall not be considered as a light-diffusing system.

LIGHT-TRANSMITTING PLASTIC ROOF PANELS. Structural plastic panels other than skylights that are fastened to structural members, or panels or sheathing, and that are used as light-transmitting media in the plane of the roof.

LIGHT-TRANSMITTING PLASTIC WALL PANELS. Plastic materials that are fastened to structural members, or to structural panels or sheathing, and that are used as light-transmitting media in exterior walls.

PLASTIC, APPROVED. Any thermoplastic, thermosetting or reinforced thermosetting plastic material that conforms to combustibility classifications specified in the section applicable to the application and plastic type.

PLASTIC GLAZING. Plastic materials that are glazed or set in frame or sash and not held by mechanical fasteners that pass through the glazing material.

REINFORCED PLASTIC, GLASS FIBER. Plastic reinforced with glass fiber having not less than 20 percent of

glass fibers by weight.

THERMOPLASTIC MATERIAL. A plastic material that is capable of being repeatedly softened by increase of temperature and hardened by decrease of temperature.

THERMOSETTING MATERIAL. A plastic material that is capable of being changed into a substantially nonreformable product when cured.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 26: PLASTIC
SECTION BC 2603: FOAM PLASTIC INSULATION

NYC Administrative Code § 28-BC 2603

2603.1 General.

The provisions of this section shall govern the requirements and uses of foam plastic insulation in buildings and structures.

2603.2 Labeling and identification. Packages and containers of foam plastic insulation and foam plastic insulation components delivered to the job site shall bear the label of an approved agency showing the manufacturer's name, the product listing, product identification and information sufficient to determine that the end use will comply with the code requirements.

2603.3 Surface-burning characteristics. Unless otherwise indicated in this section, foam plastic insulation and foam plastic cores of manufactured assemblies shall have a flame spread index of not more than 75 and a smoke-developed index of not more than 450 where tested in the maximum thickness intended for use in accordance with ASTM E 84. Loose fill-type foam plastic insulation shall be tested as board stock for the flame spread index and smoke-developed index.

Exceptions:

1. Foam plastic interior trim shall comply with the flame spread and smoke-developed indexes as provided for in Section 2604.2.
2. In cold storage buildings, ice plants, food plants, food processing rooms and similar areas, foam plastic insulation where tested in a thickness of 4 inches (102 mm) shall be permitted in a thickness up to 10 inches (254 mm) where the building is equipped throughout with an automatic fire sprinkler system in accordance with Section 903.3.1.1. The approved automatic sprinkler system shall be provided in both the room and that part of the building in which the room is located.

3. Foam plastic insulation that is a part of a Class A, B or C roof-covering assembly shall be exempt from the flame spread requirements of this section provided the assembly with the foam plastic insulation satisfactorily passes FM 4450 or UL 1256. The smoke-developed index shall not be limited for roof applications.

4. Foam plastic insulation greater than 4 inches (102 mm) in thickness shall have a maximum flame spread index of 75 and a smoke-developed index of 450 where tested at a minimum thickness of 4 inches (102 mm), provided the end use is approved in accordance with Section 2603.8 using the thickness and density intended for use.

5. Foam plastic interior signs in covered mall buildings shall not be required to comply with the flame spread and smoke-developed indexes of this section, provided the signs comply with Section 402.14.

2603.4 Thermal barrier. Except as provided for in Sections 2603.4.1 and 2603.8, foam plastic shall be separated from the interior of a building by an approved thermal barrier of 0.5-inch (12.7 mm) gypsum wallboard or equivalent thermal barrier material that will limit the average temperature rise of the unexposed surface to not more than 250(degrees)F (120(degrees)C) after 15 minutes of fire exposure, complying with the standard time-temperature curve of ASTM E 119. The thermal barrier shall be installed in such a manner that it will remain in place for 15 minutes based on FM 4880, UL 1040, NFPA 286 or UL 1715. Combustible concealed spaces shall comply with Section 717.

2603.4.1 Thermal barrier not required. The thermal barrier specified in Section 2603.4 is not required under the conditions set forth in Sections 2603.4.1.1 through 2603.4.1.13.

2603.4.1.1 Masonry or concrete construction. Foam plastic insulation in a masonry or concrete wall, floor or roof system shall be permitted without a thermal barrier provided that each face is covered by a minimum of 1 inch (25 mm) thickness of masonry or concrete.

2603.4.1.2 Cooler and freezer walls. Foam plastic installed in a maximum thickness of 10 inches (254 mm) in cooler and freezer walls shall be permitted without thermal barrier, provided that the walls:

1. Have a flame spread index of 25 or less and a smoke-developed index of not more than 450, where tested in a minimum 4-inch (102 mm) thickness.

2. Have flash ignition and self-ignition temperatures of not less than 600(degrees)F and 800(degrees)F (316(degrees)C and 427(degrees)C), respectively.

3. Have a covering of not less than 0.032-inch (0.8 mm) aluminum or corrosion-resistant steel having a base metal thickness not less than 0.0160 inch (0.4 mm) at any point.

4. Are protected by an automatic sprinkler system. Where the cooler or freezer is within a building, both the cooler or freezer and that part of the building in which it is located shall be sprinklered.

2603.4.1.3 Walk-in coolers. In nonsprinklered buildings, foam plastic having a thickness that does not exceed 4 inches (102 mm) and a maximum flame spread index of 75 is permitted without thermal barrier in walk-in coolers or freezer units where the aggregate floor area does not exceed 400 square feet (37 m²) and the foam plastic is covered by a metal facing not less than 0.032-inch-thick (0.81 mm) aluminum or corrosion-resistant steel having a minimum base metal thickness of 0.016 inch (0.41 mm). A thickness of up to 10 inches (254 mm) is permitted where protected by a thermal barrier.

2603.4.1.4 Exterior walls-one-story buildings. For one-story buildings, foam plastic having a flame spread index of 25 or less, and a smoke-developed index of not more than 450, shall be permitted without thermal barriers in or on exterior walls in a thickness not more than 4 inches (102 mm) where the foam plastic is covered by a thickness of not less than 0.032-inch-thick (0.81 mm) aluminum or corrosion-resistant steel having a base metal thickness of 0.0160 inch (0.41 mm) and the building is equipped throughout with an automatic sprinkler system in accordance with Section

903.3.1.1.

2603.4.1.5Roofing.In construction classes that permit wood sheathing, foam plastic insulation under a roof assembly or roof covering shall be permitted without a thermal barrier, provided that it is installed in accordance with the code and the manufacturer's instructions. It shall be separated from the interior of the building by wood structural panel sheathing not less than 0.47 inch (11.9 mm) in thickness bonded with exterior glue, with edges supported by blocking, tongue-and-groove joints or other approved type of edge support, or an equivalent material. A thermal barrier is not required for foam plastic insulation that is a part of a Class A, B or C roof-covering assembly, provided the assembly with the foam plastic insulation satisfactorily passes FM 4450 or UL 1256.

2603.4.1.6Attics and crawl spaces.Within an attic or crawl space where entry is made only for service of utilities, foam plastic insulation shall be permitted without thermal barrier if protected against ignition by 1.5-inch-thick (38 mm) mineral fiber insulation; 0.25-inch-thick (6.4 mm) wood structural panel, particleboard or hardboard; 0.375-inch (9.5 mm) gypsum wallboard, corrosion-resistant steel having a base metal thickness of 0.016 inch (0.4 mm) or other approved material installed in such a manner that the foam plastic insulation is not exposed. The protective covering shall be consistent with the requirements for the type of construction.

2603.4.1.7Doors not required to have a fire protection rating.Where pivoted or side-hinged doors are permitted without a fire protection rating, foam plastic insulation, having a flame spread index of 75 or less and a smoke-developed index of not more than 450, shall be permitted as a core material without a thermal barrier where the door facing is of metal having a minimum thickness of 0.032-inch (0.8 mm) aluminum or steel having a base metal thickness of not less than 0.016 inch (0.4 mm) at any point.

2603.4.1.8Exterior doors in buildings of Group R-2 or R-3.In occupancies classified as Group R-2 or R-3, foam-filled exterior entrance doors to individual dwelling units that do not require a fire-resistance rating shall be permitted without a thermal barrier, provided that the doors are faced with wood or other approved materials.

2603.4.1.9Garage doors.Where garage doors are permitted without a fire-resistance rating, foam plastic is permitted as a core material, provided that the door facing shall be metal having a minimum thickness of 0.032-inch (0.8 mm) aluminum or 0.010-inch (0.25 mm) steel or the facing shall be minimum 0.125-inch-thick (3.2 mm) wood. Garage doors having facings other than those described above shall be tested in accordance with, and meet the acceptance criteria of DASMA 107.

2603.4.1.9.1Garage doors in one- and two-family dwellings.Garage doors using foam plastic insulation complying with Section 2603.3 in detached and attached garages associated with one- and two-family dwellings need not be provided with a thermal barrier.

2603.4.1.10Siding backer board.Foam plastic insulation of not more than 2,000 British thermal units per square feet (Btu/sq. ft.) (22.7 MJ/m²) as determined by NFPA 259 shall be permitted as a siding backer board with a maximum thickness of 0.5 inch (12.7 mm) without a thermal barrier, provided it is separated from the interior of the building by not less than 2 inches (51 mm) of mineral fiber insulation or equivalent or where applied as insulation over existing wall construction.

2603.4.1.11Interior trim.Foam plastic used as interior trim in accordance with Section 2604 shall be permitted without a thermal barrier.

2603.4.1.12Interior signs.Foam plastic used for interior signs in covered mall buildings in accordance with Section 402.14 shall be permitted without a thermal barrier.

2603.4.1.13Type V construction.Foam plastic spray applied to a sill plate and header of Type V construction is permitted without a thermal barrier, subject to all of the following:

1. The maximum thickness of the foam plastic shall be 3 1/4 inches (82.6 mm).
2. The density of the foam plastic shall be in the range of 1.5 to 2.0 pcf (24 to 32 kg/m³).
3. The foam plastic shall have a flame spread index of 25 or less and an accompanying smoke-developed index of 450 or less when tested in accordance with ASTM E84.

2603.5 Exterior walls of buildings of any height. Exterior walls of buildings of Type I, II, III or IV construction of any height shall comply with 2603.5.1 through 2603.5.7. Exterior walls of cold storage buildings required to be constructed of noncombustible materials, where the building is more than one story in height, shall also comply with the provisions of Sections 2603.5.1 through 2603.5.7. Exterior walls of buildings of Type V construction shall comply with Sections 2603.2, 2603.3 and 2603.4.

2603.5.1 Fire-resistance-rated walls. Where the wall is required to have a fire-resistance rating, data based on tests conducted in accordance with ASTM E 119 shall be provided to substantiate that the fire-resistance rating is maintained.

2603.5.2 Reserved.

2603.5.3 Potential heat. The potential heat of foam plastic insulation in any portion of the wall or panel shall not exceed the potential heat expressed in Btu per square feet (mJ/m²) of the foam plastic insulation contained in the wall assembly tested in accordance with Section 2603.5.5. The potential heat of the foam plastic insulation shall be determined by tests conducted in accordance with NFPA 259 and the results shall be expressed in Btu per square feet (mJ/m²).

Exception: One-story buildings complying with Section 2603.4.1.4.

2603.5.4 Flame spread and smoke-developed indexes. Foam plastic insulation, exterior coatings and facings shall be tested separately in the thickness intended for use, but not to exceed 4 inches (102 mm), and shall each have a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E 84.

Exception: Prefabricated or factory-manufactured panels having minimum 0.020-inch (0.51 mm) aluminum facings and a total thickness of 0.25 inch (6.4 mm) or less are permitted to be tested as an assembly where the foam plastic core is not exposed in the course of construction.

2603.5.5 Test standard. The wall assembly shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.

Exception: One-story buildings complying with Section 2603.4.1.4.

2603.5.6 Label required. The edge or face of each piece of foam plastic insulation shall bear the label of an approved agency. The label shall contain the manufacturer's or distributor's identification, model number, serial number or definitive information describing the product or materials' performance characteristics and approved agency's identification.

2603.5.7 Ignition. Exterior walls shall not exhibit sustained flaming where tested in accordance with NFPA 268. Where a material is intended to be installed in more than one thickness, tests of the minimum and maximum thickness intended for use shall be performed.

Exception: Assemblies protected on the outside with one of the following:

1. A thermal barrier complying with Section 2603.4.

2. A minimum 1-inch (25 mm) thickness of concrete or masonry.
3. Glass-fiber-reinforced concrete panels of a minimum thickness of 0.375 inch (9.5 mm).
4. Metal-faced panels having minimum 0.019-inch-thick (0.48 mm) aluminum or 0.016-inch thick (0.41 mm) corrosion-resistant steel outer facings.
5. A minimum 0.875-inch (22.2 mm) thickness of stucco complying with Section 2510.

2603.6Roofing assembly.Foam plastic insulation meeting the requirements of Sections 2603.2, 2603.3 and 2603.4 shall be permitted as part of a roof-covering assembly, provided the assembly with the foam plastic insulation is a Class A, B or C roofing assembly where tested in accordance with ASTM E 108 or UL 790.

2603.7Plenums.Foam plastic insulation shall not be used as interior wall or ceiling finish in plenums except as permitted in Section 2604 or when protected by a thermal barrier in accordance with Section 2603.4.

2603.8Special approval.Foam plastic shall not be required to comply with the requirements of Sections 2603.4 through 2603.7, where specifically approved by the department based on large-scale tests such as, but not limited to, FM 4880, UL 1040, NFPA 286 or UL 1715. Such testing shall be related to the actual end-use configuration and be performed on the finished manufactured foam plastic assembly in the maximum thickness intended for use. Foam plastics that are used as interior finish on the basis of special tests shall also conform to the flame spread requirements of Chapter 8. Assemblies tested shall include seams, joints and other typical details used in the installation of the assembly and shall be tested in the manner intended for use.



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Chapter 26: PLASTIC
SECTION BC 2604: INTERIOR FINISH AND TRIM

NYC Administrative Code § 28-BC 2604

2604.1 General.

Plastic materials installed as interior finish or trim shall comply with Chapter 8. Foam plastics shall only be installed as interior finish where approved in accordance with the special provisions of Section 2603.8. Foam plastics that are used as interior finish shall also meet the flame spread index requirements for interior finish in accordance with Chapter 8. Foam plastics installed as interior trim shall comply with Section 2604.2.

2604.2 Foam plastic interior trim. Foam plastic used as interior trim shall comply with Sections 2604.2.1 through 2604.2.4.

2604.2.1 Density. The minimum density of the interior trim shall be 20 pcf (320 kg/m³).

2604.2.2 Thickness. The maximum thickness of the interior trim shall be 0.5 inch (12.7 mm) and the maximum width shall be 8 inches (204 mm).

2604.2.3 Area limitation. The interior trim shall not constitute more than 10 percent of the aggregate wall and ceiling area of any room or space.

2604.2.4 Flame spread. The flame spread index shall not exceed 75 where tested in accordance with ASTM E 84. The smoke-developed index shall not be limited.



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SECTION BC 2605: PLASTIC VENEER

NYC Administrative Code § 28-BC 2605

2605.1 Interior use.

Where used within a building, plastic veneer shall comply with the interior finish requirements of Chapter 8.

2605.2 Exterior use. Exterior plastic veneer shall be permitted to be installed on the exterior walls of buildings of any type of construction in accordance with all of the following requirements:

1. Plastic veneer shall comply with Section 2606.4.
2. Plastic veneer shall not be attached to any exterior wall to a height greater than 50 feet (15 240 mm) above grade.
3. Sections of plastic veneer shall not exceed 300 square feet (27.9 m²) in area and shall be separated by a minimum of 4 feet (1219 mm) vertically.

Exception: The area and separation requirements and the smoke-density limitation are not applicable to plastic veneer applied to buildings constructed of Type VB construction, provided the walls are not required to have a fire-resistance rating.



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Chapter 26: PLASTIC
SECTION BC 2606: LIGHT-TRANSMITTING PLASTICS

NYC Administrative Code § 28-BC 2606

2606.1 General.

The provisions of this section and Sections 2607 through 2611 shall govern the quality and methods of application of light-transmitting plastics for use as light-transmitting materials in buildings and structures. Foam plastics shall comply with Section 2603. Light-transmitting plastic materials that meet the other code requirements for walls and roofs shall be permitted to be used in accordance with the other applicable chapters of the code.

2606.2 Approval for use. Sufficient technical data shall be submitted to substantiate the proposed use of any light-transmitting material, as approved by the department and subject to the requirements of this section.

2606.3 Identification. Each unit or package of light-transmitting plastic shall be identified with a mark or decal satisfactory to the commissioner, which includes identification as to the material classification.

2606.4 Specifications. Light-transmitting plastics, including thermoplastic, thermosetting or reinforced thermosetting plastic material, shall have a self-ignition temperature of 650(degrees)F (343(degrees)C) or greater where tested in accordance with ASTM D 1929; a smoke-developed index not greater than 450 where tested in the manner intended for use in accordance with ASTM E 84, or not greater than 75 where tested in the thickness intended for use in accordance with ASTM D 2843 and shall conform to one of the following combustibility classifications:

Class CC1: Plastic materials that have a burning extent of 1 inch (25 mm) or less where tested at a nominal thickness of 0.060 inch (1.5 mm), or in the thickness intended for use, in accordance with ASTM D 635,

Class CC2: Plastic materials that have a burning rate of 2.5 inches per minute (1.06 mm/s) or less where tested at a nominal thickness of 0.060 inch (1.5 mm), or in the thickness intended for use, in accordance with ASTM D 635.

2606.5 Structural requirements. Light-transmitting plastic materials in their assembly shall be of adequate strength and durability to withstand the loads indicated in Chapter 16. Technical data shall be submitted to establish stresses,

maximum unsupported spans and such other information for the various thicknesses and forms used as deemed necessary by the department.

2606.6Fastening.Fastening shall be adequate to withstand the loads in Chapter 16. Proper allowance shall be made for expansion and contraction of light-transmitting plastic materials in accordance with accepted data on the coefficient of expansion of the material and other material in conjunction with which it is employed.

2606.7Light-diffusing systems.Light diffusing systems shall comply with Sections 2603.7.1 through 2603.7.6. Light-diffusing systems shall not be installed in the following occupancies and locations:

1. Any room in which the net floor area per occupant is 20 square feet (1.86 m²) or less, or any room leading therefrom through which it is necessary for occupants to pass in order to reach the only exit.
2. Group I-2.
3. Group I-3.
4. Exit stairways and exit passageways.

2606.7.1Support.Light-transmitting plastic diffusers shall be supported directly or indirectly from ceiling or roof construction by use of noncombustible hangers. Hangers shall be at least No. 12 steel-wire gage (0.106 inch) galvanized wire or equivalent.

Exception: Light-transmitting plastic diffusers used in suspended acoustical ceiling systems shall conform with the support requirements as set forth in Section 803.9.

2606.7.2Installation.Light-transmitting plastic diffusers shall comply with Chapter 8 unless the light-transmitting plastic diffusers will fall from the mountings before igniting, at an ambient temperature of at least 200(degrees)F (93(degrees)C) below the ignition temperature of the panels. The panels shall remain in place at an ambient room temperature of 175(degrees)F (79(degrees)C) for a period of not less than 15 minutes.

2606.7.3Size limitations.Individual panels or units shall not exceed 10 feet (3048 mm) in length nor 30 square feet (2.79 m²) in area.

2606.7.4Fire suppression system.In buildings that are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, plastic light-diffusing systems shall be protected both above and below unless the sprinkler system has been specifically approved for installation only above the light-diffusing system. Areas of light-diffusing systems that are protected in accordance with this section shall not be limited.

2606.7.5Electrical lighting fixtures.Light-transmitting plastic panels and light-diffuser panels that are installed in approved electrical lighting fixtures shall comply with the requirements of Chapter 8 unless the light-transmitting plastic panels conform to the requirements of Section 2606.7.2.

2606.8Partitions.Light-transmitting plastics used in or as partitions shall comply with the requirements of Chapters 6 and 8.

2606.9Bathroom accessories.Light-transmitting plastics shall be permitted as glazing in shower stalls, shower doors, bathtub enclosures and similar accessory units. Safety glazing shall be provided in accordance with Chapter 24.

2606.10Awnings, patio covers and similar structures.Awnings constructed of light-transmitting plastics shall be constructed in accordance with provisions specified in Section 3105 and Chapter 32 for projections and appendages. Patio covers constructed of light-transmitting plastics shall comply with Section 2606. Light-transmitting plastics used in canopies at motor fuel-dispensing facilities shall comply with Section 2606 except as modified by Section 406.5.2.

2606.11 Greenhouses. Light-transmitting plastics shall be permitted in lieu of plain glass in greenhouses.

2606.12 Solar collectors. Light-transmitting plastic covers on solar collectors having noncombustible sides and bottoms shall be permitted on buildings not over three stories in height or 9,000 square feet (836.1 m²) in total floor area, provided the light-transmitting plastic cover does not exceed 33.33 percent of the roof area for CC1 materials or 25 percent of the roof area for CC2 materials.

Exception: Light-transmitting plastic covers having a thickness of 0.010 inch (0.3 mm) or less shall be permitted to be of any plastic material provided the area of the solar collectors does not exceed 33.33 percent of the roof area.



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Chapter 26: PLASTIC
SECTION BC 2607: LIGHT-TRANSMITTING PLASTIC WALL PANELS

NYC Administrative Code § 28-BC 2607

2607.1 General.

Light-transmitting plastics shall be permitted to be used as wall panels in exterior walls, provided that the walls are not required to have a fire-resistance rating and the installation conforms to the requirements of this section. Such panels shall be erected and anchored on a foundation, waterproofed or otherwise protected from moisture absorption and sealed with a coat of mastic or other approved waterproof coating. Light-transmitting plastic wall panels shall also comply with Section 2606.

Exception: Light-transmitting plastics shall not be used as wall panels in exterior walls in occupancies in Groups A-1, A-2, H, I-2 and I-3.

2607.2 Installation. Exterior wall panels installed as provided for herein shall not alter the type of construction classification of the building.

2607.3 Height limitation. Light-transmitting plastics shall not be installed more than 75 feet (22 860 mm) above grade plane, except as allowed by Section 2607.5.

2607.4 Area limitation and separation. The maximum area of a single wall panel and minimum vertical and horizontal separation requirements for exterior light-transmitting plastic wall panels shall be as provided for in Table 2607.4. The maximum percentage of wall area of any story in light-transmitting plastic wall panels shall not exceed that indicated in Table 2607.4 or the percentage of unprotected openings permitted by Section 704.8, whichever is smaller.

Exceptions:

1. In structures provided with approved flame barriers extending 30 inches (760 mm) beyond the exterior wall in the plane of the floor, a vertical separation is not required at the floor except that provided by the vertical thickness of the flame barrier projection.

2. Veneers of approved weather-resistant light-transmitting plastics used as exterior siding in buildings of Type V construction in compliance with Section 1406.

3. The area of light-transmitting plastic wall panels in exterior walls of greenhouses shall be exempt from the area limitations of Table 2607.4 but shall be limited as required for unprotected openings in accordance with Section 704.8. [SEE graphical material in printed version]

2607.5 Automatic sprinkler system. Where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the maximum percentage area of exterior wall in any story in light-transmitting plastic wall panels and the maximum square footage of a single area given in Table 2607.4 shall be increased 100 percent, but the area of light-transmitting plastic wall panels shall not exceed 50 percent of the wall area in any story, or the area permitted by Section 704.8 for unprotected openings, whichever is smaller. These installations shall be exempt from height limitations.

2607.6 Combinations of glazing and wall panels. Combinations of light-transmitting plastic glazing and light-transmitting plastic wall panels shall be subject to the area, height and percentage limitations and the separation requirements applicable to the class of light-transmitting plastic as prescribed for light-transmitting plastic wall panel installations.



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Chapter 26: PLASTIC
SECTION BC 2608: LIGHT-TRANSMITTING PLASTIC GLAZING

NYC Administrative Code § 28-BC 2608

2608.1 Buildings of Type VB construction.

Openings in the exterior walls of buildings of Type VB construction, where not required to be protected by Section 704, shall be permitted to be glazed or equipped with light-transmitting plastic. Light-transmitting plastic glazing shall also comply with Section 2606.

2608.2 Buildings of other types of construction. Openings in the exterior walls of buildings of types of construction other than Type VB, where not required to be protected by Section 704, shall be permitted to be glazed or equipped with light-transmitting plastic in accordance with Section 2606 and all of the following:

1. The aggregate area of light-transmitting plastic glazing shall not exceed 25 percent of the area of any wall face of the story in which it is installed. The area of a single pane of glazing installed above the first story above grade plane shall not exceed 16 square feet (1.5 m²) and the vertical dimension of a single pane shall not exceed 4 feet (1219 mm).

Exception: Where an automatic sprinkler system is provided throughout in accordance with Section 903.3.1.1, the area of allowable glazing shall be increased to a maximum of 50 percent of the wall face of the story in which it is installed with no limit on the maximum dimension or area of a single pane of glazing.

2. Approved flame barriers extending 30 inches (762 mm) beyond the exterior wall in the plane of the floor, or approved vertical panels not less than 4 feet (1219 mm) in height, shall be installed between glazed units located in adjacent stories.

Exception: Approved vertical panels not less than 3 feet (914 mm) in height or flame barriers extending 30 inches (762 mm) beyond the exterior wall shall be installed between glazed units located in adjacent stories in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

3. Light-transmitting plastics shall not be installed more than 75 feet (22 860 mm) above grade level.

Exception: Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.



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SECTION BC 2609: LIGHT-TRANSMITTING PLASTIC ROOF PANELS

NYC Administrative Code § 28-BC 2609

2609.1 General.

Light-transmitting plastic roof panels shall comply with this section and Section 2606. Light-transmitting plastic roof panels shall not be installed in Groups H, I-2 and I-3. In all other groups, light-transmitting plastic roof panels shall comply with any one of the following conditions:

1. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. The roof construction is not required to have a fire-resistance rating by Table 601.
3. The roof panels meet the requirements for roof coverings in accordance with Chapter 15.

2609.2 Separation. Individual roof panels shall be separated from each other by a distance of not less than 4 feet (1219 mm) measured in a horizontal plane.

Exceptions:

1. The separation between roof panels is not required in a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. The separation between roof panels is not required in low-hazard occupancy buildings complying with the conditions of Section 2609.4, Exception 2 or 3.

2609.3 Location. Where exterior wall openings are required to be protected by Section 704.8, a roof panel shall not be installed within 6 feet (1829 mm) of such exterior wall.

2609.4 Area limitations. Roof panels shall be limited in area and the aggregate area of panels shall be limited by a percentage of the floor area of the room or space sheltered in accordance with Table 2609.4.

Exceptions:

1. The area limitations of Table 2609.4 shall be permitted to be increased by 100 percent in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

2. Low-hazard occupancy buildings, such as swimming pool shelters, shall be exempt from the area limitations of Table 2609.4, provided that the buildings do not exceed 5,000 square feet (465 m²) in area and have a minimum fire separation distance of 10 feet (3048 mm).

3. Greenhouses that are occupied for growing plants on a production or research basis, without public access, shall be exempt from the area limitations of Table 2609.4 provided they have a minimum fire separation distance of 4 feet (1219 mm).

4. Roof coverings over terraces and patios in Group R-3 occupancies shall be exempt from the area limitations of Table 2609.4.

Table 2609.4 Area Limitations for Light-Transmitting Plastic Roof Panels	Class of Plastic	Maximum Area of Individual Roof Panels (square feet)	Maximum Aggregate Area of Roof Panels (percent of floor area)
CC1	300		
30	CC2	100	25

For SI: 1 square foot = 0.0929 m².



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SECTION BC 2610: LIGHT-TRANSMITTING PLASTIC SKYLIGHT GLAZING

NYC Administrative Code § 28-BC 2610

2610.1 Light-transmitting plastic glazing of skylight assemblies.

Skylight assemblies glazed with light-transmitting plastic shall conform to the provisions of this section and Section 2606. Unit skylights glazed with light-transmitting plastic shall also comply with Section 2405.5.

Exception: Skylights in which the light-transmitting plastic conforms to the required roof-covering class in accordance with Section 1505.

2610.2 Mounting. The light-transmitting plastic shall be mounted above the plane of the roof on a curb constructed in accordance with the requirements for the type of construction classification, but at least 4 inches (102 mm) above the plane of the roof. Edges of light-transmitting plastic skylights or domes shall be protected by metal or other approved noncombustible material, or the light-transmitting plastic dome or skylight shall be shown to be able to resist ignition where exposed at the edge to a flame from a Class B brand as described in ASTM E 108 or UL 790.

Exceptions:

1. Curbs shall not be required for skylights used on roofs having a minimum slope of three units vertical in 12 units horizontal (25-percent slope) in occupancies in Group R-3 and on buildings with a nonclassified roof covering.

2. The metal or noncombustible edge material is not required where nonclassified roof coverings are permitted.

2610.3 Slope. Flat or corrugated light-transmitting plastic skylights shall slope at least four units vertical in 12 units horizontal (4:12). Dome-shaped skylights shall rise above the mounting flange a minimum distance equal to 10 percent of the maximum span of the dome but not less than 3 inches (76 mm).

Exception: Skylights that pass the Class B Burning Brand Test specified in ASTM E 108 or UL 790 shall have no minimum slope requirement.

2610.4Maximum area of skylights.Each skylight shall have a maximum area within the curb of 100 square feet (9.3 m²).

Exception: The area limitation shall not apply where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or the building is equipped with smoke and heat vents in accordance with Section 910.

2610.5Aggregate area of skylights.The aggregate area of skylights shall not exceed 331/3 percent of the floor area of the room or space sheltered by the roof in which such skylights are installed where Class CC1 materials are utilized, and 25 percent where Class CC2 materials are utilized.

Exception: The aggregate area limitations of light-transmitting plastic skylights shall be increased 100 percent beyond the limitations set forth in this section where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or the building is equipped with smoke and heat vents in accordance with Section 910.

2610.6Separation.Skylights shall be separated from each other by a distance of not less than 4 feet (1219 mm) measured in a horizontal plane.

Exceptions:

1. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. In Group R-3, multiple skylights located above the same room or space with a combined area not exceeding the limits set forth in Section 2610.4.

2610.7Location.Where exterior wall openings are required to be protected in accordance with Section 704, a skylight shall not be installed within 6 feet (1829 mm) of such exterior wall.

2610.8Combinations of roof panels and skylights.Combinations of light-transmitting plastic roof panels and skylights shall be subject to the area and percentage limitations and separation requirements of Section 2609 applicable to roof panel installations.



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SECTION BC 2611: LIGHT-TRANSMITTING PLASTIC INTERIOR SIGNS

NYC Administrative Code § 28-BC 2611

2611.1 General.

Light-transmitting plastic interior wall signs shall be limited as specified in Sections 2611.2 through 2611.4.
Light-transmitting plastic interior wall signs in covered mall buildings shall comply with Section 402.14.
Light-transmitting plastic interior signs shall also comply with Section 2606.

2611.2Aggregate area.The sign shall not exceed 20 percent of the wall area.

2611.3Maximum area.The sign shall not exceed 24 square feet (2.2 m2).

2611.4Encasement.Edges and backs of the sign shall be fully encased in metal.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE

Chapter 27: ELECTRICAL

SECTION BC 2701: GENERAL

NYC Administrative Code § 28-BC 2701

2701.1 Scope.

This chapter governs the electrical components, equipment and systems used in buildings and structures covered by this code. Electrical components, equipment and systems shall be designed and constructed in accordance with the provisions of the New York City Electrical Code.



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Chapter 27: ELECTRICAL
SECTION BC 2702: EMERGENCY POWER SYSTEMS

NYC Administrative Code § 28-BC 2702

2702.1 Installation.

Emergency systems shall be installed in accordance with the New York City Electrical Code, NFPA 110 and NFPA 111, and shall have an on-premises fuel supply sufficient for not less than 6-hour full-demand operation of the system. However, for R-2 occupancies required to provide emergency power systems pursuant to the provisions of Section 403.11.2, and for voluntarily installed emergency power systems, natural gas from the public utility street main shall be permitted as fuel supply.

2702.1.1 Stationary generators. Emergency power generators shall be listed in accordance with UL 2200.

2702.1.2 Capacity. The emergency power system shall have a capacity and rating that supplies all equipment required to be operational at the same time.

2702.2 Where required. Emergency power systems shall be provided where required by this section.

2702.2.1 Group A occupancies. Emergency power shall be provided for voice/alarm communication systems in Group A occupancies in accordance with Section 907.2.1.2.

2702.2.2 Smoke control systems. Emergency power shall be provided for smoke control systems in accordance with Section 909.11.

2702.2.3 Exit signs. Emergency power shall be provided for exit signs in accordance with Section 1011.5.3.

2702.2.4 Means of egress illumination. Emergency power shall be provided for means of egress illumination in accordance with Section 1006.3.

2702.2.5 Accessible means of egress elevators. Emergency power shall be provided for elevators that are part of an accessible means of egress in accordance with Section 1007.4

2702.2.6Horizontal sliding doors.Emergency power shall be provided for horizontal sliding doors in accordance with Section 1008.1.3.3

2702.2.7Semiconductor fabrication facilities.Emergency power shall be provided for semiconductor fabrication facilities in accordance with Section 415.9.10.

2702.2.8Membrane structures.Emergency power shall be provided for auxiliary inflation systems in accordance with Section 3102.8.2. Emergency power shall be provided for exit signs in tents and membrane structures.

2702.2.9Hazardous materials.Emergency power shall be provided in occupancies with hazardous materials in accordance with Section 414.5.4 and the New York City Fire Code.

2702.2.10Highly toxic and toxic materials.Emergency power shall be provided for occupancies with highly toxic or toxic materials in accordance with the New York City Fire Code.

2702.2.11Organic peroxides.Emergency power shall be provided for occupancies with organic peroxides in accordance with the New York City Fire Code.

2702.2.12Pyrophoric materials.Emergency power shall be provided for occupancies with silane gas in accordance with the New York City Fire Code.

2702.2.13Covered mall buildings.Emergency power shall be provided for voice/alarm communication systems in covered mall buildings in accordance with Section 402.12

2702.2.14High-rise buildings.Emergency power shall be provided in high-rise buildings in accordance with Section 403.11.

2702.2.15Underground buildings.Emergency power shall be provided in underground buildings in accordance with Section 405.10.

2702.2.16Group I-3 occupancies.Emergency power shall be provided for doors in Group I-3 occupancies in accordance with Section 408.4.2.

2702.2.17Reserved.

2702.2.18Elevators.Emergency power for elevators, including elevators provided to accommodate ambulance stretchers pursuant to Section 3002.4, shall be provided as set forth in Section 3003.1

2702.2.19Smokeproof enclosures and pressurized elevator shaft.Emergency power shall be provided for smoke-proof enclosures as required by Section 909.20 and for pressurized elevator shafts provided in accordance with Item 5 of Section 403.9.1.1.

2702.2.20Occupancy Groups B, E and R-1.An emergency power system shall be required in those Group B, E and R-1 occupancies specified in this section:

1. Group B occupancies with occupied floor less than 75 feet (22 860 mm) above the lowest fire department vehicle access having a gross floor area over 15,000 square feet (1,393.6 m²) per floor or a total gross floor area of 100,000 square feet (9,290.3 m²) or more.

2. Group E occupancies with occupied floor less than 75 feet (22 860 mm) above the lowest level of fire department vehicle access having a gross floor area over 15, 000 square feet (1,393.6 m²) per floor or a total gross floor area of 100,000 square feet (9,290.3 m²) or more.

3. All Group R-1 occupancies.

2702.2.20.1 Equipment requiring emergency power system. With respect to such occupancy Groups B, E and R-1, the following equipment, where such equipment is required by this code, shall be provided with an emergency power system:

1. Exit signs and means of egress illumination required by Chapter 10;
2. Elevator car lighting;
3. Emergency voice/alarm communications systems;
4. Automatic fire detection systems;
5. Fire alarm systems;
6. Electrically powered fire pumps;
7. Ventilating systems used for smoke venting or control;
8. Stair pressurization;
9. At least three elevators in a building at one time with manual transfer to other elevators as required by Section 3003.

2702.3 Maintenance. Emergency power systems shall be maintained and tested in accordance with the New York City Fire Code and New York City Electrical Code.



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Chapter 28: MECHANICAL SYSTEMS

SECTION BC 2801: GENERAL

NYC Administrative Code § 28-BC 2801

2801.1 Scope.

Mechanical appliances, equipment and systems shall be constructed, installed and maintained in accordance with the New York City Mechanical Code and the New York City Fuel Gas Code. Masonry chimneys, fireplaces and barbecues shall comply with the New York City Mechanical Code and Chapter 21 of this code.



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Chapter 29: PLUMBING SYSTEMS

SECTION BC 2901: GENERAL

NYC Administrative Code § 28-BC 2901

2901.1 Scope.

The provisions of this chapter and the New York City Plumbing Code shall govern the erection, installation, alteration, repairs, relocation, replacement, addition to, use or maintenance of plumbing equipment and systems. Plumbing systems and equipment shall be constructed, installed and maintained in accordance with the New York City Plumbing Code.



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Chapter 30: ELEVATORS AND CONVEYING SYSTEMS
SECTION BC 3001: GENERAL

NYC Administrative Code § 28-BC 3001

3001.1 Scope.

This chapter establishes the minimum safety requirements for, and governs the design, construction, installation, alteration, maintenance, inspection, test and operation of, elevators, dumbwaiters, escalators, moving walks, industrial lifts and loading ramps, mechanical parking equipment, console or stage lifts, power operated scaffolds, amusement devices, and special hoisting and conveying equipment. This chapter and all the provisions of this code for new installations shall also apply to elevators in existing buildings moved to new hoistways.

High-rise buildings elevators shall also conform to the provisions of Section 403 of this code.

Exception: Personnel and material hoists used for construction operations subject to the requirements of Chapter 33.

3001.2 Referenced standards. Except as otherwise provided for in this code, the design, construction, installation, alteration, repair and maintenance of elevators and other conveying systems and their components shall conform to ASME A17.1 as modified by Appendix K, ASME A17.2, ASME A18.1, ASME A17.5, ANSI A10.5, ASME QE1-1, ASME A90.1, ASME B20.1 as modified by Appendix K, ALI ALCTV, and for construction in areas of special flood hazard, Appendix G.

3001.3 Accessibility. Passenger elevators required to be accessible by Chapter 11 shall conform to ICC A117.1.

3001.4 Change in use. A change in use of an elevator from freight to passenger, passenger to freight, or from one freight class to another freight class shall comply with Section 8.7 of ASME A17.1.

3001.5 Piping or ductwork. No piping or ductwork of any kind shall be permitted within hoistway or elevator enclosures except:

1. As required for the elevator installation; and

2. Low voltage wiring less than 50 volts required for fire alarm systems required by this code.

3001.6Elevator mirrors.A mirror shall be installed in each self-service passenger elevator in in multiple dwellings. Such mirror shall be affixed and maintained in a manner sufficient to enable persons entering such elevator to view the inside thereof prior to entry to determine whether any person is in the elevator.

3001.7Car switch operation.Elevators with car switch operation (manual operation) shall be provided with a signal system by means of which signals can be given from any landing whenever the elevator is desired at that landing.

3001.8Prohibited devices.The following devices shall be prohibited:

3001.8.1Manlifts.The installation of manlifts is prohibited.

3001.8.2Sidewalk elevators.The installation of sidewalk elevators located outside the street line is prohibited

3001.9Approved equipment.Buffers, interlocks, elevator entrances, wedge shackles, and elevator governors shall be approved by the commissioner.

3001.10Construction documents.Applications for elevator, escalator, moving walkway and stairway, dumbwaiter, and similar equipment shall contain construction documents that include the following:

1. The location of all machinery, switchboards, junction boxes, and reaction points, with loads indicated;
2. The details of all hoistway conditions including bracket spacing;
3. The estimated maximum vertical forces on the guide rails on application of the safety device;
4. In the case of freight elevators for class B or C loading, the horizontal forces on the guide-rail faces during loading and unloading; and the estimated maximum horizontal forces in a postwise direction on the guide-rail faces on application of the safety device;
5. The size and weight per foot of any rail reinforcements where provided;
6. Compliance with the accessibility features of this code;
7. The details of capability of the withstanding forces (impact) on door entrance assembly and retaining devices;
8. The withstanding hourly fire rating of the hoistway and the hoistway door assembly;
9. The impact loads imposed on machinery and sheave beams, supports and floors or foundations;
10. The impact load on buffer supports due to buffer engagement at the maximum permissible speed and load;
11. Where compensation tie down is applied, the load on the compensation tie down supports; and
12. The total static and dynamic loads from the governor, buffer and tension system.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

3001.9 amended L.L. 8/2008 § 163, eff. July 1, 2008.

3001.10 item 12 amended L.L. 8/2008 § 164, eff. July 1, 2008.



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SECTION BC 3002: HOISTWAY ENCLOSURES

NYC Administrative Code § 28-BC 3002

3002.1 Hoistway enclosure protection.

Elevator, dumbwaiter and other hoistway enclosures shall have a fire-resistance rating not less than that specified in Chapter 6 and shall be constructed in accordance with Chapter 7.

3002.1.1 Opening protectives. Openings in hoistway enclosures shall be protected as required in Chapter 7.

3002.1.2 Hardware. Hardware on opening protectives shall be of an approved type installed as tested, except that approved interlocks, mechanical locks and electric contacts, door and gate electric contacts and door-operating mechanisms shall be exempt from the fire test requirements.

3002.2 Number of elevator cars in a hoistway. Where four or more elevator cars serve all or the same portion of a building, the elevators shall be located in at least two separate hoistways. Not more than four elevator cars shall be located in any single hoistway enclosure. Elevators that service different risers shall be located in separate hoistways.

3002.3 Emergency signs. An approved pictorial sign of a standardized design shall be posted adjacent to each elevator call station on all floors instructing occupants to use the exit stairways and not to use the elevators in case of fire. The sign shall read: IN FIRE EMERGENCY, DO NOT USE ELEVATOR. USE EXIT STAIRS. The emergency sign shall not be required for elevators that are part of an accessible means of egress complying with 1007.4.

3002.4 Elevator car to accommodate ambulance stretcher. In buildings five stories in height or more, at least one elevator shall be provided for Fire Department emergency access to all floors. Emergency power shall be provided in accordance with Sections 2702 and 3003. Such elevator car shall be of such a size and arrangement to accommodate a 24-inch by 76-inch (610 mm by 1930 mm) ambulance stretcher in the horizontal, open position and shall be identified by the international symbol for emergency medical services (star of life). The symbol shall not be less than 3 inches (76 mm) high and shall be placed on both jambs of the hoistway entrances on each floor.

NYC Administrative Code § 28-BC 3002

3002.5Emergency doors.Where an elevator is installed in a single blind hoistway or on the outside of a building, there shall be installed in the blind portion of the hoistway or blank face of the building, an emergency door in accordance with ASME A17.1.

3002.6Reserved.

3002.7Common enclosure with stairway.Elevators shall not be in a common shaft enclosure with a stairway.



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SECTION BC 3003: ELEVATOR EMERGENCY OPERATIONS

NYC Administrative Code § 28-BC 3003

3003.1 Emergency power.

In buildings and structures where emergency power is required or furnished to operate an elevator, the operation shall be in accordance with Sections 3003.1.1 through 3003.1.4.

3003.1.1 Manual transfer. Emergency power shall be manually transferable to all elevators in each bank.

3003.1.2 One elevator. Where only one elevator is installed, the elevator shall automatically transfer to emergency power within 60 seconds after failure of normal power.

3003.1.3 Two or more elevators. Where two or more elevators are controlled by a common operating system, all elevators shall automatically transfer to emergency power within 60 seconds after failure of normal power where the emergency power source is of sufficient capacity to operate all elevators at the same time. Where the emergency power source is not of sufficient capacity to operate all elevators at the same time, all elevators shall transfer to emergency power in sequence, return to the designated landing and disconnect from the emergency power source. After all elevators have been returned to the designated level, at least three elevators shall remain operable from the emergency power source.

3003.1.4 Venting. Where emergency power is connected to elevators, the machine room ventilation or air conditioning shall be connected to the emergency power source.

3003.2 Fire fighters' emergency operation. Elevators shall be provided with Phase I emergency recall operation and Phase II emergency in-car operation in accordance with ASME A17.1 as modified by Appendix K.

3003.3 Elevator in readiness. Requirements for elevator in readiness shall be as defined in Sections 3003.3.1 through 3003.3.2 .

3003.3.1 High-rise buildings. Except as provided in Section 3003.3.2, in high-rise buildings as defined in Section

403, all floors shall be served by at least one elevator that shall be kept available for immediate use by the Fire Department during all hours of the night and day, including holidays, Saturdays and Sundays. There shall be available at all times a person competent to operate the elevator. However, an attendant shall not be required for buildings with occupied floors of 150 feet (45 720 mm) or less above the lowest level of the fire department vehicle access that have elevators with automatic or continuous pressure operation with keyed switches meeting the requirements of ASME A17.1 as modified by Appendix K so as to permit sole use of the elevators by the Fire Department.

3003.3.2Number of Elevators.A number of elevators shall be kept available at every floor for the sole use of the Fire Department as required by Section 3003.3.2.1 and Section 3003.3.2.2. This requirement shall apply to the following types of buildings:

1. High-rise buildings with occupancies classified in Groups A, B, E, I, F, H, M and S;
2. Buildings with Group B occupancies with a gross area of 200, 000 square feet (18 581 m2);
3. Buildings with a main use or dominant occupancy in Group R-1 or R-2.

3003.3.2.1Three or fewer elevators.Where a floor is serviced by three or fewer elevator cars, every car shall be kept available for sole use by the Fire Department.

3003.3.2.2More than three elevators.Where a floor is serviced by more than three elevator cars, at least three elevator cars with a total rated load capacity of not less than 6,000 pounds (2722 kg) shall be kept available for sole use by the Fire Department. Such cars shall include not more than two cars that service all floors and at least one other car in another bank servicing that floor. If the total load capacity of all cars servicing the floor is less than 6,000 pounds (2722 kg), all such cars shall be kept available for sole use by the Fire Department.

3003.3.3Operation and control.Elevators that are kept for the sole use of the Fire Department and that have automatic or continuous pressure operation shall be controlled by keyed switches meeting the requirements of ASME 17.1.

3003.3.4Other elevator cars.In high rise buildings classified in occupancy groups A, B, E, F, H, I, M and S, in low-rise buildings classified in occupancy group B with a gross area of 200,000 square feet (18 581 m2) or more and in buildings classified in occupancy group R-1 or R-2, all other automatically operated cars shall have manual operation capability.



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SECTION BC 3004: HOISTWAY VENTING

NYC Administrative Code § 28-BC 3004

3004.1 Reserved.

3004.2 Reserved.

3004.3 Reserved.

3004.4 Reserved.

3004.5 Plumbing and mechanical systems. Plumbing and mechanical systems shall not be located in an elevator shaft.

Exception: Floor drains sumps and sump pumps shall be permitted at the base of the shaft provided they are indirectly connected to the plumbing system.

3004.6 Control of smoke and hot gases. Hoistways of elevators shall be provided with any one of the following means to prevent the accumulation of smoke and hot gases in case of fire in accordance with Sections 3004.6.1 through 3004.6.4.

3004.6.1 Vents in the hoistway enclosures. Hoistway enclosures may be vented in accordance with the following:

1. Location of vents:

1.1. The vents in the side of the hoistway enclosure below the elevator machine room floor or in the roof of the hoistway shall open either directly to the outer air or through non-combustible ducts to the outer air.

1.2. The vents in the wall or roof of an overhead elevator machine room through the smoke hole in the top of the elevator hoistway shall be vented to the outer air through non-combustible ducts.

2. Area of vents. The area of vents in the hoistway or the elevator machine room and the smoke hole shall be not less than 3 1/2 percent of the area of the hoistway nor less than 3 square feet (0.28 m²) for each elevator car, whichever is greater. Such vents shall comply with the following requirements:

2.1. Open Vents. Of the total required vent area, not less than one-third shall be permanently open or equipped with an openable hinged damper. The smoke hole shall be permanently open.

2.2. Closed Vents. The two-thirds closed portion of the required vent area either in the hoistway enclosure or in the elevator machine room may consist of windows or skylights glazed with annealed glass not more than 1/8-inch (3.2 mm) thick. A closed damper that opens upon the activation of a smoke detector placed at the top of the hoistway shall be considered closed.

3004.6.2 Mechanical ventilation of the hoistway enclosure. Hoistway enclosures may be mechanically vented. The system of mechanical ventilation shall be of sufficient capacity to exhaust at least 12 air changes per hour of the volume of such hoistways through a roof or an approved location on an exterior wall other than the lot line wall. Such system shall comply with the following requirements:

1. The smoke detector shall be placed at the top of the hoistway and shall activate the mechanical ventilation system.

2. Such mechanical ventilation system shall not pass through the overnight sleeping areas of a hotel, multiple dwelling, hospital, or similar buildings.

3. Such mechanical ventilation system shall be equipped with a manual shut-off in or near the elevator control panel at the designated level.

3004.6.3 Air pressurization of hoistway enclosure. Hoistways may be air pressurized. Where such system is utilized, the air shall not cause erratic operation of the landing or car door equipment, traveling cables, selector tapes, governor ropes, compensating ropes, or any other components sensitive to excess movement or deflection.

3004.6.4 Alternate means. The commissioner may accept alternate means to prevent the accumulation of smoke and hot gases in the hoistways and machine rooms in case of fire.



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SECTION BC 3005: CONVEYING SYSTEMS

NYC Administrative Code § 28-BC 3005

3005.1 General.

Conveying systems shall comply with the provisions of this section.

3005.2 Escalators and moving walks. Escalators and moving walks shall be constructed of approved noncombustible and fire-retardant materials. This requirement shall not apply to electrical equipment, wiring, wheels, handrails and the use of 1/28-inch (0.9 mm) wood veneers on balustrades backed up with noncombustible materials.

3005.2.1 Enclosure. Escalator floor openings shall be enclosed except where Exception 2 of Section 707.2 is satisfied.

3005.2.2 Escalators. Where provided in below-grade transportation stations, escalators shall have a clear width of 32 inches (813 mm) minimum.

Exception: The clear width is not required in existing facilities undergoing alterations.

3005.3 Conveyors. Conveyors and related equipment shall comply with ASME B20.1.

3005.3.1 Enclosure. Conveyors and related equipment connecting successive floors or levels shall be enclosed with fire barrier walls and approved opening protectives complying with the requirements of Section 3002 and Chapter 7.

3005.3.2 Conveyor safeties. Power-operated conveyors, belts, and other material-moving devices shall be equipped with automatic limit switches, which will shut off the power in an emergency and automatically stop all operation of the device.

3005.4 Reserved.

3005.5 Amusement devices. Amusement devices shall also comply with rules of the department.



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SECTION BC 3006: MACHINE ROOMS

NYC Administrative Code § 28-BC 3006

3006.1 Access.

An approved means of access shall be provided to elevator machine rooms and overhead machinery spaces.

3006.2Venting.Elevator machine rooms that contain solid-state equipment for elevator operation shall be provided with an independent ventilation or air-conditioning system to protect against the overheating of the electrical equipment. The system shall be capable of maintaining temperatures within the range established for the elevator equipment.

3006.3Pressurization.The elevator machine room serving a pressurized elevator hoistway shall be pressurized upon activation of a heat or smoke detector located in the elevator machine room.

3006.4Machine rooms and machinery spaces.Elevator machine rooms and machinery spaces shall be enclosed with construction having a fire-resistance rating not less than the required rating of the hoistway enclosure served by the machinery. Openings shall be protected with assemblies having a fire-resistance rating not less than that required for the hoistway enclosure doors.

3006.5Sprinklers prohibited.Sprinklers are not permitted in elevator machine rooms.

3005.6Plumbing systems.Plumbing systems not related to elevator machinery shall not be located in elevator equipment rooms.

3006.7Elevator machinery noise control in multiple dwellings.Gear-driven machinery, gearless machinery, and motor generators located in an elevator machinery room or shaft on a roof, or on a floor other than a floor on grade, shall be supported on vibration isolator pads having a minimum thickness of 1/2 inch (12.7 mm).



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SECTION BC 3007: SERVICE EQUIPMENT CERTIFICATES

NYC Administrative Code § 28-BC 3007

3007.1 Required.

No service equipment shall be placed in operation until a service equipment certificate of compliance has been obtained in accordance with the provisions of this code.

3007.2 Posting of inspection certificate. At the time a service equipment certificate of compliance is issued, an inspection certificate issued by the commissioner shall be posted. No such inspection certificate shall be issued for elevators that are not subject to periodic inspections pursuant to this code. The inspection certificate shall be in such form as the commissioner shall determine by rule and shall be posted in a frame with a transparent cover in the car of every passenger and freight elevator and on or near every escalator and moving walk and power operated scaffold.

3007.2.1 Alternate posting locations. In lieu of posting the inspection certificate in those locations specified in this section, the inspection certificate may be kept in the on-site building manager's office. In such case, the building manager's office must be open during normal business hours. In addition, notice must be posted in each location and kept in a frame with a transparent cover, or a plaque with an indelible inscription, stating that the inspection certificate is located in the building manager's office and identifying the location of such office.

3007.3 Temporary use certificates. The commissioner may issue temporary use certificates for any equipment or device regulated by this code, except power-operated scaffolds, provided that such partial use and operation may be made safely and without endangering public health, safety, and welfare and provided further that such temporary use certificate shall not be issued for a period of more than thirty calendar days, subject to renewal for additional thirty-day periods at the discretion of the commissioner. Temporary use certificates for elevators shall also be conditioned upon compliance with the following:

1. The class of service to be permitted shall be designated on the temporary use certificate.
2. The hoistway shall be enclosed throughout in an enclosure complying with ASME 17.1 or with a temporary

enclosure in accordance with the requirements for workers' elevators (temporary elevators) of the Industrial Code of the State of New York, No. 23.

3007.3.1 Posting of temporary use certificate. The temporary use certificate shall be posted in a conspicuous location on, or adjacent to, the device covered by the certificate and shall state that the device has not been finally approved by the commissioner.



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SECTION BC 3008: ELEVATOR, AMUSEMENT, AND OTHER DEVICE OPERATORS

NYC Administrative Code § 28-BC 3008

3008.1 Elevator operators.

With the exception of automatic operation, continuous pressure elevators and sidewalk elevators, every passenger and freight elevator with a rise of more than one story shall be in the charge of a designated competent operator, who shall be at least 18 years old, free from serious physical or mental defects, and selected with consideration of his or her abilities to perform his or her duties in a careful and competent manner. Such designated competent operator shall be instructed in accordance with requirements of department rules.

3008.2Amusement device operators.Operators of amusement devices shall meet the requirements of rules of the department.

3008.3Other device operators.Other devices regulated by this code shall, when deemed necessary by the commissioner to protect public safety, be in the charge of a designated competent operator conforming to such qualifications as the commissioner may prescribe, except that operators for workers' hoists shall be assigned as required by the applicable provisions of ASME 10.4

3008.4Sanction for unlawful operation.If the commissioner finds that any person engaged in operating an elevator, amusement, or other device is not competent to operate the elevator, amusement or other device, the owner, agent or lessee of such elevator, amusement, or other device shall, upon notice from the commissioner, discontinue the operation of such device by such operator.



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SECTION BC 3009: ELEVATOR BEING SERVICED

NYC Administrative Code § 28-BC 3009

3009.1 Signage.

When an existing or new automatic passenger elevator in any building or structure is being serviced by an elevator maintenance company, elevator maintenance personnel, or other person and there are no maintenance personnel available to remain in the elevator car, "CAUTION" sign tapes shall be placed across the car door jamb. One strip of "CAUTION" sign tape shall be placed at a height of 18 inches (457 mm) above the car floor and another strip of "CAUTION" sign tape shall be placed at a height of 54 inches (1372 mm) above the car floor.

3009.1.1 Sign tape. The "CAUTION" sign tape shall be 3 inches (76 mm) in width with the words "CAUTION - DO NOT ENTER" repeated every 6 inches (152 mm). The lettering shall be black on yellow background. The letters shall be at least 2 inches (51 mm) high.



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Chapter 3: USE AND OCCUPANCY CLASSIFICATION
SECTION BC 301: GENERAL

NYC Administrative Code § 28-BC 301

301.1 Scope.

The provisions of this chapter shall control the classification of all buildings and structures, and spaces therein, as to use and occupancy.



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SECTION BC 3010: ACCIDENTS

NYC Administrative Code § 28-BC 3010

3010.1 Accidents.

The owner of any device regulated by this chapter shall promptly notify the commissioner of every accident involving injury to any person requiring the services of a physician or damage to property or to apparatus exceeding one thousand dollars on, about, or in connection with such equipment, before commencing any repairs and shall afford the commissioner every facility for investigating such accident or damage. The commissioner shall make an investigation immediately thereafter, and shall prepare a full and complete report of such investigation. Such report shall give in detail all material facts and information available and the cause or causes as far as they can be determined. Such report shall be a public record. When an accident involves the failure or destruction of any part of the construction or operating mechanism of such equipment, no such equipment shall be used until it has been made safe, and re-inspected by the commissioner; and the commissioner may order the discontinuance of such equipment until a new service equipment certificate has been issued by him or her for its use. No part shall be removed from the premises of the damaged construction or operating mechanism until permission to do so has been granted by the commissioner.



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SECTION BC 3011: EXISTING INSTALLATIONS

NYC Administrative Code § 28-BC 3011

3011.1 General.

Existing installations shall be modified in accordance with department rules.



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SECTION BC 3012: INSPECTION AND TESTING

NYC Administrative Code § 28-BC 3012

3012.1 Elevators and Conveying Systems.

Inspection and testing of elevators and conveying systems shall be in accordance with Appendix K. Refer to Chapter 3 of Title 28 of the Administrative Code for additional requirements.

3012.2 Amusement devices. Inspection and testing of amusement devices shall comply with rules of the department. Refer to Chapter 3 of Title 28 of the Administrative Code for additional requirements.



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SECTION BC 302: CLASSIFICATION

NYC Administrative Code § 28-BC 302

302.1 General.

Structures or portions of structures shall be classified with respect to occupancy in one or more of the groups listed below. Structures with multiple uses shall be classified according to Section 302.3. Where a structure, or portion thereof, is proposed for a purpose which is not specifically provided for in this code, such structure, or portion thereof shall be classified in the group which the occupancy most nearly resembles, according to the fire safety and relative hazard involved, and as approved by the commissioner.

1. Assembly (see Section 303): Groups A-1, A-2, A-3, A-4 and A-5
2. Business (see Section 304): Group B
3. Educational (see Section 305): Group E
4. Factory and Industrial (see Section 306): Groups F-1 and F-2
5. High Hazard (see Section 307): Groups H-1, H-2, H-3, H-4 and H-5
6. Institutional (see Section 308): Groups I-1, I-2, I-3 and I-4
7. Mercantile (see Section 309): Group M
8. Residential (see Section 310): Groups R-1, R-2 and R-3
9. Storage (see Section 311): Groups S-1 and S-2
10. Utility and Miscellaneous (see Section 312): Group U

For a listing of Occupancy Group Classifications that corresponds with uses listed in the Zoning Resolution, refer to department rules.

302.1.1 Incidental use areas and mixed occupancies including accessory occupancies. Structures with multiple occupancies or uses shall comply with Section 508.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

302.1.1 repealed and added L.L. 8/2008 § 72, eff. July 1, 2008.

302.1.1 Table repealed L.L. 8/2008 § 72, eff. July 1, 2008.

302.1.1.1 repealed L.L. 8/2008 § 72, eff. July 1, 2008.

302.2 repealed L.L. 8/2008 § 73, eff. July 1, 2008.

302.2.1 repealed L.L. 8/2008 § 73, eff. July 1, 2008.

302.3 repealed L.L. 8/2008 § 73, eff. July 1, 2008.

302.3.1 repealed L.L. 8/2008 § 73, eff. July 1, 2008.

302.3.2 repealed L.L. 8/2008 § 73, eff. July 1, 2008.

302.4 repealed L.L. 8/2008 § 73, eff. July 1, 2008.

302.5 repealed L.L. 8/2008 § 73, eff. July 1, 2008.



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SECTION BC 303: ASSEMBLY GROUP A

NYC Administrative Code § 28-BC 303

303.1 Assembly Group A.

Assembly Group A occupancy includes, among others, the use of a building or structure or a portion thereof, excluding a dwelling unit, for the gathering together of any number of persons for purposes such as civic, social or religious functions, recreation, food or drink consumption, awaiting transportation, or similar group activities; or when occupied by 75 persons or more for educational or instructional purposes.

Exceptions:

1. A room or space used for assembly purposes by fewer than 75 persons and accessory to another occupancy shall be included as a part of that occupancy
2. A building or non-accessory tenant space used for assembly purposes by fewer than 75 persons shall be considered a Group B occupancy.

Assembly occupancies shall include the following:

A-1 Assembly uses, usually with fixed seating, intended for the production and viewing of the performing arts or motion pictures including, but not limited to:

Motion picture theaters

Symphony and concert halls

Television and radio studios admitting an audience

Theaters

A-2 Assembly uses intended for food and/or drink consumption including, but not limited to:

Banquet halls

Cabarets

Cafeterias, except as provided for in A-3

Dance halls

Night clubs

Restaurants

Taverns and bars

A-3 Assembly uses intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A including, but not limited to:

Amusement arcades

Art galleries

Bowling alleys

Cafeterias for children up to and including the 12th grade

Classrooms and instructional rooms with 75 persons or more; such rooms with fewer than 75 persons shall be classified as Group B or E

Community halls

Courtrooms

Custodial care facilities with 75 or more persons, providing care to persons over the age of 2, where no more than four occupants are incapable of responding to an emergency situation without physical assistance from staff

Dance studio or instruction (not including food or drink consumption)

Exhibition halls

Funeral parlors

Gymnasiums (without spectator seating)

Houses of worship

Indoor swimming pools (without spectator seating)

Indoor tennis courts (without spectator seating)

Lecture halls

Museums

Waiting areas in transportation terminals

Pool and billiard parlors

School auditoriums

A-4 Assembly uses intended for viewing of indoor sporting events and activities with spectator seating including, but not limited to:

Arenas

Skating rinks

Swimming pools

Tennis courts

A-5 Assembly uses intended for participation in or viewing outdoor activities including, but not limited to:

Amusement park structures

Bleachers

Grandstands

Stadiums

303.2 Certificate of Operation. A Certificate of Operation shall be required, as per Section 28-117.1, for the following places of assembly:

1. Indoor places of assembly used or intended for use by 75 persons or more, including open spaces at 20 feet (6096 mm) or more above or below grade, such as roofs or roof terraces.

2. Outdoor places of assembly used and intended for use by 200 persons or more.



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SECTION BC 304: BUSINESS GROUP B

NYC Administrative Code § 28-BC 304

304.1 Business Group B.

Business Group B occupancy includes, among others, the use of a building or structure, or a portion thereof, for office, professional, service-type transactions, or for conducting public or civic services, including the incidental storage of records and accounts and the incidental storage of limited quantities of stocks of goods for office use or purposes. Business Group B occupancies shall include, but not be limited to, the following:

Airport traffic control towers

Animal hospitals, kennels and pounds

Banks

Barber and beauty shops

Civic administration offices

Clinic-outpatient, including group medical centers, and neighborhood family care centers

Custodial care facilities with fewer than 75 persons, providing care to persons over the age of 2, where no more than four occupants are incapable of responding to an emergency situation without physical assistance from staff

Dry cleaning and laundries; pick-up and delivery stations and self-service

Educational occupancies above the 12th grade, where not classified in Group A. Such occupancy may be used occasionally for educational purposes offered to children through the 12th grade

Electronic data processing

Laboratories; non-production testing and research, as per Section 419

Libraries when not classified in Group E

Motor vehicle showrooms

Offices

Post offices

Photocopying and printing shops using electronic printing equipment

Professional services (architects, attorneys, dentists, physicians, engineers, etc.)

Radio and television stations not admitting an audience

Telephone exchanges



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SECTION BC 305: EDUCATIONAL GROUP E

NYC Administrative Code § 28-BC 305

305.1 Educational Group E.

Educational Group E occupancy includes, among others, the use of a building or structure, or a portion thereof, by five or more persons at any one time for educational purposes offered to children through the 12th grade and where no more than two children are under the age of 2, including but not limited to, the following:

Academies

Day care facilities where no more than two children are under the age of 2

Libraries accessory to Group E occupancies

Schools

Exceptions:

1. Classrooms and instructional rooms with 75 or more persons shall be classified as Group A-3.

2. Day care services provided within a dwelling unit as described in Section 310.

3. Custodial care facilities with up to 30 children under the age of 2 are permitted to be classified as Group E when the rooms where such children are cared for are located on the level of exit discharge and each of these child care rooms has an exit door directly to the exterior.

305.2Reserved.



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SECTION BC 306: FACTORY GROUP F

NYC Administrative Code § 28-BC 306

306.1 Factory Industrial Group F.

Factory Industrial Group F occupancy includes, among others, the use of a building or structure, or a portion thereof, for assembling, disassembling, fabricating, finishing, manufacturing, packaging, repair, cleaning, laundering or processing operations that are not classified as a Group H hazardous occupancy.

306.2 Factory Industrial F-1 Moderate-Hazard Occupancy. Factory industrial uses which are not classified as Factory Industrial F-2 Low Hazard shall be classified as F-1 Moderate Hazard and shall include, but not be limited to, the following:

Aircraft

Aircraft repairs

Automobiles and other motor vehicles, manufacturing

Automobiles and other motor vehicles, repairs

Bakeries

Beverages; alcoholic

Boats

Boat repairs

Brooms or brushes

Canvas or similar fabric

Carpets and rugs

Carpets and rugs, cleaning, using or storing solvents having a flash point between 100(degrees)F (38(degrees)C) and 138.2(degrees)F (59(degrees)C) (Tag. Closed-cup)

Clothing

Disinfectants

Dry cleaning and dyeing using or storing solvents having a flash point between 100(degrees)F (38(degrees)C) and 138.2(degrees)F (59(degrees)C) (Tag. Closed-cup)

Electric generation plants

Engines (including rebuilding)

Food processing, except meat slaughtering or preparation of fish for packing

Furniture

Hemp products

Jute products

Laboratories; for production (moderate-hazard), that may involve the synthesis or storage of materials that constitute a physical or health hazard in quantities below those found in Tables 307.7(1) and 307.7(2)

Leather products

Metals; finishing, plating, grinding, sharpening, polishing, cleaning, rustproofing, heat treatment, or similar processes

Millwork (sash & door)

Motion pictures filming (without spectators)

Musical instruments

Optical goods

Paper mills or products

Photographic film

Plastic products

Printing or publishing

Recreational vehicles

Refuse incineration

Shoes

Soaps and detergents

Textiles

Tobacco

Trailers

Upholstering

Wood; distillation

Woodworking (cabinet) using no more than 2 quarts (1.9 L) per day or storing no more than 20 gallons (75.7 L) of paint, varnish, lacquer or shellac

306.3 Factory Industrial F-2 Low-Hazard Occupancy. Factory industrial uses that involve the cleaning, laundering, fabrication or manufacturing of noncombustible materials which during finishing, packing or processing do not involve a significant fire hazard shall be classified as F-2 occupancies and shall include, but not be limited to, the following:

Appliances

Athletic equipment

Automobile laundries

Automobile wrecking establishments

Beverages; bottling works

Beverages; non-alcoholic

Bicycles Brick and masonry

Business machines

Cameras and photo equipment

Carpets and rugs, cleaning, using or storing solvents having a flash point above 138.2(degrees)F (59(degrees)C) (Tag. closed-cup)

Ceramic products

Construction and agricultural machinery

Dry cleaning and dyeing using or storing solvents having a flash point above 138.2(degrees)F (59(degrees)C) (Tag. closed-cup)

Electronics

Food processing; meat slaughtering or preparation of fish for packing

Foundries

Glass products

Gypsum

Ice

Laboratories; for production (low-hazard), that may involve the synthesis or storage of materials that constitute a physical or health hazard in quantities below those found in Tables 307.7(1) and 307.7(2)

Laundries

MachineryMetal products (fabrication and assembly), not including flammable metals and alloys listed in Section 307

Plastic products; non-flammable

Printing; incidental to primary use, area not exceeding 2,000 square feet (185.8 m²)

Television filming (without spectators)

306.4Location restrictions.Locations of spaces classified in Factory Group F may be restricted within a building containing a Group R occupancy pursuant to Section 509.8.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

306.4 amended L.L. 8/2008 § 74, eff. July 1, 2008.



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SECTION BC 307: HIGH-HAZARD GROUP H

NYC Administrative Code § 28-BC 307

307.1 High-Hazard Group H.

High-Hazard Group H occupancy includes, among others, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation or storage of materials that constitute a physical or health hazard in quantities in excess of those found in Tables 307.7(1) and 307.7(2) (see also definition of "Control area").

Exception: Laboratories for non-production testing, research, experimental, instructional or educational purposes, in compliance with Section 419.

307.2Definitions. The following words and terms shall, for the purposes of this section and as used elsewhere in this code, have the meanings shown herein.

AEROSOL. A product that is dispensed from an aerosol container by a propellant.

Aerosol products shall be classified by means of the calculation of their chemical heats of combustion and shall be designated Level 1, 2 or 3.

Level 1 aerosol products. Those with a total chemical heat of combustion that is greater than 0 and less than or equal to 8,600 British thermal units per pound (Btu/lb) (20 kJ/g).

Level 2 aerosol products. Those with a total chemical heat of combustion that is greater than 8,600 Btu/lb (20 kJ/g), but less than or equal to 13,000 Btu/lb (30 kJ/g).

Level 3 aerosol products. Those with a total chemical heat combustion that is greater than 13,000 Btu/lb (30 kJ/g).

BARRICADE. A structure or other artificial or natural barrier constructed in connection with the storage, handling and use of explosives that provides a shield from the impact of such explosion. A straight line from the top of any sidewall of a building containing explosives to the eave line of any magazine or other building or to a point 12 feet

(3658 mm) above the center of a railway or highway shall pass through such barrier.

Artificial barricade. An artificial mound or revetment, including a barrier constructed of sandbags, with a minimum thickness of 3 feet (914 mm).

Natural barricade. Terrain or other natural features of the ground.

BOILING POINT. The temperature at which the vapor pressure of a liquid equals the atmospheric pressure of 14.7 pounds per square inch (psi) (101 kPa) gage or 760 mm of mercury. Where an accurate boiling point is unavailable for the material in question, or for mixtures which do not have a constant boiling point, for the purposes of this classification, the 20-percent evaporated point of a distillation performed in accordance with ASTM D 86 shall be used as the boiling point of the liquid.

CLOSED SYSTEM. The use of a solid or liquid hazardous material involving a closed vessel or system that remains closed during normal operations where vapors emitted by the product are not liberated outside of the vessel or system and the product is not exposed to the atmosphere during normal operations; and all uses of compressed gases. Examples of closed systems for solids and liquids include product conveyed through a piping system into a closed vessel, system or piece of equipment.

COMBUSTIBLE DUST. Finely divided solid material that is 420 microns or less in diameter, will pass through a U.S. standard No. 40 sieve and, when dispersed in air in insufficient concentrations, can be ignited by a flame, spark or other source of ignition.

COMBUSTIBLE FIBERS. Readily ignitable and free-burning fibers, such as cocoa fiber, cotton, excelsior, hay, hemp, henequen, istle, jute, kapok, oakum, sisal, Spanish moss, straw, tow, wastepaper or other natural or synthetic fibers that possess such qualities.

Exception: Moss used for medicinal purposes.

COMBUSTIBLE LIQUID. For the purposes of transportation, a combustible liquid as defined by the United States Department of Transportation. For all other purposes, a liquid, other than a compressed gas or cryogenic fluid, having a closed cup flash point at or above 100(degrees)F (38(degrees)C) classified as follows:

Class II. Liquids having a closed cup flash point at or above 100(degrees)F (38(degrees)C) and below 140(degrees)F (60(degrees)C).

Class IIIA. Liquids having a closed cup flash point at or above 140(degrees)F (60(degrees)C) and below 200(degrees)F (93(degrees)C).

Class IIIB. Liquids having a closed cup flash point at or above 200(degrees)F (93(degrees)C).

COMPRESSED GAS. A material, or mixture of materials which is a gas at 68F (20C) or less at 14.7 psia (101 kPa) of pressure; and has a boiling point of 68F (20C) or less at 14.7 psia (101 kPa) that is either liquefied, nonliquefied or in solution at that temperature and pressure, except those gases which have no other health- or physical-hazard properties are not considered to be compressed until the pressure in the packaging exceeds 41 psia (28 kPa) at 68F (20C). Compressed gases shall be classified as follows:

Nonliquefied compressed gases. Gases, other than those in solution, which are in a packaging under the charged pressure and are entirely gaseous at a temperature of 68F (20C).

Liquefied compressed gases. Gases that, in a packaging under the charged pressure, are partially liquid at a temperature of 68F (20C).

Compressed gases in solution. Nonliquefied gases that are dissolved in a solvent.

Compressed gas mixtures. A mixture of two or more compressed gases contained in a single packaging, the hazard properties of which are represented by the properties of the mixture as a whole.

CONTROL AREA. Spaces within a building that are enclosed and bounded by exterior walls, fire walls, fire barriers and roofs, or a combination thereof, where quantities of hazardous materials not exceeding the maximum allowable quantities per control area are stored, handled, or used, including any dispensing.

CORROSIVE MATERIAL. A material that causes full thickness destruction of human skin at the site of contact within specified periods of time when tested by methods described in DOTn 49 CFR § 173.136 and 173.137. Liquid that has a severe corrosion rate on steel or aluminum based on the criteria in DOTn 49 CFR § 173.173(c)(2) is also a corrosive material.

CRYOGENIC FLUID. A liquid having a boiling point lower than ;ms150(degrees)F(;ms101(degrees)C) at 14.7 pounds per square inch absolute (psia) (an absolute pressure of 101 kPa).

DEFLAGRATION. An exothermic reaction, such as the extremely rapid oxidation of a flammable dust or vapor in air, in which the reaction progresses through the unburned material at a rate less than the velocity of sound. A deflagration can have an explosive effect.

DETACHED BUILDING. A separate single-story building, without a basement or crawl space, used for the storage or use of hazardous materials and located at an approved distance from other buildings and structures.

DETONATION. An exothermic reaction characterized by the presence of a shock wave in the material which establishes and maintains the reaction. The reaction zone progresses through the material at a rate greater than the velocity of sound. The principal heating mechanism is one of shock compression. Detonations have an explosive effect.

DISPENSING. The pouring or transferring of any material from a container, tank or similar vessel, whereby dusts, fumes, mists, vapors, or gases are liberated to the atmosphere.

EXPLOSIVE. Any chemical compound, mixture or device, the primary or common purpose of which is to function by explosion. The term includes, but is not limited to, dynamite, black powder, pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord, igniters and display fireworks, 1.3G (Class B, Special).

The term "explosive" includes any material determined to be within the scope of 18 USC Chapter 40, as amended, and also includes any material classified as an explosive other than consumer fireworks, 1.4G (Class C, Common) by the hazardous materials regulations of DOTn 49 CFR.

High explosive. Explosive material, such as dynamite, which can be caused to detonate by means of a No. 8 test blasting cap when unconfined.

Low explosive. Explosive material that will burn or deflagrate when ignited. It is characterized by a rate of reaction that is less than the speed of sound. Examples of low explosives include, but are not limited to, black powder; safety fuse; igniters; igniter cord; fuse lighters; fireworks, 1.3G (Class B, Special) and propellants, 1.3C.

UN/DOTn Class 1 explosives. The former classification system used by DOTn included the terms "high" and "low" explosives as defined herein. The following terms further define explosives under the current system applied by DOTn for all explosive materials defined as hazard Class 1 materials. Compatibility group letters are used in concert with the division to specify further limitations on each division noted (i.e., the letter G identifies the material as a pyrotechnic substance or article containing a pyrotechnic substance and similar materials).

Division 1.1. Explosives that have a mass explosion hazard. A mass explosion is one which affects almost the

entire load instantaneously.

Division 1.2. Explosives that have a projection hazard but not a mass explosion hazard.

Division 1.3. Explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.

Division 1.4. Explosives that pose a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package.

Division 1.5. Very insensitive explosives. This division is comprised of substances that have a mass explosion hazard, but that are so insensitive there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport.

Division 1.6. Extremely insensitive articles which do not have a mass explosion hazard. This division is comprised of articles that contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation.

FIREWORKS. Any composition or device for the purpose of producing a visible or audible effect for entertainment purposes by combustion, deflagration or detonation that meets the definition of 1.4G fireworks or 1.3G fireworks as set forth herein.

FIREWORKS, 1.3G. (Formerly Class B, Special Fireworks.) Large fireworks devices, which are explosive materials, intended for use in fireworks displays and designed to produce audible or visible effects by combustion, deflagration or detonation. Such 1.3G fireworks include, but are not limited to, firecrackers containing more than 130 milligrams (2 grains) of explosive composition, aerial shells containing more than 40 grams of pyrotechnic composition, and other display pieces which exceed the limits for classification as 1.4G fireworks. Such 1.3G fireworks are also described as fireworks, 49 CFR pt. 172 by the DOTn.

FIREWORKS, 1.4G. (Formerly Class C, Common Fireworks.) Small fireworks devices containing restricted amounts of pyrotechnic composition designed primarily to produce visible or audible effects by combustion. Such 1.4G fireworks which comply with the construction, chemical composition and labeling regulations of the DOTn for fireworks, 49 CFR pt. 172, and the U.S. Consumer Product Safety Commission (CPSC) as set forth in 16 CFR pts. 1500 and 1507, are not explosive materials for the purpose of this code.

FLAMMABLE GAS. A material which is a gas at 68(degrees)F (20(degrees)C) or less at 14.7 pounds per square inch absolute (psia) (101 kPa) of pressure (a material that has a boiling point of 68(degrees)F (20(degrees)C) or less at 14.7 psia (101 kPa)) which:

1. Is ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with air; or
2. Has a flammable range at 14.7 psia (101 kPa) with air of at least 12 percent, regardless of the lower limit.

The limits specified shall be determined at 14.7 psia (101 kPa) of pressure and a temperature of 68(degrees)F (20(degrees)C) in accordance with ASTM E 681.

FLAMMABLE LIQUEFIED GAS. A liquefied compressed gas which, under a charged pressure, is partially liquid at a temperature of 68(degrees)F (20(degrees)C) and which is flammable.

FLAMMABLE LIQUID. For the purposes of transportation, a combustible liquid as defined by the United States Department of Transportation. For all other purposes, a liquid, other than a compressed gas or cryogenic fluid, having a closed cup flash point below 100(degrees)F (38(degrees)C) classified as follows:

Class IA. Liquids having a flash point below 73(degrees)F (23(degrees)C) and a boiling point below 100(degrees)F (38(degrees)C).

Class IB. Liquids having a flash point below 73(degrees)F (23(degrees)C) and a boiling point at or above 100(degrees)F (38(degrees)C).

Class IC. Liquids having a flash point at or above 73(degrees)F (23(degrees)C) and below 100(degrees)F (38(degrees)C)

FLAMMABLE MATERIAL. A material capable of being readily ignited from common sources of heat or at a temperature of 600(degrees)F (316(degrees)C) or less.

FLAMMABLE SOLID. A solid, other than a blasting agent or explosive, that is capable of causing fire through friction, absorption or moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which has an ignition temperature below 212(degrees)F (100(degrees)C) or which burns so vigorously and persistently when ignited as to create a serious hazard. A chemical shall be considered a flammable solid as determined in accordance with the test method of 16 CFR pt. 1500.44, if it ignites and burns with a self-sustained flame at a rate greater than 0.1 inch (2.5 mm) per second along its major axis. This shall include flammable metals, which are flammable pure metals or their flammable alloys.

FLASH POINT. The minimum temperature in degrees Fahrenheit at which a liquid will give off sufficient vapors to form an ignitable mixture with air near the surface or in the container, but will not sustain combustion. The flash point of a liquid shall be determined by appropriate test procedure and apparatus as specified in ASTM D 56, ASTM D 93 or ASTM D 3278.

HANDLING. The movement of a material in its container, the removal of the material from its container, or any other action or process that may affect the material, other than its storage or use.

HAZARDOUS MATERIALS. Those chemicals or substances that are physical hazards or health hazards as defined and classified in this section and the New York City Fire Code, whether the materials are in usable or waste condition.

HEALTH HAZARD. A classification of a chemical for which there is statistically significant evidence that acute or chronic health effects are capable of occurring in exposed persons. The term "health hazard" includes chemicals that are toxic or highly toxic, and corrosive.

HIGHLY TOXIC MATERIAL. A material that is lethal at the following doses or concentrations:

1. A chemical that has a median lethal dose (LD50) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each; or
2. A chemical that has a median lethal dose (LD50) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each; or
3. A chemical that has a median lethal concentration (LC50) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume or dust, when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

INCOMPATIBLE MATERIALS. Materials that, if mixed or combined, could explode, generate heat, gases or other byproducts, or react in such a way hazardous to life or property.

OPEN SYSTEM. The use of a solid or liquid hazardous material involving a vessel or system that is continuously

open to the atmosphere during normal operations and where vapors are liberated, or the product is exposed to the atmosphere during normal operations. Examples of open systems for solids and liquids include dispensing from or into open beakers or containers, dip tank and plating tank operations.

ORGANIC PEROXIDE. An organic compound having a double oxygen or peroxy (-O-O-) in its chemical structure. Organic peroxides can pose an explosion hazard (detonation or deflagration), can be shock sensitive, or can be susceptible to decomposition into various unstable compounds over an extended period of time and are classified as follows based upon their hazardous properties:

Class I. Organic peroxides that are capable of deflagration but not detonation.

Class II. Organic peroxides that burn very rapidly and that pose a moderate reactivity hazard.

Class III. Organic peroxides that burn rapidly and that pose a moderate reactivity hazard.

Class IV. Organic peroxides that burn in the same manner as ordinary combustibles and that pose a minimal reactivity hazard.

Class V. Organic peroxides that burn with less intensity than ordinary combustibles or do not sustain combustion and that pose no reactivity hazard.

Unclassified detonable. Organic peroxides that are capable of detonation and pose an extremely high explosion hazard through rapid explosive decomposition.

OXIDIZER. A material that readily yields oxygen or other oxidizing gas, such as bromine, chlorine and fluorine, or that readily reacts to promote or initiate combustion of combustible materials classified as follows:

Class 1. An oxidizer whose primary hazard is that it slightly increases the burning rate but which does not cause spontaneous ignition when it comes in contact with combustible materials.

Class 2. An oxidizer that will cause a moderate increase in the burning rate or that causes spontaneous ignition of combustible materials with which it comes in contact.

Class 3. An oxidizer that will cause a severe increase in the burning rate of combustible materials with which it comes in contact or that will undergo vigorous self-sustained decomposition due to contamination or exposure to heat.

Class 4. An oxidizer that can undergo an explosive reaction due to contamination or exposure to thermal or physical shock. Additionally, the oxidizer will enhance the burning rate and can cause spontaneous ignition of combustibles.

OXIDIZING GAS. A gas that can support and accelerate combustion of other materials.

PHYSICAL HAZARD. A chemical for which there is evidence that it is a combustible liquid, compressed gas, cryogenic, explosive, flammable gas, flammable liquid, flammable solid, organic peroxide, oxidizer, pyrophoric or unstable (reactive) or water-reactive material.

PYROPHORIC MATERIAL. A material with an autoignition temperature in air, at or below a temperature of 130(degrees)F (54(degrees)C).

PYROTECHNIC COMPOSITION. A chemical mixture that produces visible light displays or sounds through a self-propagating, heat-releasing chemical reaction which is initiated by ignition.

STANDARD CUBIC FEET (SCF). Cubic feet of gas at normal temperature and pressure (NTP).

TOXIC MATERIAL. A chemical that is lethal at the following doses or concentrations:

1. A chemical that has a median lethal dose (LD50) of more than 50 milligrams per kilogram, but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each; or
2. A chemical that has a median lethal dose (LD50) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each; or
3. A chemical that has a median lethal concentration (LC50) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than 2 milligrams per liter but not more than 20 milligrams per liter of mist, fume or dust, when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

Exception: For purposes of this code, chlorine shall be classified as a highly toxic material.

UNSTABLE (REACTIVE) MATERIAL. A material, other than an explosive, which in the pure state or as commercially produced, will vigorously polymerize, decompose, condense or become self-reactive and undergo other violent chemical changes, including explosion, when exposed to heat, friction or shock, or in the absence of an inhibitor, or in the presence of contaminants, or in contact with incompatible materials. Unstable (reactive) materials are shall be classified as follows:

Class 1. Materials that in themselves are normally stable but which can become unstable at elevated temperatures and pressure.

Class 2. Materials that in themselves are normally unstable and readily undergo violent chemical change but do not detonate. This class includes materials that can undergo chemical change with rapid release of energy at normal temperatures and pressures, and that can undergo violent chemical change at elevated temperatures and pressures.

Class 3. Materials that in themselves are capable of detonation or of explosive decomposition or explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation. This class includes materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures.

Class 4. Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures. This class includes materials that are sensitive to mechanical or localized thermal shock at normal temperatures and pressures.

WATER-REACTIVE MATERIAL. A material that explodes; violently reacts; produces flammable, toxic or other hazardous gases; or evolves enough heat to cause self-ignition or ignition of nearby combustibles upon exposure to water or moisture. Water-reactive materials shall be classified as follows:

Class 1. Materials that may react with water with some release of energy, but not violently.

Class 2. Materials that may form potentially explosive mixtures with water.

Class 3. Materials that react explosively with water without requiring heat or confinement.

307.3High-Hazard Group H-1. Buildings and structures which contain materials that present a detonation hazard shall be classified as Group H-1. Such materials shall include, but not be limited to, the following:

Explosives:

Division 1.1

Division 1.2

Division 1.3

Exception: Materials that are used and maintained in a form where either confinement or configuration will not elevate the hazard from a mass fire to mass explosion hazard shall be allowed in H-2 occupancies.

Division 1.4

Exception: Articles, including articles packaged for shipment, that are not regulated as an explosive under Bureau of Alcohol, Tobacco and Firearms regulations, or unpackaged articles used in process operations that do not propagate a detonation or deflagration between articles shall be allowed in H-3 occupancies.

Division 1.5

Division 1.6

Organic peroxides, unclassified detonable

Oxidizers, Class 4

Unstable (reactive) materials, Class 3 detonable and Class 4

Pyrophoric materials, detonable

Water-reactive materials, Class 2 and 3, detonable

No part of this section shall be construed to authorize the manufacture, storage, sale or use of explosives, including fireworks, if otherwise prohibited by the New York City Fire Code and unless in compliance with the requirements of the New York City Fire Code.

307.4 High-Hazard Group H-2. Buildings and structures which contain materials that present a deflagration hazard or a hazard from accelerated burning shall be classified as Group H-2. Such materials shall include, but not be limited to, the following:

Class I, II or IIIA flammable or combustible liquids which are used or stored in normally open containers or systems, or in closed containers or systems pressurized at more than 15 psi (103.4 kPa) gage.

Combustible dusts

Cryogenic fluids, flammable

Flammable gases

Organic peroxides, Class I

Oxidizers, Class 3, that are used or stored in normally open containers or systems, or in closed containers or systems pressurized at more than 15 psi (103.3 kPa) gage

Pyrophoric liquids, solids and gases, nondetonable

Unstable (reactive) materials, Class 3, nondetonable

Water-reactive materials, Class 3, nondetonable

No part of this section shall be construed to authorize an LPG-distribution facility if otherwise prohibited by the New York City Fire Code.

307.5 High-Hazard Group H-3. Buildings and structures that contain materials that readily support combustion or present a physical hazard shall be classified as Group H-3. Such materials shall include, but not be limited to, the following:

Class I, II or IIIA flammable or combustible liquids which are used or stored in normally closed containers or systems pressurized at less than 15 psi (103 kPa) gage.

Combustible fibers

Cryogenic fluids, oxidizing

Flammable solids

Organic peroxides, Classes II and III

Oxidizers, Classes 1 and 2

Oxidizing gases

Unstable (reactive) materials, Class 2

Water-reactive materials, Class 2, nondetonable

307.6 High-Hazard Group H-4. Buildings and structures which contain materials that are health hazards shall be classified as Group H-4. Such materials shall include, but not be limited to, the following:

Corrosives

Highly toxic materials

Toxic materials

307.7 Group H-5 structures. Semiconductor fabrication facilities and comparable research and development areas in which hazardous production materials (HPM) are used and the aggregate quantity of materials is in excess of those listed in Tables 307.7(1) and 307.7(2). Such facilities and areas shall be designed and constructed in accordance with Section 415.9.

307.8 Multiple hazards. Buildings and structures containing a material or materials representing hazards that are classified in one or more of Groups H-1, H-2, H-3 and H-4 shall conform to the code requirements for each of the occupancies so classified.

307.9 Exceptions. The following shall not be classified in Group H, but shall be classified in the occupancy which they most nearly resemble. Hazardous materials in any quantity shall conform to the requirements of this code, including Section 414, and the New York City Fire Code.

1. Buildings and structures that contain not more than the maximum allowable quantities per control area of hazardous materials as shown in Tables 307.7(1) and 307.7(2) provided that such buildings are maintained in accordance with the New York City Fire Code.

2. Buildings utilizing control areas in accordance with Section 414.2 that contain not more than the maximum allowable quantities per control area of hazardous materials as shown in Tables 307.7(1) and 307.7(2).

3. Buildings and structures occupied for the application of flammable finishes, provided that such buildings or areas conform to the requirements of Section 416 and the New York City Fire Code.

4. Wholesale and retail sales and storage of flammable and combustible liquids in mercantile occupancies conforming to the New York City Fire Code.

5. Closed systems housing flammable or combustible liquids or gases utilized for the operation of machinery or equipment.

6. Cleaning establishments that utilize combustible liquid solvents having a flash point of 140(degrees)F (60(degrees)C) or higher in closed systems employing equipment listed by an approved testing agency, provided that this occupancy is separated from all other areas of the building by 1-hour fire-resistance-rated fire barrier walls or horizontal assemblies or both.

7. Cleaning establishments that utilize a liquid solvent having a flash point at or above 200(degrees)F (93(degrees)C).

8. Liquor stores and distributors without bulk storage.

9. Refrigeration systems.

10. The storage or utilization of materials for agricultural purposes on the premises.

11. Stationary batteries utilized for facility emergency power, uninterrupted power supply or telecommunication facilities provided that the batteries are provided with safety venting caps and ventilation is provided in accordance with the New York City Mechanical Code.

12. Corrosives shall not include personal or household products in their original packaging used in retail display or commonly used building materials.

13. Buildings and structures occupied for aerosol storage shall be classified as Group S-1, provided that such buildings conform to the requirements of the New York City Fire Code.

14. Display and storage of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in quantities not exceeding the maximum allowable quantity per control area in Group M or S occupancies complying with Section 414.2.4.

15. The storage of black powder, smokeless propellant and small arms primers in Groups M and R-3 and special industrial explosive devices in Groups B, F, M and S, provided such storage conforms to the quantity limits and requirements prescribed in the New York City Fire Code.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 3: USE AND OCCUPANCY CLASSIFICATION
SECTION 308: INSTITUTIONAL GROUP I

NYC Administrative Code § 28-BC 308

308.1 Institutional Group I.

Institutional Group I occupancy includes, among others, the use of a building or structure, or a portion thereof, in which people are cared for or live in a supervised environment, having physical limitations because of health or age are harbored for medical treatment or other care or treatment, or in which people are detained for penal or correctional purposes or in which the liberty of the occupants is restricted. Institutional occupancies shall be classified as Group I-1, I-2, I-3 or I-4.

308.1.1 Definitions. For definitions of terms related to Group I occupancy classification, see Section 310.2.

308.2 Group I-1. This occupancy shall include buildings, structures or parts thereof housing persons, on a 24-hour basis, who because of age, mental disability or other reasons, live in a supervised residential environment that provides personal care services. The occupants are capable of self-preservation and capable of responding to an emergency situation without physical assistance from staff. Such occupancy shall be subject to the New York State Multiple Dwelling Law. This group shall include, but not be limited to, the following:

Adult homes, where occupants are capable of self-preservation (see Section 308.2.1)

Alcohol and drug abuse rehabilitation centers

Assisted living facilities

Community Residences or Intermediate Care Facilities (see Section 308.2.2)

Congregate care facilities

Convalescent facilities

Enriched housing, where occupants are capable of self-preservation (see Section 308.2.1)

Halfway houses

Overnight child care facilities where all supervised occupants are under the age of 18, with no more than two children under the age of 2

Residential care facilities

Social rehabilitation facilities

308.2.1 Adult homes and enriched housing. Adult homes and enriched housing facilities operated pursuant to and meeting the additional construction requirements of Section 460 of the New York State Social Services Law and regulations of the New York State Department of Health offering care on a 24-hour basis to persons capable of self-preservation, in the same building, shall be classified as Group I-1.

Exception: Such a facility offering supervised care on a 24-hour basis for no more than 16 occupants capable of self preservation, in the same building, may be classified in Group R in accordance with Section 310.

308.2.2 Community Residences or Intermediate Care Facilities. Community Residences or Intermediate Care Facilities, operated pursuant to and meeting the additional construction requirements of the New York State Mental Hygiene Law and applicable regulations of the New York State Office of Mental Health and Office of Mental Retardation and Developmental Disabilities shall be classified as Group I-1.

Exceptions: Such facilities limited to 14 residents capable of self-preservation and three staff members per dwelling unit shall be classified as:

1. Group R-1, where such facility does not occupy more than two dwelling units in a residential building classified as R-1 of Type I or II construction, or one dwelling unit in any other type of construction, and occupied on a transient basis; or

2. Group R-2 where such facility does not occupy more than two dwelling units in a residential building classified R-2 of Type I or II construction, or one dwelling unit in any other type of construction, and occupied on a long-term basis; or

3. Group R-3 where the number of dwelling units in the building does not exceed two.

308.3 Group I-2. This occupancy shall include buildings and structures used for medical, surgical, psychiatric, nursing or personal care on a 24-hour basis or overnight of more than two children under the age of 2, or more than three persons who are not capable of self-preservation and not capable of responding to an emergency situation without physical assistance from staff. This group shall include, but not be limited to, the following:

Adult homes, where occupants are not capable of self-preservation, operated pursuant to and meeting the additional construction requirements of Section 460 of the New York State Social Services Law and regulations of the New York State Department of Health

Community Residences or Intermediate Care Facilities, where occupants are not capable of self preservation, operated pursuant to and meeting the additional construction requirements of the New York State Mental Hygiene Law and applicable regulations of the New York State Office of Mental Health and Office of Mental Retardation and Developmental Disabilities

Enriched Housing, where occupants are not capable of self-preservation, operated pursuant to and meeting the additional construction requirements of Section 460 of the New York State Social Services Law and regulations of the

New York State Department of Health

Hospitals

Nursing homes (both intermediate-care facilities and skilled nursing facilities)

Mental hospitals where patients are not under restraint

Detoxification facilities

Exception: Such a facility offering care on a 24-hour basis for 3 or fewer persons who are not capable of self preservation may occupy not more than one dwelling unit in a Group R occupancy.

308.4Group I-3.This occupancy shall include buildings and structures that are inhabited by more than five persons who are under restraint or security. An I-3 facility is occupied by persons who are generally incapable of self-preservation due to security measures not under the occupants' control. This group shall include, but not be limited to, the following:

Mental hospitals where patients are under restraint

Prisons

Jails

Reformatories

Detention centers

Correctional centers

Prerelease centers

Buildings of Group I-3 shall be classified as one of the occupancy conditions indicated in Section 408.1.

308.5Group I-4.This group shall include custodial care facilities providing care to more than two children under the age of 2, or to more than four persons over the age of 2 who are not capable of responding to an emergency situation without physical assistance from the staff. Such occupancy shall include, but not be limited to, adult custodial care facilities and day nurseries.

Exceptions:

1. Custodial care facility as described in Section 303.
2. Custodial care facility as described in Section 304.
3. Custodial care facility as described in Exception 3 of Section 305.1.
4. Such facility providing care within a dwelling unit as described in Section 310.
5. Such facility providing care to children under the age of 2 in houses of worship during religious functions.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 3: USE AND OCCUPANCY CLASSIFICATION
SECTION BC 309: MERCANTILE GROUP M

NYC Administrative Code § 28-BC 309

309.1 Mercantile Group M.

Mercantile Group M occupancy includes, among others, buildings and structures or a portion thereof, for the display and sale of merchandise, and involves stocks of goods, wares or merchandise incidental to such purposes and accessible to the public. Mercantile occupancies shall include, but not be limited to, the following:

Department stores

Drug stores

Markets

Motor fuel-dispensing facilities

Retail or wholesale stores

Sales rooms

309.2 Quantity of hazardous materials. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials stored or displayed in a single control area of a Group M occupancy shall not exceed the quantities in Table 414.2.4.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 3: USE AND OCCUPANCY CLASSIFICATION
SECTION BC 310: RESIDENTIAL GROUP R

NYC Administrative Code § 28-BC 310

310.1 Residential Group R.

Residential Group R includes, among others, the use of a building or structure, or a portion thereof, for dwelling or sleeping purposes when not classified as Institutional Group I. Buildings containing 3 or more dwelling units shall be subject to the New York State Multiple Dwelling Law. Residential occupancies shall be classified as Groups R-1, R-2, or R-3.

310.1.1 Group R-1. This occupancy shall include:

1. Residential buildings or spaces occupied, as a rule, transiently, for a period less than one month, as the more or less temporary abode of individuals or families who are lodged with or without meals, including, but not limited to, the following:

Class B multiple dwellings as defined in Section 27-2004 of the New York City Housing Maintenance Code and Section 4 of the New York State Multiple Dwelling Law

Exception: Class B multiple dwellings classified in Group I-1.

Club houses.

Hotels (transient)

Motels (transient)

Rooming houses (boarding houses-transient)

Settlement houses

Vacation timeshares

2. College or school student dormitories, except for student apartments classified as an R-2 occupancy

3. Congregate living units owned and operated by a government agency or not-for-profit organization, where the number of occupants in the dwelling unit exceeds the limitations of a family as defined, including, but not limited to, the following:

Adult homes or enriched housing with 16 or fewer occupants requiring supervised care within the same building on a 24-hour basis

Fraternity and sorority houses

Homeless shelters

310.1.2 Group R-2. This occupancy shall include buildings or portions thereof containing sleeping units or more than two dwelling units that are occupied, as a rule, for shelter and sleeping accommodation on a long-term basis for a month or more at a time. Such occupancy shall be subject to the New York State Multiple Dwelling Law. This group shall include, but not be limited to, the following:

Adult homes or enriched housing with 16 or fewer occupants requiring supervised care on a 24-hour basis in the same building, provided that the number of occupants per dwelling unit does not exceed the definition of a family

Apartment houses

Apartment hotels (nontransient)

Class A multiple dwellings as defined in Section 27-2004 of the New York City Housing Maintenance Code and Section 4 of the New York State Multiple Dwelling Law, including the following:

1. Dwelling units where the resident of the unit provides custodial care to no more than four persons on less than a 24-hour basis and not overnight.

2. Dwelling units where the resident of the unit provides child custodial care as a family day care home registered with the New York City Department of Health and Mental Hygiene in accordance with the New York State Social Services Law with no more than six children between the ages of 2 and 13, or with no more than five children if any are under the age of 2, receiving supervised care on less than a 24-hour basis and not overnight.

Exception: Class A multiple dwellings classified in Group I-1.

Convents and monasteries with more than 20 occupants in the building Student apartments

310.1.3 Group R-3. This occupancy shall include buildings or portions thereof containing no more than 2 dwelling units, occupied, as a rule, for shelter and sleeping accommodation on a long term basis for a month or more at a time, and are not classified in Group R-1, R-2 or I. This group shall include, but not be limited to, the following:

Convents and monasteries with fewer than 20 occupants in the building

Group homes

One- and two-family dwellings, including the following:

1. Dwelling units where the resident of the unit provides custodial care to no more than four persons on less than a 24-hour basis and not overnight.

2. Dwelling units where the resident of the unit provides child custodial care as a family day care home registered with the New York City Department of Health and Mental Hygiene in accordance with the New York State Social Services Law with no more than six children between the ages of 2 and 13, or with no more than five children if any are under the age of 2, receiving supervised care on less than a 24 hour basis and not overnight.

310.2 Definitions. The following words and terms shall, for the purposes of this section and as used elsewhere in this code, have the meanings shown herein.

APARTMENT. A dwelling unit providing permanent provisions for both sanitation and kitchen facilities, occupied or arranged to be occupied by not more than one family maintaining a common household.

APARTMENT, STUDENT. An apartment occupied or arranged to be occupied by students enrolled at a single accredited college or university and maintaining a common household pursuant to a lease, sublease, or occupancy agreement directly with such college or university.

BOARDER (ROOMER, LODGER). A person who pays a consideration for living within the household and does not occupy such space as an incident of employment.

CONGREGATE LIVING UNIT. A dwelling unit, comprised of one or more habitable rooms separated by non-rated partitions, occupied or arranged to be occupied by more than one family or by persons who are not maintaining a common household. Creation of or conversion to such unit shall be subject to Section 27-2077 of the New York City Housing Maintenance Code.

CUSTODIAL CARE FACILITY. A building or part thereof occupied by persons, on less than a 24-hour basis and not overnight, who because of age, disability or other reasons, receive personal care services by individuals other than parents or guardians, relatives by blood, marriage, domestic partnership, or adoption, in a place other than the home of the person cared for.

DWELLING. A building or structure which is occupied in whole or in part as the home, residence or sleeping place of one or more families.

DWELLING, MULTIPLE. A dwelling which is either rented, leased, let or hired out, to be occupied, or is occupied, as the residence or home of three or more families living independently of each other. A multiple dwelling does not include a building used for occupancies in Groups I-2, I-3 or I-4.

DWELLING, ONE-FAMILY. Any building or structure designed and occupied exclusively for residence purposes on a long-term basis for more than a month at a time by not more than one family. One-family dwellings shall also be deemed to include a dwelling located in a series of one-family dwellings each of which faces or is accessible to a legal street or public thoroughfare, provided that each such dwelling unit is equipped as a separate dwelling unit with all essential services, and also provided that each such unit is arranged so that it may be approved as a legal one-family dwelling.

DWELLING, TWO-FAMILY. Any building or structure designed and occupied exclusively for residence purposes on a long-term basis for more than a month at a time by not more than two families. Two-family dwellings shall also be deemed to include a dwelling located in a series of two-family dwellings each of which faces or is accessible to a legal street or public thoroughfare, provided that each such dwelling is equipped as a separate dwelling with all essential services, and also provided that each such dwelling is arranged so that it may be approved as a legal two-family dwelling.

DWELLING UNIT. A single unit consisting of one or more habitable rooms and occupied or arranged to be occupied as a unit separate from all other units within a dwelling.

FAMILY.

1. A single person occupying a dwelling unit and maintaining a common household with not more than two boarders, roomers or lodgers; or
2. Two or more persons related by blood, adoption, legal guardianship, marriage or domestic partnership; occupying a dwelling unit and maintaining a common household with not more than two boarders, roomers or lodgers; or
3. Not more than three unrelated persons occupying a dwelling unit and maintaining a common household; or
4. Not more than three unrelated persons occupying a dwelling unit in a congregate housing or shared living arrangement and maintaining a common household; or
5. Members of a group home; or
6. Foster children placed in accordance with provisions of the New York State Social Services Law, their foster parent(s), and other persons related to the foster parents by blood, marriage or domestic partnership; where all residents occupy and maintain a common household with not more than two boarders, roomers or lodgers; or
7. Up to seven unrelated students enrolled at a single accredited college or university occupying a student apartment and maintaining a common household pursuant to a lease, sublease, or occupancy agreement directly with such college or university, provided that:
 - 7.1. The entire structure in which the dwelling unit is located is fully sprinklered in accordance with Chapter 9; and
 - 7.2. Such occupancy does not exceed the maximums contained in Section 27-2075(a) of the New York City Housing Maintenance Code; and
 - 7.3. Prior to commencement of such occupancy, and on an annual basis thereafter such college or university has submitted a fire safety plan containing fire safety and evacuation procedures for such dwelling unit that is acceptable to the Fire Commissioner and in compliance with any rules promulgated by the Fire Commissioner; and
 - 7.4. The dwelling unit complies with additional occupancy and construction requirements as may be established by rule by the Housing Preservation and Development Commissioner.

A common household is deemed to exist if all household members have access to all parts of the dwelling unit. Lack of access to all parts of the dwelling unit establishes a rebuttable presumption that no common household exists.

GROUP HOME. A facility for the care and maintenance of not fewer than seven nor more than twelve children, supervised by the New York State Board of Social Welfare, and operated pursuant to and meeting any additional construction requirements of Section 374-c of the New York State Social Services Law and applicable regulations of the New York State Department of Social Services. Such a facility occupied by more than twelve children shall be classified as Group I-1.

PERSONAL CARE SERVICE. The care of residents who do not require chronic or convalescent medical or nursing care. Personal care involves responsibility for the safety of the resident while inside the building.

RESIDENTIAL CARE/ASSISTED LIVING FACILITIES. A building or part thereof housing persons, on a 24-hour basis, who because of age, mental disability or other reasons, live in a supervised residential environment which provides personal care services. The occupants are capable of self-preservation and are capable of responding to an emergency situation without physical assistance from staff. This classification shall include, but not be limited to, the following: residential board and care facilities, assisted living facilities, halfway houses, congregate care facilities,

social rehabilitation facilities, alcohol and drug abuse rehabilitation centers and convalescent facilities.

ROOMING HOUSE. A dwelling (i) which was originally erected as a single- or two-family private dwelling pursuant to the New York City Building Code in effect prior to December 6, 1968, (ii) which is a "Class B converted dwelling" as such term is defined in the New York City Housing Maintenance Code, and (iii) which has more than half of its habitable rooms as sleeping units. The creation of or conversion to a rooming house shall be limited by Section 27-2077 of the New York City Housing Maintenance Code.

SLEEPING UNIT. A dwelling unit, which may contain either toilet or kitchen facilities but not both. Any sleeping unit housing more than one family shall also be classified as a congregate living unit. The creation of or conversion to sleeping units shall be limited by Section 27-2077 of the New York City Housing Maintenance Code.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 31: SPECIAL CONSTRUCTION
SECTION BC 3101: GENERAL

NYC Administrative Code § 28-BC 3101

3101.1 Scope.

The provisions of this chapter shall govern special building construction including membrane structures, temporary structures, pedestrian walkways and tunnels, awnings and canopies, marquees, signs, telecommunications towers and antennas, swimming pools and enclosures, sidewalk cafes, and fences.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 31: SPECIAL CONSTRUCTION
SECTION BC 3102: MEMBRANE STRUCTURES

NYC Administrative Code § 28-BC 3102

3102.1 General.

The provisions of this section shall apply to air-supported structures, air-inflated structures, membrane-covered cable structures, membrane-covered frame structures, and tents, collectively known as membrane structures.

3102.1.1 Certificates of occupancy. The duration of certificates of occupancy for air-inflated structures, air-supported structures, and tents may be limited in accordance with the requirements of Chapter 1.

3102.2 Definitions. The following terms shall, for the purposes of this section and as used elsewhere in this code, have the meanings shown herein:

AIR-INFLATED STRUCTURE. A building where the shape of the structure is maintained by air pressurization of cells or tubes to form a barrel vault over the usable area. Occupants of such a structure do not occupy the pressurized area used to support the structure.

AIR-SUPPORTED STRUCTURE. A building wherein the shape of the structure is attained and maintained by elevated air pressure and occupants of the structure are within the elevated pressure area. Air-supported structures are of two basic types:

Double skin. Similar to a single skin, but with an attached liner that is separated from the outer skin and provides an airspace which serves for insulation, acoustic, aesthetic or similar purposes.

Single skin. Where there is only the single outer skin and the air pressure is directly against that skin.

CABLE-RESTRAINED, AIR-SUPPORTED STRUCTURE. A structure in which the uplift is resisted by cables or webbings which are anchored to either foundations or dead men. Reinforcing cable or webbing is attached by various methods to the membrane or is an integral part of the membrane. This is not a cable-supported structure.

MEMBRANE-COVERED CABLE STRUCTURE. A nonpressurized structure in which a mast and cable system provides support and tension to the membrane weather barrier and the membrane imparts stability to the structure.

MEMBRANE-COVERED FRAME STRUCTURE. A nonpressurized building wherein the structure is composed of a rigid framework to support a tensioned membrane which provides the weather barrier.

NONCOMBUSTIBLE MEMBRANE STRUCTURE. A membrane structure in which the membrane and all component parts of the structure are noncombustible.

TENT. A non-pressurized membrane structure of a fabric weather barrier supported by poles and guys, in which the fabric weather barrier does not impart stability to the structure. Tents need not be fully enclosed on the sides.

3102.3Type of construction. Noncombustible membrane structures shall be classified as Type IIB construction. Noncombustible frame or cable-supported structures covered by an approved membrane in accordance with Section 3102.3.1 shall be classified as Type IIB construction. Heavy timber frame-supported structures covered by an approved membrane in accordance with Section 3102.3.1 shall be classified as Type IV construction. Other membrane structures shall be classified as Type V construction.

3102.3.1Membrane and interior liner material. Membranes and interior liners shall be either noncombustible as set forth in Section 703.4, or flame resistant as determined in accordance with NFPA 701 and the manufacturer's test protocol.

3102.4Allowable floor areas. The area of a membrane structure shall not exceed the limitations set forth in Table 503, except as provided in Section 506.

3102.5Maximum height. Membrane structures shall not exceed one story nor shall such structures exceed the height limitations in feet set forth in Table 503. Membrane structures may be erected above the roof of a building provided that such roof is of noncombustible construction required to have a fire-resistance rating

Exception: Noncombustible membrane structures serving as roofs only.

3102.6Mixed construction. Membrane structures shall be permitted to be utilized as specified in this section as a portion of buildings of other types of construction. Height and area limits shall be as specified for the type of construction and occupancy of the building.

3102.6.1Noncombustible membrane. A noncombustible membrane shall be permitted for use as the roof or as a skylight of any building or atrium of a building of any type of construction, provided it is at least 20 feet (6096 mm) above any floor, balcony or gallery, and meets the fire classification requirements of Section 1505 for roof assemblies.

3102.6.1.1Flame-resistant membrane. A flame-resistant membrane shall be permitted to be used as the roof or as a skylight on buildings of Type IIB, III, IV and V construction, provided it is at least 20 feet (6096 mm) above any floor, balcony or gallery, and meets the fire classification requirements of Section 1505 for roof assemblies.

3102.7Engineering design. Membrane structures shall be designed and constructed to sustain dead loads; loads due to tension or inflation; live loads including wind, snow or flood and seismic loads and in accordance with Chapter 16 and Appendix G.

Exception: Tents, air-inflated structures, and air-supported structures shall be designed by either an alternate engineering design approved by the commissioner or as follows:

1. Tents. Tents shall be guyed, supported, and braced to withstand a wind pressure of 10 psf (478.8 Pa) of projected area of the tent. The poles and their supporting guys, stays, stakes, fastenings, etc. shall be of sufficient strength and attached so as to resist wind pressure of 20 psf (957.6 Pa) of projected area of the tent.

2. Air-inflated structures and air-supported structures.

2.1. Air-inflated structures and air-supported structures shall be anchored to the ground or supporting structure by either ballast or positive anchorage, sufficiently and evenly distributed, and adequate to resist the inflation lift load, the aerodynamic lift load, and the drag (shear) load due to wind impact. The latter factors shall be based on a fastest mile wind speed of 70 mph (112.65 km/hr), and an estimated stagnation of not less than 0.5 q for structures on grade whose height is equal to, or less than, the width of the structure. For greater heights, or for elevated structures, increased anchorage shall be provided, justified by analytical and/or experimental data subject to approval by the commissioner.

2.2. The skin of the structure shall be of such strength, and the joints so constructed, as to provide a minimum dead load strip tensile strength at 70(degrees)F (21(degrees)C) of 4 times the 70 mph (121.65 km/hr) design load (inflation and aerodynamic loading). The joints shall provide a dead load strip tensile strength of 160(degrees)F (71(degrees)C) of twice the 70 mph (121.65 km/hr) design load (i.e., a factor of safety of 4 and 2 respectively). In addition, the material shall provide a trapezoidal tear strength of at least 15 percent of the maximum design tensile load. Material and joint strengths shall be so certified by the manufacturer, justified by analytical and/or experimental data.

3102.8 Inflation systems. Air-supported structures and air-inflated structures shall be provided with primary and auxiliary inflation systems to meet the minimum requirements of Sections 3102.8.1 through 3102.8.3.

3102.8.1 Equipment requirements. The primary inflation system shall consist of one or more blowers and shall include provisions for automatic control to maintain the required inflation pressures. Such system shall be so designed as to prevent over pressurization of the system.

3102.8.1.1 Auxiliary inflation system. In addition to the primary inflation system, in structures exceeding 1,500 square feet (140 m²) in area, an auxiliary inflation system shall be provided with sufficient capacity to maintain the inflation of the structure in case of primary system failure. The auxiliary inflation system shall operate automatically when there is a loss of internal pressure and when the primary blower system becomes inoperative.

3102.8.1.2 Blower equipment. Blower equipment shall meet the following requirements:

1. Blowers shall be powered by continuous-rated motors at the maximum power required for any flow condition as required by the structural design.

2. Blowers shall be provided with inlet screens, belt guards and other protective devices as required by the commissioner to provide protection from injury.

3. Blowers shall be housed within a weather-protecting structure.

4. Blowers shall be equipped with backdraft check dampers to minimize air loss when inoperative.

5. Blower inlets shall be located to provide protection from air contamination. The location of inlets shall be approved.

3102.8.2 Emergency power. Wherever an auxiliary inflation system is required, an approved emergency power-generating system shall be provided. However, notwithstanding Section 2702.1, the emergency power-generating system shall be equipped with a suitable means for automatically starting the generator set upon failure of the normal electrical service and for automatic transfer and operation of all of the required electrical functions at full power within 60 seconds of such service failure. Emergency power shall be capable of operating independently for a minimum of 4 hours.

3102.8.3 Support provisions. A system capable of supporting the membrane in the event of deflation shall be provided for in air-supported structures and air-inflated structures having an occupant load of more than 50 or where

covering a swimming pool regardless of occupant load. Such support system shall be capable of maintaining the membranes at least 7 feet (2134 mm) above the floor, seating area or surface of the water. When air-supported structures or air-inflated structures are used as a roof on Type I or II construction buildings, such support system shall be capable of maintaining the membranes not less than 20 feet (6096 mm) above the floor or seating area.

3102.9 Separation. No air-inflated structure, air-supported structure, or tent shall be erected closer than 20 feet (6096 mm) to any interior lot line nor closer than 30 feet (9144 mm) in any direction to an unprotected opening, required exterior stairway or corridor, or required exit door, on the same level or above the level of such structure. Such structure may abut another building on the same tax lot if the following conditions exist:

1. No unprotected openings or exits are located above or within 30 feet (9144 mm) of such structure.
2. No doors serving as a required exit are located between such structure and the abutted building.
3. The exterior wall of the abutted building meets the requirements of Section 705 for fire walls.

3102.10 Exits. In addition to the requirements of Chapter 10, travel distance to an exit from any point within a tent, air-supported structure, or air-inflated structure shall not exceed 75 feet (22 860 mm).

3102.10.1 Exit openings from tents. Exit openings from tents shall remain open unless covered by a flame-resistant curtain of a contrasting color to the tent. Such curtain shall be supported at least 80 inches (2032 mm) above the floor level at the exit and, when open, no part of the curtain shall obstruct the exit.

3102.10.2 Exit openings from air-supported structures and air-inflated structures. Exit doors in air-supported structures and air-inflated structures shall close automatically against normal operational pressures. Opening force at the edge of such doors shall not exceed 15 pounds (6.80 kg), with the structure at operational pressure. Exit doors shall be located in frames constructed such that they will remain operative and support the weight of the pressurized membrane structure in a state of total collapse.



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Chapter 31: SPECIAL CONSTRUCTION
SECTION BC 3103: TEMPORARY STRUCTURES

NYC Administrative Code § 28-BC 3103

3103.1 General.

The provisions of this section shall apply to temporary platforms, reviewing stands, outdoor bandstands and similar miscellaneous structures erected for a period of 30 days or less. Such structures may be constructed of wood whether located inside or outside of the fire districts.

3103.1.1 Permit required. Temporary structures that cover an area in excess of 120 square feet (11.16 m²), including connecting areas or spaces with a common means of egress or entrance, shall not be erected, operated or maintained for any purpose without obtaining a permit from the department.

3103.2 Construction documents. A permit application and construction documents shall be submitted for each installation of a temporary structure. The construction documents shall include a site plan indicating the location of the temporary structure and information delineating the means of egress and the occupant load.

3103.3 Location. Temporary structures shall be located in accordance with the requirements of Table 602 based on the fire-resistance rating of the exterior walls for the proposed type of construction.

3103.4 Means of egress. Temporary structures shall conform to the means of egress requirements of Chapter 10 and shall have a maximum exit access travel distance of 100 feet (30 480 mm).



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SECTION BC 3104: PEDESTRIAN WALKWAYS AND TUNNELS

NYC Administrative Code § 28-BC 3104

3104.1 General.

This section shall apply to connections between buildings such as pedestrian walkways or tunnels, located at, above or below grade level, that are used as a means of travel by persons. The pedestrian walkway shall not contribute to the building area or the number of stories or height of connected buildings.

3104.2 Separate structures. Connected buildings shall be considered to be separate structures.

Exceptions:

1. Buildings on the same tax lot in accordance with Section 503.1.3.
2. For purposes of calculating the number of Type B units required by Chapter 11, structurally connected buildings and buildings with multiple wings shall be considered one structure.

3104.3 Construction. The pedestrian walkway shall be of a construction type that is at least equal to the higher type of the two buildings connected.

Exception: Exterior pedestrian walkways serving as a required exit shall be constructed of noncombustible materials.

3104.4 Contents. Only materials approved by the department shall be located in the pedestrian walkway. Decorations may be permitted in accordance with the New York City Fire Code.

3104.5 Fire barriers between pedestrian walkways and buildings. Walkways shall be separated from the interior of the building by fire barrier walls with a fire-resistance rating of not less than 2 hours. This protection shall extend vertically from a point 10 feet (3048 mm) above the walkway roof surface or the connected building roof line, whichever is lower, down to a point 10 feet (3048 mm) below the walkway and horizontally 10 feet (3048 mm) from

each side of the pedestrian walkway. Openings within the 10-foot (3048 mm) horizontal extension of the protected walls beyond the walkway shall be equipped with devices providing a 3/4-hour fire protection rating in accordance with Section 715.

Exception: On pedestrian walkways having a maximum height above grade of 3 stories or 40 feet (12 192 mm), whichever is less; or 5 stories or 55 feet (16 764 mm) where sprinklered, whichever is less, the walls separating the pedestrian walkway from a connected building are not required to have a fire barrier by this section where any of the following conditions exist:

1. The distance between the connected buildings is more than 10 feet (3048 mm), the pedestrian walkway and connected buildings are equipped throughout with an automatic sprinkler system in accordance with NFPA 13 as modified in Appendix Q and the wall is constructed of a tempered, wired or laminated glass wall and doors subject to the following:

1.1. The glass shall be protected by an automatic sprinkler system in accordance with NFPA 13 as modified in Appendix Q and the sprinkler system shall completely wet the entire surface of interior sides of the glass wall when actuated.

1.2. The glass shall be in a gasketed frame and installed in such a manner that the framing system will deflect without breaking (loading) the glass before the sprinkler operates.

1.3. Obstructions shall not be installed between the sprinkler heads and the glass.

2. The distance between the connected buildings is more than 10 feet (3048 mm), and both sidewalls of the pedestrian walkway are at least 50 percent open with the open area uniformly distributed to prevent the accumulation of smoke and toxic gases.

3. Buildings are on the same tax lot, in accordance with Section 503.1.3.

4. Where exterior walls of connected buildings are required by Section 704 to have a fire-resistance rating greater than 2 hours, the walkway shall be equipped throughout with an automatic sprinkler system installed in accordance with NFPA 13 as modified in Appendix Q.

5. The pedestrian walkway does not serve as a required exit.

3104.6Public way. Pedestrian walkways over a public way shall also comply with Chapter 32.

3104.7Width. The unobstructed width of pedestrian walkways shall not be less than 36 inches (914 mm). The total width shall not exceed 30 feet (9144 mm).

3104.8Egress. Access shall be provided at all times to a pedestrian walkway that serves as a required exit. Doors satisfying the requirements of Chapter 10 shall enclose each end of such pedestrian walkway. The width of such pedestrian walkway shall be at least equal to the width of the doors opening onto such pedestrian walkway, but in no case less than 44 inches (1118 mm). The floor level at doors shall be the same as that of the connected building.

Exception: The floor level at doors of open pedestrian walkways shall be at least 7 1/2 inches (191 mm) below the level of the door. Where the requirements of Chapter 11 are applicable, the differences in levels shall be accommodated by means of ramps in compliance with the provisions of Chapter 11.

3104.9Exit access travel. The length of exit access travel shall not exceed 200 feet (60 960 mm).

Exceptions:

1. Exit access travel distance on a pedestrian walkway equipped throughout with an automatic sprinkler system in accordance with NFPA 13 as modified in Appendix Q shall not exceed 250 feet (76 200 mm).

2. Exit access travel distance on a pedestrian walkway constructed with both sides at least 50 percent open shall not exceed 300 feet (91 440 mm).

3. Exit access travel distance on a pedestrian walkway constructed with both sides at least 50 percent open, and equipped throughout with an automatic sprinkler system in accordance with NFPA 13 as modified in appendix Q, shall not exceed 400 feet (122 m).

3104.10Tunneled walkway.Separation between the tunneled walkway and the building to which it is connected shall not be less than 2-hour fire-resistant construction and openings therein shall be protected in accordance with Table 715.3.

3104.11Ventilation.Smoke and heat vents shall be provided for enclosed walkways and tunneled walkways as required for Group F-1 occupancies in accordance with Section 910.



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Chapter 31: SPECIAL CONSTRUCTION
SECTION BC 3105: AWNINGS AND CANOPIES

NYC Administrative Code § 28-BC 3105

3105.1 General.

Awnings and canopies shall comply with the requirements of this section, the requirements of Chapter 32 for projections over public ways, and other applicable sections of this code.

Exception: Canopies projecting over public rights-of-way governed by Title 19 of the Administrative Code and rules of the New York City Department of Transportation.

3105.2 Definition. The following term shall, for the purposes of this section and as used elsewhere in this code, have the meaning shown herein.

RETRACTABLE AWNING. A retractable awning is a cover with a frame that retracts against a building or other structure to which it is entirely supported.

3105.3 Design and construction. Awnings and canopies shall be designed and constructed to withstand wind or other lateral loads and live loads as required by Chapter 16 with due allowance for shape, open construction and similar features that relieve the pressures or loads. Structural members shall be protected to prevent deterioration. Awnings shall have frames of noncombustible material, covered with flame-resistant fabric in accordance with NFPA 701, plastic in accordance with Section 2605, sheet metal, or other equivalent material, and shall be either fixed, retractable, folding or collapsible.

3105.4 Reserved.



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Chapter 31: SPECIAL CONSTRUCTION
SECTION BC 3106: MARQUEES

NYC Administrative Code § 28-BC 3106

3106.1 General.

Marquees shall comply with this section and other applicable sections of this code. Marquees projecting beyond the street line shall also comply with the requirements of Chapter 32. Signs placed on marquees shall also comply with Section 3107.

3106.2 Thickness. The maximum height or thickness of a marquee measured vertically from its lowest to its highest point shall not be limited.

Exception: Marquees projecting beyond the street line shall meet the height and thickness requirements of Chapter 32.

3106.3 Roof construction. Where the roof or any part thereof is a skylight, the skylight shall comply with the requirements of Chapter 24. Every roof and skylight of a marquee shall be drained in accordance with the provisions of the New York City Plumbing Code.

3106.4 Location prohibited. Every marquee shall be so located as not to interfere with the operation of any exterior standpipe, and such that the marquee does not obstruct the clear passage of stairways or exit discharge from the building or the installation or maintenance of street lighting.

3106.5 Construction. A marquee shall be supported entirely from the building and constructed of noncombustible materials. Marquees shall be designed as required in Chapter 16. Structural members shall be protected to prevent deterioration.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE

Chapter 31: SPECIAL CONSTRUCTION

SECTION BC 3107: SIGNS

NYC Administrative Code § 28-BC 3107

3107.1 General.

Signs shall be designed, constructed and maintained in accordance with Appendix H.



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SECTION BC 3108: RADIO, TELEVISION, AND TELECOMMUNICATIONS TOWERS AND ANTENNAS

NYC Administrative Code § 28-BC 3108

3108.1 General.

Subject to the provisions of Chapter 16 and the requirements of Chapter 15 governing the fire-resistance ratings of buildings for the support of roof structures, radio, television, and telecommunications towers and antennas shall be designed and constructed as herein provided. All such towers and antennas shall be collectively referred to as "towers" for the purposes of this section.

3108.2Location and access.Towers shall be located and equipped with step bolts and ladders so as to provide ready access for inspection purposes. Guy wires or other accessories shall not cross or encroach upon any street or other public space, or over above-ground electric utility lines, or encroach upon any privately owned property without written consent of the owner of the encroached-upon property, space or above-ground electric utility lines.

3108.3Construction.Towers shall be constructed of approved corrosion-resistant noncombustible material. The minimum type of construction of isolated radio towers not more than 100 feet (30 480 mm) in height shall be Type IIB.

3108.4Loads.Towers shall be designed to resist wind loads in accordance with TIA/EIA-222. Consideration shall be given to conditions involving wind load on ice-covered sections.

3108.4.1Dead load.Towers shall be designed for the dead load plus ice load.

3108.4.2Wind load.Towers shall be provided with adequate foundations and anchorage designed to resist two times the calculated wind load.

3108.5Grounding.Towers shall be permanently and effectively grounded in accordance with the New York City Electrical Code.



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Chapter 31: SPECIAL CONSTRUCTION
SECTION BC 3109: SWIMMING POOLS, SWIMMING POOL ENCLOSURES, AND SAFETY DEVICES

NYC Administrative Code § 28-BC 3109

3109.1 General.

Swimming pools, swimming pool enclosures, and swimming pool safety devices shall comply with the requirements of this section and other applicable sections of this code.

3109.2 Definitions. The following terms shall, for the purposes of this section and as used elsewhere in this code, have the meaning shown herein.

SWIMMING POOL. Any indoor or outdoor swimming, wading, spa, or special-purpose pool.

Exceptions:

1. Portable, freestanding wading pools containing water less than 24 inches (610 mm) in depth.
2. Float tanks or relaxation tanks sized for use by one person at a time.
3. Pools used for religious purposes.
4. Spa pools used for prescribed medical therapy or rehabilitation and under medical supervision.

SWIMMING POOL, PRIVATE. A swimming pool that is accessory to a one- or two-family dwelling, or to a single dwelling unit of a multiple dwelling, and that is solely for the use of the occupants for non-commercial purposes.

SWIMMING POOL, PUBLIC. A swimming pool that is not a private swimming pool. Public swimming pools include swimming pools that are accessory to bathing establishments as such term is defined in the New York City Health Code, whether owned or operated by city agencies, or commercial interests or private entities, including, but not limited to, public or private schools, corporations, hotels, motels, camps, apartment houses, condominiums, country clubs, gymnasias and health establishments.

3109.3 All swimming pools. Public and private swimming pools shall comply with the requirements for safety and accessibility as provided in this section.

3109.3.1 Entrapment avoidance. Where the suction inlet system, such as an automatic cleaning system, is a vacuum cleaner system which has a single suction inlet, or multiple suction inlets which can be isolated by valves, each suction inlet shall protect against user entrapment by an approved antivortex cover, a 12-inch by 12-inch (305 mm by 305 mm) or larger grate, or other approved means. In addition, all swimming pools and spas shall be equipped with an alternative backup system which shall provide vacuum relief should grate covers be missing. Alternative vacuum relief devices shall include one of the following:

1. Approved vacuum release system.
2. Approved vent piping.
3. Other approved devices or means.

3109.3.2 Water circulation, water treatment, and drainage. The supply, circulation, treatment, and drainage of water for swimming pools shall meet the requirements of the New York City Plumbing Code.

3109.3.3 Electrical precautions. No overhead electrical conductors shall be installed within 15 feet (4572 mm) of any swimming pool. All metal fences, enclosures, or railings that might become electrically charged as a result of contact with broken overhead conductors or from any other cause near, or adjacent to, a swimming pool shall be grounded in accordance with the provisions of lightning protection in the New York City Electrical Code.

3109.3.4 Facilities for people with disabilities. Facilities for people with physical disabilities shall be provided where required by Chapter 11 of this code.

3109.4 Public swimming pools. Public swimming pools shall comply with the requirements for safety and accessibility as provided in Section 3109.3 and 3109.4.

Exceptions: A swimming pool with a power safety cover or a spa with a safety cover complying with ASTM F 1346.

3109.4.1 Barrier height and clearances. Public swimming pools shall be completely enclosed by a fence, wall, building, or other solid barrier, or any combination thereof, at least 6 feet (1829 mm) in height. Openings in the enclosure shall not permit the passage of a 4-inch-diameter (102 mm) sphere. The enclosure shall be equipped with self-closing and self-latching gates.

Exception: Enclosures shall be at least 4 feet (1219 mm) in height when surrounding wading pools with water less than 24 inches (610 mm) in depth.

3109.4.2 Other laws. In addition to the requirements of this section, any other, more stringent requirements for the construction and design of swimming pool and barriers that may be provided for in Article 165 of the New York City Health Code, as administered by the New York City Department of Health and Mental Hygiene, shall also be applicable.

3109.5 Private swimming pools. Private swimming pools shall comply with the requirements for safety and accessibility as provided in Section 3109.3 and this section.

Exception: An above-ground private swimming pool which has a maximum water depth of 4 feet (1219 mm) and an area not exceeding 500 square feet (46.45 m²) that is accessory to an R-3 occupancy and is privately used for non-commercial purposes shall not be required to comply with Sections 3109.3.1, 3109.3.2, 3109.5.2, 3109.5.3, and 3109.5.4.

3109.5.1Barrier height and clearances.The top of the barrier enclosing a private swimming pool shall be at least 48 inches (1219 mm) above grade measured on the side of the barrier that faces away from the swimming pool. The maximum vertical clearance between grade and the bottom of the barrier shall be 2 inches (51 mm) measured on the side of the barrier that faces away from the swimming pool. Where the top of the pool structure is above grade, the barrier is authorized to be erected at grade level or mounted on top of the pool structure. The maximum vertical clearance between the top of the pool structure and the bottom of the barrier shall be 4 inches (102 mm).

3109.5.1.1Openings.Openings in the barrier shall not allow passage of a 4-inch-diameter (102 mm) sphere.

3109.5.1.2Solid barrier surfaces.Solid barriers which do not have openings shall not contain indentations or protrusions except for normal construction tolerances and tooled masonry joints.

3109.5.1.3Closely spaced horizontal members.Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is less than 45 inches (1143 mm), the horizontal members shall be located on the swimming pool side of the fence. Spacing between vertical members shall not exceed 13/4 inches (44 mm) in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 13/4 inches (44 mm) in width.

3109.5.1.4Widely spaced horizontal members.Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is 45 inches (1143 mm) or more, spacing between vertical members shall not exceed 4 inches (102 mm). Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 13/4 inches (44 mm) in width.

3109.5.1.5Chain link dimensions.Maximum mesh size for chain link fences shall be a 21/4 inch square (57 mm square) unless the fence is provided with slats fastened at the top or the bottom which reduce the openings to no more than 13/4 inches (44 mm).

3109.5.1.6Diagonal members.Where the barrier is composed of diagonal members, the spacing between parallel diagonal members shall be no more than 13/4 inches (44 mm).

3109.5.1.7Gates.Access gates shall comply with the requirements of Sections 3109.5.1.1 through 3109.5.1.6 and shall be equipped to accommodate a locking device. Pedestrian access gates shall open outward away from the pool and shall be self-closing and have a self-latching device. Gates other than pedestrian access gates shall have a self-latching device. Where the release mechanism of the self-latching device is located less than 54 inches (1372 mm) from the bottom of the gate, the release mechanism shall be located on the pool side of the gate at least 3 inches (76 mm) below the top of the gate, and the gate and barrier shall have no opening greater than 1/2 inch (12.7 mm) within 18 inches (457 mm) of the release mechanism.

3109.5.1.8 Dwelling wall as a barrier.Where a wall of a dwelling serves as part of the barrier, one of the following shall apply:

1. Doors with direct access to the swimming pool through that wall shall be equipped with an alarm which produces an audible warning when the door and its screen are opened. The alarm shall sound continuously for a minimum of 30 seconds immediately after the door is opened and be capable of being heard throughout the dwelling during normal household activities. The alarm shall automatically reset under all conditions. The alarm shall be equipped with a manual means to temporarily deactivate the alarm for a single opening. Such deactivation shall last no more than 15 seconds. The deactivation switch shall be located at least 54 inches (1372 mm) above the threshold of the door.

2. The swimming pool shall be equipped with a power safety cover which complies with ASTM F 1346.

3. The door providing access to the swimming pool from the dwelling shall open inward, away from the swimming pool, and shall be self-closing and have a self-latching device. The release mechanism of the self-latching device shall

be located no less than 54 inches (1372 mm) from the bottom of the door.

3109.5.1.9Pool structure as barrier.Where an aboveground private swimming pool structure is used as a barrier or where the barrier is mounted on top of the pool structure, and the means of access is a ladder or steps, then the ladder or steps either shall be capable of being secured, locked or removed to prevent access, or the ladder or steps shall be surrounded by a barrier which meets the requirements of Sections 3109.5.1.1 through 3109.5.1.8. When the ladder or steps are secured, locked or removed, any opening created shall not allow the passage of a 4-inch-diameter (102 mm) sphere.

3109.5.2Indoor swimming pools.Walls surrounding indoor private swimming pools shall not be required to comply with Section 3109.5.1.8.

3109.5.3Prohibited locations.Barriers shall be located so as to prohibit permanent structures, equipment or similar objects from being used to climb the barriers.

3109.5.4Construction requirements.Private swimming pools shall be constructed so as to be water tight and easily cleaned. They shall be built of nonabsorbent materials with smooth surfaces and shall be free of open cracks and open joints.

3109.5.4.1Walls.The walls of swimming pools shall be vertical for at least the top 30 inches (762 mm) below the normal water level. The junctions between the side walls and the bottom shall be coved. A swimming pool overflow shall be provided meeting the requirements of the New York City Plumbing Code.

3109.5.4.2Bottom slopes.The bottom of the swimming pool shall slope downward toward the main drains. The slope in shallow areas with depths less than 5 feet (1524 mm) shall not exceed 1 unit vertical in 12 units horizontal. In portions of the swimming pool with depth greater than 5 feet (1524 mm), the slope shall not be steeper than 1 unit vertical in 3 units horizontal.

3109.5.4.3Ladders.There shall be a ladder or steps with handrails at the deep end and at the shallow end of every swimming pool. Ladders and steps shall have no slip treads. All ladders shall be rigidly installed and shall be constructed of corrosion-resistant materials.

3109.5.4.4Walkways .Every swimming pool shall have a walkway at least 5 feet (1524 mm) wide around its entire perimeter. The walkway shall have a non-slip surface and shall be constructed to drain away from the swimming pool.

3109.5.4.5Handholds.Every swimming pool shall be constructed so that either the overflow gutter, if provided, or the tops of the side walls afford a continuous handhold for bathers.

3109.5.4.6Markings.Permanent markings showing the depth of the shallow end, break points, diving depth, and deep end shall be provided so as to be visible from both inside and outside the swimming pool.

3109.5.4.7Diving boards and towers.Diving towers shall be rigidly constructed and permanently anchored. The depth of the water below a diving board shall be at least 102 inches (2591 mm) for a board 39 inches (991 mm) or less above the water. For a diving board more than 39 inches (991 mm) and not more than 118 inches (2997 mm) above the water, the depth of the water below the board shall be at least 144 inches (3658 mm). For a diving board or platform more than 118 inches (2997 mm) above the water, the depth of the water below the board shall be at least 192 inches (4877 mm). Indoor swimming pools shall provide at least 144 inches (3658 mm) overhead clearance above all diving boards.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 3: USE AND OCCUPANCY CLASSIFICATION
SECTION BC 311: STORAGE GROUPS

NYC Administrative Code § 28-BC 311

311.1 Storage Group S.

Storage Group S occupancy includes, among others, the use of a building or structure, or a portion thereof, for storage, such as for warehouses, storage rooms, freight depots and distribution centers, when not classified as a hazardous occupancy.

311.2 Moderate-hazard storage, Group S-1. Buildings occupied for storing any flammable or combustible materials that are likely to permit the development and production of fire with moderate rapidity including, but not limited to, storage of the following:

Aerosols, Levels 2 and 3

Bags; cloth, burlap and paper

Bamboos and rattan

Baskets

Belting; canvas and leather

Books and paper in rolls or packs

Boots and shoes

Buttons, including cloth covered, pearl or bone

Cardboard and cardboard boxes

Clothing, woolen wearing apparel

Cordage

Furniture

Furs

Glues, mucilage, pastes and size

Grains

Horns and combs, other than celluloid

Leather

Linoleum

Lumber

Photo engravings

Resilient flooring

Silks

Soaps

Sugar

Tires, bulk storage of

Tobacco, cigars, cigarettes and snuff

Upholstery and mattresses

Wax candles

311.3Low-hazard storage, Group S-2.Includes, among others, buildings used for the storage of noncombustible materials such as products on wood pallets or in paper cartons with or without single thickness divisions; or in paper wrappings. Such products are permitted to have a negligible amount of plastic trim, such as knobs, handles or film wrapping. Storage uses shall include, but not be limited to, storage of the following:

Asbestos

Beverages up to and including 12-percent alcohol in metal, glass or ceramic containers

Cement in bags

Chalk and crayons

Dairy products in nonwaxed coated paper containers

Dry cell batteries

Electrical coils

Electrical motors

Empty cans

Food products

Foods in noncombustible containers

Fresh fruits and vegetables in nonplastic trays or containers

Frozen foods

Glass

Glass bottles, empty or filled with noncombustible liquids

Gypsum board

Inert pigments

Ivory

Meats

Metal cabinets

Metal desks with plastic tops and trim

Metal parts

Metals

Mirrors

Oil-filled and other types of distribution transformers

Parking garages, open or enclosed

Porcelain and pottery

Stoves

Talc and soapstones

Washers and dryers



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Chapter 31: SPECIAL CONSTRUCTION
SECTION BC 3110: SIDEWALK CAFES

NYC Administrative Code § 28-BC 3110

3110.1 General.

Sidewalk cafes provided beyond the building line shall comply with the requirements of this section, the New York City Zoning Resolution, the Commissioners of the Department of Consumer Affairs and Department of Transportation, and with the projection limitations of Chapter 32 of this code.

3110.2Enclosures.Enclosed sidewalk cafes shall be constructed of noncombustible material. The walls of such enclosures shall not extend more than 8 feet (2438 mm) above the sidewalk. Light transmitting plastic glazing complying with Section 2606 shall be permitted as glazing within such walls. Light-transmitting plastic skylight glazing complying with Section 2610 may be installed in the roofs of such enclosures.

3110.3Awnings.Awnings supported entirely from the building may be placed over unenclosed sidewalk cafes provided they are at least 8 feet (2438 mm) clear above the sidewalk and within the limits specified by the Commissioner of the Department of Consumer Affairs. Such awnings shall be in compliance with Section 3105 of this code.

3110.4Obstructions prohibited.No part of any awning, enclosure, fixture, equipment or removable platform of a sidewalk cafe shall be located:

1. Beneath a fire escape so as to obstruct operation of fire escape drop ladders or counter-balanced stairs;
2. So as to obstruct any exit from a building;
3. So as to obstruct any cellar access hatch or areaway;
4. So as to interfere with any vent or other mechanical ventilation outlet or inlet;
5. So as to interfere with or obscure any standpipe connections, hydrant or associated signage in any way that

would hinder its use by the fire department.

Exception: Upon special application, the commissioner may permit an easily removable, prominently designated platform, designed in accordance with Section 3110.5, to cover a cellar entrance or areaway that is not used as a required means of egress.

3110.5Removable platforms.Removable platforms of sidewalk cafes shall be constructed in accordance with the requirements of this section.

3110.5.1Continuity.Removable platforms shall be constructed to provide for a continuous unbroken and level floor without openings or cracks so as to prevent any material or liquid from falling through to the area beneath.

3110.5.2Maintenance.No papers, trash or other materials may be permitted to accumulate in the area beneath the floor of any removable platform.

3110.6Accessibility.Sidewalk cafes and access thereto shall comply with Chapter 11.

3110.7Assembly seating.Unless separated from seating inside the building by fire partitions complying with Section 708, the seating for enclosed sidewalk cafes shall be added to that inside the building in order to determine whether a place of assembly permit is required.

3110.8Rules.In addition to the requirements specified herein, the commissioner may promulgate such additional rules necessary to secure safety.



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SECTION BC 3111: FENCES

NYC Administrative Code § 28-BC 3111

3111.1 Permitted heights.

Fences are permitted to be erected to a maximum height of 10 feet (3048 mm) above the ground.

Exceptions:

1. In residence districts, as established by the New York City Zoning Resolution, fences are permitted to be erected to a maximum height of 6 feet (1829 mm) above the ground.
2. Fences in residence districts used in conjunction with non-residence buildings and public playgrounds, excluding buildings accessory to dwellings, are permitted to be erected to a maximum height of 15 feet (4572 mm) above the ground.
3. Higher fences may be permitted by the commissioner where required for the enclosure of public playgrounds, school yards, parks, and similar public facilities.



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Chapter 3: USE AND OCCUPANCY CLASSIFICATION
SECTION BC 312: UTILITY AND MISCELLANEOUS GROUP U

NYC Administrative Code § 28-BC 312

312.1 General.

Buildings and structures of an accessory character and miscellaneous structures not classified in any specific occupancy shall be constructed, equipped and maintained to conform to the requirements of this code commensurate with the fire and life hazard incidental to their occupancy. Group U shall include, but not be limited to, the following:

Carports

Fences more than 6 feet (1829 mm) high

Private garages as per Section 406.1

Retaining walls

Sheds or greenhouses accessory to Group R-3 occupancies, that are: freestanding, less than 120 square feet (11.15 m²) in area, not permanently affixed to the ground, and used for household goods or items associated with the garden or lawn. Any other shed shall be classified as either S-1 or S-2.

Tanks

Towers



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 32: ENCROACHMENTS INTO THE PUBLIC RIGHT-OF-WAY
SECTION BC 3201: GENERAL

NYC Administrative Code § 28-BC 3201

3201.1 Scope.

The provisions of this chapter shall govern the encroachment of structures into the public right-of-way.

3201.1.1 Encroachments removable. All encroachments permitted beyond the street line by the provisions of this chapter shall be constructed so that they may be removed at any time without endangering the structural safety or fire safety of the building except that footings as permitted under Section 3202.1.1 of this code need not be removable.

3201.2 Measurement. The projection of any structure or appendage shall be the distance measured horizontally from the lot line to the outermost point of the projection.

3201.3 Other laws. The provisions of this chapter shall not be construed to permit the violation of other laws regulating the use and occupancy of public property.

3201.3.1 Restrictions on construction and projections on certain streets, parkways, boardwalks and beaches. Notwithstanding the provisions of this chapter, it shall be unlawful to build, erect, or make areaways, steps or other encroachments or projections prohibited by Sections 19-131, 19-132, 19-135, 18-109, 18-112 and 18-113 of the Administrative Code.

3201.4 Drainage. Drainage water collected from a roof, awning, canopy or marquee, other than canvas and flexible material, and condensate from mechanical equipment shall not flow over a public walking surface.

3201.5 Permission revocable. Any permission, expressed or implied, permitting the construction of encroachments within the area of the street under the provisions of this chapter shall be revocable, except footings as permitted under Section 3202.1.1.

3201.6 Existing projections. Any part of a building that projects beyond a street line on January 1, 1938 may be maintained as constructed until its removal is directed in accordance with applicable law.

3201.7 Alteration of existing encroachments. Alterations to existing encroachments beyond the street line may be permitted in whole or in part, provided that such alterations conform with the requirements of this chapter.

3200.8 Definitions. As used in this chapter, the following terms shall have the following meanings:

CURB LINE. The line coincident with the face of the street curb adjacent to the roadway.

FOOTING. A foundation element consisting of an enlargement of a foundation pier or foundation wall, wherein the soil materials along the side of and underlying the element may be visually inspected prior to and during its construction.

PROJECTING SIGN. A sign other than a wall sign, which projects from and is supported by a wall of a building or structure.

SIGN. Any letter, figure, character, mark, plane, point, marquee sign, design, poster, pictorial, picture, stroke, stripe, line, trademark, reading matter or illuminated service, which shall be constructed, placed, attached, painted, erected, fastened or manufactured in any manner whatsoever, so that the same shall be used for the attraction of the public to any place, subject, person, firm, corporation, public performance, article, machine or merchandise, whatsoever, which is displayed in any manner outdoors. Every sign shall be classified and conform to the requirements of that classification as set forth in this chapter.

STREET. A thoroughfare dedicated or devoted to public use by legal mapping or other lawful means, or a public way.

STREET LINE. A lot line separating a street from other land.

VAULT. Any space below the surface of the a street, that is covered over, except those openings that are used exclusively as places for descending, by means of steps, to the cellar or basement of any building.



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Chapter 32: ENCROACHMENTS INTO THE PUBLIC RIGHT-OF-WAY
SECTION BC 3202: ENCROACHMENTS

NYC Administrative Code § 28-BC 3202

3202.1 Encroachments below grade.

Encroachments below grade shall comply with Sections 3202.1.1 through 3202.1.4.

3202.1.1Footings.Exterior wall and column footings may be constructed to project beyond the street line not more than 12 inches (305 mm), provided that the top of the footing is not less than 8 feet (2438 mm) below the ground or sidewalk level. Foundation walls required to support permitted projections may be constructed to project not more than the permitted projection beyond the street line.

3202.1.2Vaults.Vaults may be permitted in accordance with the New York City Charter and Chapter 19 of the Administrative Code. Such vaults shall comply with the provisions of this code and other applicable laws and rules.

3202.1.3Areaways.Areaways, subject to approval by the Commissioner of the Department of Transportation, shall be protected by grates, guards or other approved means.

3202.1.4Tunnels between buildings.Tunnels connecting buildings, and projecting beyond street lines, may be constructed subject to the approval of the Commissioner of the Department of Transportation. Such tunnels shall comply with the provisions of this code and other applicable laws and regulations.

3202.2Encroachments above grade.Encroachments into the public right-of-way above grade shall be prohibited except as provided for in Sections 3202.2.1 through 3202.2.3.

3202.2.1Encroachments subject to the area limitations.Encroachments that are subject to area limitations are those elements listed in sections 3202.2.1.1 through 3202.2.1.8, generally of an architectural character, that form an integral part of the building facade. The aggregate area of all such elements constructed to extend beyond the street line shall not exceed 10 square feet (0.93 m²) within any 100 square feet (9.1 m²) of wall area, except that a veneer may be applied to the entire facade of a building erected before December 6, 1968, if such veneer does not project more than 4 inches (102

mm) beyond the street line. The area of any such projection shall be measured at that vertical plane, parallel to the wall, in which the area of the projection is greatest. This plane of measurement may be at the street line, the line of maximum projection, or any point in between.

3202.2.1.1 Entrance details. Entrance details, including steps, and doors when fully open, may be constructed to project beyond the street line not more than 18 inches (457 mm). Entrance steps that project beyond the street line shall be guarded at each end by railings or check pieces at least 3 feet (914 mm) high or by other members of the entrance detail providing equivalent protection.

3202.2.1.2 Architectural details. Details such as cornices, eaves, bases, sills, headers, band course, opening frames, sun control devices, rustications, applied ornament or sculpture, grilles, windows when fully open, air conditioning units, and other similar elements may be constructed:

1. To project not more than 4 inches (102 mm) beyond the street line when less than 10 feet (3048 mm) above the ground or sidewalk level.

2. To project not more than 10 inches (254 mm) beyond the street line when more than 10 feet (3048 mm) above the ground or sidewalk level.

Exception: Architectural details that are more than 10 feet (3048 mm) above the sidewalk and that project more than 10 inches (254 mm) may be permitted subject to the approval of the Commissioner of the Department of Transportation.

3202.2.1.3 Balconies. Balconies, including railings and supporting brackets, no parts of which are less than 10 feet (3048 mm) above the ground or sidewalk level, may be constructed to project not more than 22 inches (559 mm) beyond the street line. When permitted by the provisions of this code, fire escapes that are part of a required exit may be constructed to project not more than 4 feet 6 inches (1372 mm) beyond the street line provided no part, including any movable ladder or stair, is lower than 10 feet (3048 mm) above the ground or sidewalk level when not in use.

3202.2.1.4 Marquees. Marquees may be constructed to project beyond the street line provided that they comply with Section 3106 and Sections 3202.2.1.4.1 through 3202.2.1.4.5.

3202.2.1.4.1 Height. Marquees shall receive structural support only from the building, and shall be at least 10 feet (3048 mm) above the ground level or sidewalk.

3202.2.1.4.2 Projection. Marquees shall project no closer to the curb line than 2 feet (610 mm). 3202.2.1.4.3 Thickness. Marquees shall be no thicker nor shall the fascia be higher than 3 feet (914 mm) when measured from top to bottom.

3202.2.1.4.4 Dimensions. Dimensions shall include all decoration, but shall exclude any tension supports suspending the marquee from the wall.

3202.2.1.4.5 Occupancy restrictions. Marquees may be erected on:

1. Buildings of an essentially public nature including but not limited to the following:

- 1.1 Public buildings.

- 1.2. Theatres.

- 1.3. Hotels.

- 1.4. Terminals.

1.5. Large department stores.

1.6. Supermarkets.

1.7. Multiple dwellings.

2. Warehouses or markets in one of the following established market areas:

2.1. Bronx.

2.1.1. Edgewater Road and Halleck Street between Lafayette Avenue and East Bay Avenue.

2.1.2. Lafayette Avenue between Edgewater Road and the Bronx River.

2.1.3.

East Bay Avenue between Halleck Street and the Bronx River.

2.1.4. Hunt's Point Avenue between East Bay Avenue and the Bronx River.

2.1.5. Exterior Street between East 149th Street and East 157th Street.

2.1.6. Cromwell Avenue between East 150th Street and East 153rd Street.

2.1.7. East 150th Street between Exterior Street and River Avenue.

2.1.8. Westchester Avenue between St. Ann's Avenue and Bergen Avenue.

2.1.9. Brook Avenue between East 150th Street and East 156th Street.

2.1.10. Bergen Avenue between East 149th Street and East 156th Street.

2.1.11. East 152nd Street between Bergen Avenue and Brook Avenue.

2.1.12. East 153rd Street between Bergen Avenue and Brook Avenue.

2.2. Brooklyn.

2.2.1. North 6th Street between Berry Street and Wythe Avenue.

2.3. Manhattan.

2.3.1. John Street to Fulton Street between South Street and Front Street.

2.3.2. Fulton Street to Dover Street between South Street and Water Street.

2.3.3. South Street and Front Street between John Street and Dover Street.

2.3.4. Water Street between Fulton Street and Dover Street.

2.3.5. Horatio Street to West 14th Street between West Street and 9th Avenue.

2.3.6. West Street, Washington Street, Greenwich Street

2.3.7. 9th Avenue and 10th Avenue between Horatio Street and West 14th Street.

2.3.8. West 16th Street, north side, and West 17th Street, south side, between 10th Avenue and 11th Avenue.

2.3.9. West 24th Street to West 26th Street, south side, between 11th Avenue and 12th Avenue.

2.3.10. West 27th Street, north side, to West 28th Street between 11th Avenue and 12th Avenue.

2.3.11. 12th Avenue and St. Claire Place between 125th Street and 132nd Street.

2.3.12. 12th Avenue, west side, between 132nd Street and 133rd Street.

2.4. Queens.

2.4.1. 95th Avenue, north side, between Sutphin Boulevard and 148th Street.

3202.2.1.4.6 Change of occupancy. When the occupancy or use of a building with a marquee is changed to an occupancy or use for which a projecting marquee is not permitted, the marquee shall be removed.

Exception: Where such marquee is subject to the jurisdiction of the Landmarks Preservation Commission such marquee shall not be removed without the prior approval of the Landmarks Preservation Commission.

3202.2.1.4.7 Other agency approvals. An applicant wishing to erect a marquee shall provide proof that the Commissioners of the Departments of Transportation, Consumer Affairs, and Environmental Protection have not permitted the use of a space or structure on or under the sidewalk beneath the proposed marquee in such a manner that the construction of the proposed marquee shall interfere with the removal or repair of any such permitted use or structure.

3202.2.1.5 Light fixtures. Light fixtures that are supported entirely from the building may be constructed to project not more than 2 feet (610 mm) beyond the street line, provided no part of the fixture is less than 8 feet (2438 mm) above the ground or sidewalk level.

3202.2.1.6 Flagpoles. Flagpoles that are supported entirely from the building may be constructed to project not more than 18 feet (5486 mm) beyond the street line, but not closer than 2 feet (610 mm) to the curb line, provided that no part of the flagpole is less than 15 feet (4572 mm) above the ground or sidewalk level.

3202.2.1.7 Wall signs. Wall signs may be constructed to project not more than 12 inches (305 mm) beyond the street line when conforming to the requirements of this code and Section H111 of Appendix H.

3202.2.1.8 Projecting signs. All permitted projecting signs may be constructed to project not more than 10 feet (3048 mm) beyond the street line, but not closer to the curb line than 2 feet (610 mm), when conforming to the requirements of this code and Section H112 of Appendix H, and provided that no part of the sign is less than 10 feet (3048 mm) above the ground or sidewalk level.

Exceptions: Permanent projecting signs are prohibited on buildings in the areas indicated below:

1. Borough of Manhattan.

1.1. Projecting signs. No permanent projecting sign shall be erected on any building on:

1.1.1. 5th Avenue between Washington Square north and 110th Street;

1.1.2. 34th Street between Park Avenue and 7th Avenue;

1.1.3. Madison Avenue between 23rd Street and 96th Street;

- 1.1.4. 57th Street between Lexington Avenue and Broadway;
- 1.1.5. Vanderbilt Avenue between 42nd Street and 47th Street;
- 1.1.6. Park Avenue between 32nd Street and 40th Street;
- 1.1.7. Park Avenue between 45th Street and 96th Street;
- 1.1.8. 33rd Street between Lexington Avenue and 5th Avenue;
- 1.1.9. 35th through 41st Streets between Lexington Avenue and 5th Avenue;
- 1.1.10. 43rd through 56th Streets between Lexington Avenue and 5th Avenue;
- 1.1.11. 58th Street between Lexington Avenue and 5th Avenue;
- 1.1.12. 60th Street between Lexington Avenue and 5th Avenue;
- 1.1.13. Nassau Street between Wall Street and Frankfort Street; or
- 1.1.14. John Street between Broadway and William Street.

1.2. Illuminated projecting signs. No permanent illuminated projecting sign shall be erected on any building on:

- 1.2.1. 72nd Street between Central Park West and River Drive.

2. Borough of Brooklyn.

2.1. Projecting signs. No permanent projecting sign shall be erected on any building on:

- 2.1.1. Fulton Street between Flatbush Avenue and Joralemon Street and Willoughby Street.

2.2. Illuminated projecting signs. No permanent illuminated projecting sign shall be erected on any building on:

- 2.2.1. Fulton Street between Flatbush Avenue and Prospect Street and Henry Street;
- 2.2.2. Washington Street between Myrtle Avenue and Prospect Street;
- 2.2.3. Court Street between Fulton Street and Livingston Street;
- 2.2.4. Pierrepont Street between Fulton Street and Clinton Street;
- 2.2.5. Montague Street between Court Street and Clinton Street;
- 2.2.6. Remsen Street between Court Street and Clinton Street; or
- 2.2.7. Joralemon Street between Court Street and Clinton Street.

3202.2.2 Encroachments not subject to area limitations.

3202.2.2.1 Ramps. When a building erected prior to December 6, 1969 is altered to provide access to individuals who use wheelchairs, ramps constructed to provide such access may, with the approval of the commissioner, project beyond the street line for a distance of not more than 44 inches (1118 mm). Ramps shall comply with the applicable provisions of Chapter 11.

3202.2.2.2Bridges between buildings.Bridges connecting buildings, and projecting beyond street lines may be permitted in accordance with applicable law. Such bridges shall be of a construction class that is at least equal to the higher class of the two buildings connected, and shall otherwise comply with the provisions of this code and other applicable laws and rules.

3202.2.3Awnings.Awnings constructed in accordance with Section 3105 and supported entirely from the building may project beyond the street line as follows:

3202.2.3.1Store front awnings.Store front awnings may project beyond the street line not more than 8 feet (2438 mm), provided no part of the awning is less than 8 feet (2438 mm) above the ground or sidewalk level, except for a flexible valance which may be not less than 7 feet (2134 mm) above the ground or sidewalk level, and provided that the awning box or cover does not project more than 12 inches (305 mm).

3202.2.3.2Awnings over windows or doors.Awnings over windows or doors may project beyond the street line not more than 5 feet (1524 mm), provided that no part of the awning is less than 8 feet (2438 mm) above the ground or sidewalk level.

3202.3Reserved.

3202.4Temporary encroachments.Encroachments of temporary nature shall comply with Sections 3202.4.1 and 3202.4.2.

3202.4.1Sidewalk cafes.Enclosures for sidewalk cafes, where permitted by the Commissioner of the Department of Consumer Affairs pursuant to applicable law and constructed in compliance with Section 3110, may be constructed beyond the street line.

3202.4.2Storm enclosures.Storm enclosures projecting not more than 18 inches (457 mm) beyond the street line may be permitted during the period between November 15 and the following April 15. Such enclosures shall be removed at the end of this period. Construction of storm enclosures must comply with the requirements of this code including the fire resistance rating of the building to which it is appurtenant and Chapter 11 of this code.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3301: GENERAL

NYC Administrative Code § 28-BC 3301

3301.1 Scope.

The provisions of this chapter shall govern the conduct of all construction or demolition operations with regard to the safety of the public and property. For regulations relating to the safety of persons employed in construction or demolition operations, OSHA Standards shall apply.

3301.1.1 Responsibility for safety. Nothing in this chapter shall be construed to relieve persons engaged in construction or demolition operations from complying with other applicable provisions of law, nor is it intended to alter or diminish any obligation otherwise imposed by law on the owner, construction manager, general contractor, contractors, materialmen, registered design professionals, or other party involved in a construction or demolition project to engage in sound design and engineering, safe construction or demolition practices including but not limited to debris removal, and to act in a reasonable and responsible manner to maintain a safe construction or demolition site.

3301.1.2 Fire Code. In addition to the requirements of this chapter, construction or demolition operations shall also be conducted in conformance with the New York City Fire Code.

3301.2 Contractors. Contractors, construction managers, and subcontractors engaged in building work shall institute and maintain safety measures and provide all equipment or temporary construction necessary to safeguard all persons and property affected by such contractor's operations.

3301.3 Site Safety Managers, Coordinators and Superintendent of Construction. A Site Safety Manager or Site Safety Coordinator must be designated and present on the construction or demolition of major buildings as defined by and in accordance with Section 3310. A Superintendent of Construction is required for the construction or demolition of such other buildings identified pursuant to rules promulgated by the commissioner.

3301.4 Inspection of operations. Inspection of operations for compliance with the provisions of this chapter may be performed by, or under, the authority of the person superintending the work. Unless otherwise specified by the

provisions of this chapter, inspection and test reports relating to operations within the scope of this chapter shall be maintained by the permit holder or the person responsible for the inspection and made available to the department upon request.

Exception: Operations specifically required by this code to be inspected only by a registered design professional or special inspector.

3301.5 Inspection of equipment. Any equipment or device, except hand tools, that would affect public safety when operated shall be inspected by the person superintending the work or by his or her designated representative before the equipment or device is used on a specific job. Such inspection shall be made, and every defect or unsafe condition shall be corrected before use is permitted.

Any unsafe equipment or device shall immediately be made safe or removed from the site. Periodic inspection of equipment shall be performed during construction or demolition operations, and a record of such inspections shall be kept at the site for the duration of the work and made available to the department upon request.

3301.6 Sizes and stresses of materials and equipment.

3301.6.1 Sizes. All sizes and dimensions prescribed in this chapter are minimum requirements. Lumber sizes are nominal or commercial except where stated otherwise.

3301.6.2 Stresses. Temporary equipment and constructions shall be designed so that the allowable stress values for the material as specified by this code are not exceeded.

3301.6.3 Design capacity. No structure, device, or equipment, whether permanent or temporary, including all partly or fully completed elements or sections of the building, shall be loaded in excess of its design capacity.

3301.7 Design. Whenever design is required by the provisions of this chapter, such design shall be executed by, or under, the supervision of a registered design professional who shall cause his or her seal and signature to be affixed to any drawings or specifications that may be required for the work unless specifically indicated by this chapter that the design may be executed by another individual. All such documents shall be kept at the site for inspection by the commissioner for the duration of the job.

3301.8 Accident reporting. The department shall be notified promptly, in accordance with the circumstances, of all accidents at construction or demolition sites.

3301.9 Required signs. The signs required below in Sections 3301.9.1 to 3301.9.6 shall be constructed of 3/4 inch (19 mm) plywood or sheet metal. The letters on the required signs shall be black on white background.

The required signs must be in place 24 hours prior to commencement of any construction or demolition activity and remain visible at the site until all work is completed. The signs shall be no larger than that needed to accommodate the required information in letters no less than 3 inches (76 mm) high.

Exception: Where construction or demolition operations are limited to the interior components of the building.

3301.9.1 New buildings or demolitions. At sites where a new building or full demolition permit is required, a sign with the statement "TO ANONYMOUSLY REPORT UNSAFE CONDITIONS AT THIS WORK SITE THAT ENDANGER WORKERS, CALL 311" in both English and Spanish shall be posted at a height of no more than 12 feet (3658 mm) above the ground on each perimeter of the site fronting a public thoroughfare.

3301.9.2 Construction sites. At a height of no more than 12 feet (3658 mm) above the ground on each perimeter of a construction site fronting a public thoroughfare, a sign shall be erected containing the following information:

1. The name, address and telephone number of the owner of the property;
2. The name, address and telephone number of the general contractor; and
3. The phone number for reporting complaints.

In addition, copies of all permits shall be displayed in a conspicuous location readily visible by the public.

3301.9.3 Demolition sites. At a height of no more than 12 feet (3658 mm) above the ground on each perimeter of a demolition site fronting a public thoroughfare, a sign shall be erected containing the following information:

1. The name, address, and telephone number of the owner of the property;
2. The name, address, and telephone number of the demolition contractor; and
3. The phone number for reporting complaints.

In addition, copies of all permits shall be displayed in a conspicuous location readily visible by the public.

3301.9.4 Major buildings. At all major building sites as defined in Section 3310, the following information shall be included, in both English and Spanish. The information may be included on the required construction or demolition sign, or on a separate sign placed at a height of no more than 12 feet (3658 mm) above the ground on each perimeter of the construction or demolition site fronting a public thoroughfare:

1. The telephone numbers of the department special units in charge of complaints on major buildings; and
2. The telephone number of the department of transportation.

3301.9.5 Sidewalk sheds. Following the receipt of a permit to erect a sidewalk shed, the permit holder shall post a readily visible sign on the sidewalk shed. Such sign shall include:

1. The name, address, and telephone number of the permit holder;
2. The permit number; and
3. The expiration date of the permit. .

3301.9.6 Scaffolds and Hoists. Following the receipt of a permit to erect or suspend a scaffold, or erect a material or personnel hoist, the permit holder shall post a sign. Such sign shall be plainly visible from the street and include the name, address, telephone number of the permit holder, and permit number. The sign shall also include the expiration date of the permit.

The sign shall either be:

1. Affixed to the scaffold, runback structure, or a protective structure described in Section 3307. When attached to a scaffold or runback structure, the effects of wind on the sign shall be taken into consideration by a qualified individual in accordance with the provisions of Section 3314.3; or
2. Placed at the job site in at least one place readily visible to the public.

3301.10 Obscured lawful signs. When a protective structure is constructed in accordance with Section 3307, a temporary sign may be posted on such protective structure when the structure is adjacent to any building and obscures from view a lawful and existing sign. The temporary sign shall comply with the following requirements:

1. The temporary sign shall be securely fastened to the face of the protective structure at a location directly in front of such business storefront;

2. No projecting temporary signs shall be permitted, and all temporary signs shall be limited to a maximum height of 4 feet (1219 mm), and when affixed to a sidewalk shed shall not project above the parapet;

3. No temporary signs shall be permitted on the ends of any protective structure, unless the lawful and existing sign would otherwise be obscured from view by a deck or parapet of a sidewalk shed or bridge; and

4. No temporary sign shall project below the deck of any sidewalk shed.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

3301.9.4 Item 1 amended L.L. 8/2008 § 165, eff. July 1, 2008.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3302: DEFINITIONS

NYC Administrative Code § 28-BC 3302

3302.1 Definitions.

The following words and terms shall, for the purposes of this chapter, have the following meanings.

ARCHITECT. See Chapter 1 of Title 28 of the Administrative Code.

ARTICULATING BOOM CRANE. A power operated machine for lifting or lowering a load and moving it horizontally that utilizes a boom consisting of a series of folding pin connected structural members, typically manipulated to extend or retract by power from hydraulic cylinders, with or without a hoisting mechanism integral to the machine.

AXIS OF ROTATION. The vertical axis around which the crane superstructure rotates.

AXLE. The shaft or spindle with which or about which a wheel rotates. On truck and wheel mounted cranes it refers to an automotive type of axle assembly including housing, gearing, differential, bearings and mounting appurtenances.

BASE (MOUNTING). The base or carrier on which the rotating superstructure is mounted such as a truck, crawler or platform.

BEARER (PUTLOG). A horizontal transverse scaffold member (which may be supported by legs or runners) upon which the scaffold platform rests and joins scaffold uprights, posts, poles, and similar members.

BOOM. A section or strut, of which the heel (lower end) is affixed to a base, carriage or support, and whose upper end supports a cable and sheaves where the load is lifted by means of wire rope and a hook.

BOOM POINT. The outward end of the top section of the boom, containing the hoist sheave assembly.

BRAKE. A device used for retarding or stopping motion by friction or power means.

BUCKET HOIST. A power or manually operated suspended bucket contained by guide rails used for raising or lowering material exclusively and controlled from a point outside the conveyance.

CABLEWAY. A power operated system for moving loads in a generally horizontal direction in which the loads are conveyed on an overhead cable, track or carriage.

CERTIFICATE OF APPROVAL. A certificate issued by the department upon review and approval of the engineering and testing of a specific make and model of hoisting equipment to ensure compliance with the applicable provisions of this code and its referenced standards

CERTIFICATE OF OPERATION. A certificate issued by the department annually upon satisfactory inspection of the hoisting equipment holding a certificate of approval to ensure that the equipment continues to be in compliance with this code and its referenced standards.

CERTIFICATE OF ON-SITE INSPECTION. A certificate issued by the department based on a site specific approval of the placement, founding and operation of hoisting equipment.

CLAMSHELL. A shovel bucket with two jaws which clamp together by their own weight when it is lifted by a closing line.

CLIMBING/JUMPING. The raising or lowering of a tower or climber crane to different floors or levels of a building or structure.

COMMERCIAL TRUCK MOUNTED CRANE (BOOM TRUCK). A crane consisting of a rotating superstructure (center post or turntable), boom, operating machinery, and one or more operator's stations mounted on a frame attached to a commercial truck chassis, usually retaining a payload hauling capability whose power source usually powers the crane. Its function is to lift, lower, and swing loads at various radii.

COMPETENT PERSON. One who is capable of identifying existing predictable hazards in the surroundings or conditions that are unsanitary, hazardous or dangerous, and who has authorization to take prompt corrective measures to eliminate such hazards.

CONSTRUCTION. The excavation, erection, alteration, and repair of buildings or any component parts, including all operations incidental thereto.

CORNER SCAFFOLD (ANGLE SCAFFOLD). A suspended scaffold consisting of an assembly of two or more platforms connected non-linearly and designed and manufactured to fit around a corner or a projecting part of a building.

COUNTERWEIGHT. Weight used to supplement the weight of the machine in providing stability for lifting loads.

CRANE. A power operated machine for lifting or lowering a load and moving it horizontally which utilizes wire rope and in which the hoisting mechanism is an integral part of the machine. The definition of a crane shall also include articulating boom crane, regardless of whether it has a hoisting mechanism integral to the machine.

CRAWLER CRANE. A crane consisting of a rotating superstructure with a power plant, operating machinery, and boom, mounted on a base and equipped with crawler treads for travel. Its function is to lift, lower, and swing loads at various radii.

DEBRIS NET or NETTING. A netting of a fine mesh of a size and strength sufficient to catch debris such as falling tools and materials.

DEMOLITION. Full or partial demolition.

DEMOLITION, FULL. The dismantling, razing, or removal of all of a building or structure, including all operations incidental thereto.

DEMOLITION, PARTIAL. The dismantling, razing, or removal of structural members, floors, interior bearing walls, and/or exterior walls or portions thereof, including all operations incidental thereto.

DERRICK. An apparatus consisting of a mast or equivalent member held at the end by guys or braces, with or without a boom, for use with a hoisting mechanism and operating ropes, for lifting or lowering a load and moving it horizontally.

DISMANTLING. The final process of taking apart, piece by piece, in a specific sequence, the components of a crane. Dismantling shall include climbing and jumping.

DRUM. The cylindrical member around which a rope is wound for raising and lowering the load or boom.

ENGINEER. See Chapter 1 of Title 28 of the Administrative Code.

ERECTION. The assembly and placement of crane sections and components into place, including all operations incidental thereto. Erection shall include climbing and jumping.

FULL DEMOLITION. See "Demolition, Full."

GUARDRAIL SYSTEM (SCAFFOLD). A vertical barrier as described in Section 3314.8 consisting of, but not limited to, top rails, mid rails and posts, erected to prevent falling from a scaffold platform or walkway to lower levels.

GUY. A rope used to steady or secure the mast or other members in the desired position.

HEAVY DUTY SIDEWALK SHED. A sidewalk shed designed to carry a live load of at least 300 pounds per square foot (1465 kg/m²).

HOISTING MACHINE. A power operated machine used for lifting or lowering a load, utilizing a drum and a wire rope, excluding elevators. This shall include but not be limited to a crane, derrick, cableway and hydraulic lifting system, and articulating booms.

HOISTING MECHANISM. A hoist drum and rope reeving system used for lifting and lowering loads.

HOISTING EQUIPMENT. Equipment used to raise and lower personnel and/or material with intermittent motion.

JIB. An extension attached to the boom point to provide added boom length for lifting specified loads. The jib may be in line with the boom or offset to various angles in the vertical plane of the boom.

JUMP (JUMPING). The process of adding or removing mast or tower sections to equipment that has already been erected.

LAY. That distance measured along a wire rope in which one strand makes one complete helical convolution about the core or center.

LIGHT DUTY SIDEWALK SHED. A sidewalk shed designed to carry a live load of at least 150 pounds per square foot (732.3 kg/m²).

LOAD (WORKING). The external load, in pounds (kilograms), applied to the crane or derrick, including the weight of auxiliary load attaching equipment such as lower load blocks, shackles and slings.

LOAD RATINGS. Crane and derrick ratings in pounds (kilograms) established by the manufacturer in accordance with standards set forth in rules promulgated by the commissioner.

LOAD RATING CHART. A full and complete range of manufacturer's crane load ratings at all stated operating radii, boom angles, work areas, boom lengths and configurations, jib lengths and angles (or offset), as well as alternative ratings for use and nonuse of optional equipment on the crane, such as outriggers and extra counterweights, that affect ratings.

LOWER LOAD BLOCK. The assembly of hook or shackle, swivel, sheaves, pins and frame suspended by the hoisting ropes.

MAST-CLIMBING WORK PLATFORMS. A powered device consisting of an elevating platform mounted on a base or chassis and mast, that when erected is capable of supporting personnel, material, equipment and tools on a deck or platform that is capable of traveling vertically in infinitely adjustable increments to reach the desired work level.

MATERIAL HANDLING EQUIPMENT. A power or manually operated platform, bucket, car or cage that moves horizontally and is mainly used for transporting material during construction, alteration, repair or demolition of a building or structure.

MATERIAL HOIST (MATERIAL HOISTING EQUIPMENT). A power or manually operated platform, bucket, car or cage that moves vertically and is used for raising or lowering material exclusively during construction, alteration, repair or demolition of a building or structure, and is controlled from a point outside the conveyance.

MOBILE CRANE. A commercial truck mounted crane, crawler crane, wheel mounted crane (multiple control stations), or wheel mounted crane (single control station).

MOBILE SCAFFOLD. A powered or unpowered, portable, caster, track or wheel-mounted supported scaffold.

MULTI-POINT ADJUSTABLE SUSPENSION SCAFFOLD. A suspension scaffold consisting of a platform(s) that is suspended by more than two ropes from overhead supports and equipped with a means to raise and lower the platform to the desired work levels.

OUTRIGGER (CRANE). Extendable or fixed members attached to the mounting base that rest on supports at the outer ends used to support the crane.

OUTRIGGER (SCAFFOLD). The structural member of a supported scaffold used to increase the base width of a scaffold in order to provide support for and increased stability of the scaffold.

OUTRIGGER BEAM (THRUSTOUT). The structural member of a suspension scaffold or outrigger scaffold that provides support for the scaffold by extending the scaffold point of attachment to a point out and away from the structure or building.

OUTRIGGER SCAFFOLD. A supported scaffold consisting of a platform resting on outrigger beams (thrustouts) projecting beyond the wall or face of the building or structure, the inboard ends of which are secured inside the building or structure

PARTIAL DEMOLITION. See "Demolition, Partial."

PERSONNEL HOIST. A mechanism and its hoistway, equipped with a car that moves vertically on guide members, used for hoisting or lowering workers or workers and materials for the construction, alteration or demolition of a building structure or other work

PLATFORM. A work surface elevated above lower levels. Platforms can be constructed using individual wood

planks, fabricated planks, or fabricated decks.

POWER BUGGIES. An automotive vehicle designed or used for the transportation of materials on or about construction or demolition sites. It shall not include automobiles, motor trucks, general purpose tractors, or excavating or material handling machinery.

QUALIFIED PERSON. A person who by possession of a recognized degree, certificate or professional standing, or who by knowledge, training and experience, has demonstrated his or her ability to solve or resolve problems related to the subject matter, the work or the project.

REGISTERED DESIGN PROFESSIONAL. An architect or engineer.

ROPE. Wire rope unless otherwise specified.

RUNBACK STRUCTURE. A temporary system of hoistway landing runways, vertical supports and horizontal diaphragms designed to bridge between the hoistway and the parent structure and to transmit both vertical and horizontal loads to the supporting structure and/or foundation.

SCAFFOLD. Any temporary elevated platform and its supporting structure (including points of anchorage) used for supporting workers or workers and material. Includes supported scaffold, suspension scaffold and mobile scaffold.

SINGLE-POINT ADJUSTABLE SUSPENSION SCAFFOLD. A suspension scaffold consisting of a platform suspended by one rope from an overhead support and equipped with means to permit the movement of the platform to desired work levels.

STANDARD GUARDRAIL SYSTEM (SCAFFOLD). See Guardrail System (Scaffold).

STRUCTURAL NET or NETTING. A system of nets capable of complying with the prototype test described in ANSI A10.11-1989.

SUPERSTRUCTURE. The rotating upper frame structure of the machine and the operating machinery mounted thereon.

SUPPORTED SCAFFOLD. One or more platforms supported by outrigger beams, brackets, poles, legs, uprights, posts, frames, including pre-fabricated frames that are mechanized but not motorized, or any similar rigid support, including back structures connecting hoistways to buildings, and including structures where sidewalk protection is constructed as an integral part of the apparatus.

SUSPENSION SCAFFOLD. One or more platforms suspended by ropes or other means from an overhead structure.

SUSTAINED WIND. Winds with a one minute average duration lasting for a one hour period or longer.

SWING. Rotation of the superstructure for movement of loads in a horizontal direction about the axis of rotation.

TOWER. A vertical structural frame consisting of columns and bracing that are capable of supporting working and dynamic loads and transmitting them to the support(s).

TOWER CRANE. A power operated hoisting machine that utilizes a vertical tower with a rotating superstructure and includes a load boom (jib) in order to lift or lower a load and move it horizontally.

TRANSIT. The moving or transporting of a crane from one job site to another.

TRAVEL. The function of the machine moving from one location to another on a job site.

TWO-POINT SUSPENSION SCAFFOLD (SWING STAGE). A suspension scaffold consisting of a platform supported by hangers (stirrups) suspended by two ropes from overhead supports and equipped with means to permit the raising and lowering of the platform to desired working levels.

WHEEL MOUNTED CRANE (MULTIPLE CONTROL STATIONS). A crane consisting of a rotating superstructure, operating machinery, and operator's station and boom, mounted on a crane carrier equipped with axles and rubber-tired wheels for travel, a power source(s), and having separate stations for driving and operating. Its function is to lift, lower, and swing loads at various radii.

WHEEL MOUNTED CRANE (SINGLE CONTROL STATION). A crane consisting of a rotating superstructure, operating machinery, and boom, mounted on a crane carrier equipped with axles and rubber-tired wheels for travel, a power source, and having a single control station for driving and operating. Its function is to lift, lower, and swing loads at various radii.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

Climbing/jumping added L.L. 46/2008 § 1, eff. Dec. 21, 2008.

Dismantling added L.L. 46/2008 § 1, eff. Dec. 21, 2008.

Erection added L.L. 46/2008 § 1, eff. Dec. 21, 2008.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3303: SAFEGUARDS AND MAINTENANCE OF SITE

NYC Administrative Code § 28-BC 3303

3303.1 Equipment.

3303.1.1Machinery.All exposed, electrically charged, moving or otherwise dangerous parts of machines and construction or demolition equipment shall be located, guarded, shielded, or barricaded so as to prevent contact by the public.

3303.1.2Service lines and conduits.Hose lines, wires, ropes, pipes, chains and conduits shall be located so that they will not constitute a tripping hazard. Where it is necessary to carry such lines across sidewalks, or any public way, they shall either be suspended at least 8 feet (2438 mm) above the walks, or suitable chamfered planks or a pedestrian bridge shall be provided.

3303.1.3Contractors sheds.Contractors sheds and offices located within 30 feet (9144 mm) of new construction or existing buildings shall be made of metal or other noncombustible material. Fire retardant treated wood may be used when protected from the weather.

3303.1.4Internal combustion-powered equipment.In addition to the requirements of this chapter, the use of internal combustion-powered equipment shall also comply with the New York City Fire Code.

3303.2Utilities.

3303.2.1Existing services.The location of all existing utilities and service lines shall be determined and adequate measures taken, or devices provided, to safeguard the public and property before such utilities are disturbed. If any utility is to be removed, relocated, or have its service interrupted, the utility company or city agency affected shall be notified at least 72 hours in advance.

3303.2.2Maintaining essential services.Fire preventive, sanitary, or other facilities that have been provided for the protection of life, health, and property shall be continuously maintained and protected unless authorization is obtained

from the agency having jurisdiction to temporarily or permanently disconnect such facility.

3303.2.3Electrical work.All temporary electrical equipment and wiring shall meet the requirements of the New York City Electrical Code, and shall be maintained in compliance with such requirements. Portions of permanent electrical installations may be used for temporary operations provided the requirements of the New York City Electrical Code are met.

The person superintending the work shall notify the utility company affected at least 72 hours before the commencement of work that may affect a power line, above or below ground.

3303.2.4Sanitary facilities.Sanitary facilities shall be provided during construction, remodeling, or demolition activities in accordance with the New York City Plumbing Code.

3303.3Obstruction of sidewalks and streets.No street or sidewalk shall be closed either in whole or in part without a permit from the department of transportation. Such permit shall be displayed at the job site.

The closing or temporary use of streets or sidewalks or the obstruction of any part thereof shall comply with the requirements of the department of transportation.

3303.4Housekeeping.

3303.4.1Maintenance.All areas used by the public shall be maintained free from ice, snow, grease, debris, equipment, materials, projections, tools, or other items, substances, or conditions that may constitute a slipping, tripping, or other hazard.

3303.4.2Waste dumpsters, debris boxes and skip boxes.Waste dumpsters, debris boxes and skip boxes shall comply with the following:

1. Waste dumpsters, debris boxes and skip boxes shall be secured by rope, cable or chocking at wheels at the end of the workday in order to prevent movement. Such waste dumpsters, debris boxes and skip boxes shall not be placed at the edge of the building at any time, except when being moved from the floor or building.

2. Containers containing debris or waste shall be covered at the end of the workday and at any time when full to near the rim. Containers need not be covered when they are not in use or while stored in a fully enclosed space at the end of the workday.

3303.4.3Containers.Sufficient containers of metal, canvas, plastic or other material acceptable to the commissioner shall be available for the storage of all garbage and debris.

3303.4.4Debris.Debris control shall comply with the following:

1. All debris shall be cleaned off floors daily.

2. The roof of the sidewalk shed and the street shall be cleaned of construction or demolition debris daily.

3. A daily inspection shall be made for construction or demolition debris on all floors and if the building is a major building, such inspection shall be noted in the site safety log.

3303.4.5Storage of materials during construction or demolition.Materials stored on the floors of a building during construction or demolition operations shall comply with Sections 3303.4.5.1 and 3303.4.5.2.

3303.4.5.1Housekeeping.Housekeeping shall be conducted as follows:

1. When not being used, materials, equipment and tools that might fall from levels above areas used by the public shall be kept away from edges or openings.

2. When exterior walls are not in place, stored material shall be kept at least 10 feet (3048 mm) back from the perimeter of the building. However, when the floor area is less than 1,000 square feet (304.8 square meters), stored material may be kept not less than 5 feet (1524 mm) back from the perimeter of the building.

3. Material may be stored between 5 and 10 feet (1524 and 3048 mm) back from the perimeter of the building when such material weighs less than 750 pounds (340.2 kg).

4. Material stored on floors of a building or elsewhere on the site shall be secured when not being used.

3303.4.5.2Storage of materials at top working floors.Storage of materials at top working floors shall comply with the following:

1. Material may be stored within 2 feet (610 mm) of the edge of a building provided that such material is stored not more than two stories below the stripping operation on concrete structures, or the uppermost concrete floor on steel frame structures. Such material shall be secured against accidental movement. Storage of material on all other floors shall conform to Section 3303.4.5.1 and shall be secured when not being used.

2. No material shall hang over the edge of a building unless banded and braced preparatory to relocation at the end of the workday. Where such material is so banded and braced, it may overhang the floor of the stripping operation by not more than one-third of its length so long as it is relocated on the next workday for concrete operations.

3. Where the steel mill and lumber mill are located, material may overhang for relocation until the next workday. No more than two floors shall be designated as steel mills or lumber mills.

3303.4.6Storage of combustible material and equipment.Storage of combustible material and other material and equipment that may present a fire hazard shall comply with the New York City Fire Code.

3303.5Removal of waste material.Waste materials shall be removed in a manner that prevents injury or damage to persons, adjoining properties and public rights-of-way.

3303.5.1Removal of combustible waste material.Combustible waste material or combustible debris shall not be permitted to accumulate, and shall be removed from the site at reasonable intervals in accordance with the requirements of the New York City Fire Code.

3303.5.2Dropping or throwing prohibited.No material shall be dropped or thrown outside the exterior walls of a building.

3303.5.3Clogging.Precautions shall be taken to prevent concrete or mortar washings, sand, grit, or any other material that would cause clogging from entering a sewer or drain.

3303.5.4Air pollution.The provisions of the Air Pollution Control Code shall apply in order to prevent particulate matter from becoming airborne.

3303.5.5Chutes.Chutes used in association with the removal of materials shall comply with Sections 3303.5.5.1, 3305.5.2, 3305.5.3, and 3305.5.4.

3303.5.5.1Enclosures.Chute enclosures shall comply with the following requirements:

1. Material chutes that are at an angle of more than forty-five degrees with the horizontal shall be entirely enclosed on all sides, except for openings at the floor levels for the receiving of materials. Such openings shall not exceed 48

inches (1219 mm) in height, measured along the wall of the chute, and all openings, except the top opening, shall be closed and secured when not in use.

2. Chutes at an angle of less than forty-five degrees with the horizontal may be open on the upper side.

3303.5.5.2Chute construction.Chute construction shall comply with the following requirements:

1. Every chute used to convey waste material from a building shall be rigidly supported and braced throughout its height. Chutes less than 24 inches (610 mm) in maximum dimension shall be constructed of not less than 1-inch (25.4 mm) (nominal) wood or 1/8 inch (3.18 mm) thick steel. Chutes more than 24 inches (610 mm) in maximum dimensions shall be constructed of not less than 2-inch (51 mm) (nominal) wood or 3/16 inch (4.76 mm) thick steel.

2. Chutes shall be provided with a metal impact plate where material is forced to change direction while falling.

3. A gate shall be provided at the lower end of every chute to control the loading of material into trucks and to close the chute at all other times. Splashboards or baffles shall be erected to prevent materials from rebounding into the street or under the sidewalk shed.

4. A bumper or curb at least 4 inches by 4 inches (102 by 102 mm) in section shall be provided at each chute opening where such opening is level with, or below, the floor or platform. Every space between the chute and the edge of the opening in the floor or platform shall be solidly planked.

3303.5.5.3Fire retardant construction.When used in the following applications, all chutes constructed of combustible material shall be covered on the exterior with corrugated steel sheeting having a minimum thickness of 24 gauge through their entire height. Alternatively, chutes shall be constructed of non-combustible material:

1. Chutes exceeding 75 feet (22 860 mm) in height.
2. Alteration, repair or partial demolition of buildings where the main use or dominant occupancy is in Group I.

3303.5.5.4Supports.All structural supports of material chutes shall be of noncombustible material.

3303.6Escape hatches.Where salamanders or other heating equipment are used to provide temporary heating during the placing of concrete for a floor, an escape hatch shall be provided from the floor where the concrete is being placed and shall extend through at least one story immediately below such floor. The escape hatch shall be located as near to the center of the building as practical.

3303.6.1Required ladders and metal shields.The escape hatch shall be constructed with at least two ladders enclosed in a metal shield. The ladders shall extend from a distance of 3 feet (914 mm) above the floor under construction to at least two stories below, unless such floor is less than two stories above the lowest floor. The metal shield shall enclose the ladders on all sides from the top of the floor where the concrete is being placed to at least the top of the floor next below. The inside dimensions between faces of the shield shall be not less than 3 feet 8 inches (1118 mm).

3303.6.2Shield space and decking.The space between the shield and the perimeter of the opening in the floor under construction and also between the shield and the perimeter of the opening in the floor next below, shall be decked over with 2-inch (51 mm) or heavier planking covered with plywood or sheet metal so as to make the decking smoke tight. At the termination of the ladders, the opening in the floor shall be covered completely with 2-inch (51 mm) planking or other material of equivalent strength.

3303.7Fire prevention and fire protection.Fire fighting equipment, access at the construction or demolition site and the conduct of all construction or demolition operations affecting fire prevention and fire fighting shall comply with the New York City Fire Code.

3303.7.1 Water supply. No hazardous or combustible material shall be kept at the site unless water supply for fire protection, either temporary or permanent, is available at the site.

3303.7.2 Fire extinguishers. Fire extinguishers shall be provided in accordance with the New York City Fire Code.

3303.8 Standpipe systems during construction, alteration or demolition. During construction, alteration or demolition operations, standpipe systems shall comply with the following:

1. When work reaches a height greater than 75 feet (22 860 mm) in a building for which a standpipe system will be required, a permanent or temporary standpipe meeting the requirements of Section 905 shall be kept in readiness at all times for use by fire fighting personnel. The system shall be a dry system when freezing conditions may be encountered.

2. Existing standpipe systems in structures undergoing demolition shall be maintained as dry standpipes. At the commencement of demolition, the standpipe risers shall be capped above the outlet on the floor immediately below the floor being demolished so as to maintain the standpipe system on all lower floors for Fire Department use. Standpipe hose, nozzles and spanners are not required to be maintained and may be removed at any time. Siamese hose connections shall be kept free from obstruction and shall be marked by a metal sign reading, "Standpipe Siamese Connection" and by a red light at night.

3. The standpipe system may be used for water supply necessary to demolition operations. In freezing weather, such standpipe system shall be completely drained after use to prevent freezing. Existing standpipe systems shall not be utilized to convey compressed air unless the standpipe consists of two or more risers. In such case and upon fire department approval, one of the risers may be used to convey compressed air to any floor or portion of the premises.

3303.9 Elements to be maintained during remodeling and additions. Required exits, existing structural elements, fire protection devices and sanitary safeguards shall be maintained at all times during remodeling, alterations, repairs or additions to any building or structure.

Exception: When such required elements or devices are being remodeled, altered or repaired and adequate alternate provisions are made.

3303.10 Repair and alteration operations in occupied buildings. Where repairs or alterations are conducted in occupied buildings, barricades, signs, drop cloths, and other protective means shall be erected as required to provide reasonable protection for the occupants against hazard and nuisance. In buildings containing occupied dwelling units, all work shall be performed in accordance with a tenant protection plan as required by Chapter 1 of Title 28 of the Administrative Code.

3303.11 Maintenance of exits during construction or demolition. Required means of egress shall be maintained at all times during construction or demolition.

Exception: Where there are approved temporary means of egress systems and facilities.

- 3303.11.1 Temporary stairways in unoccupied buildings. Where a building being constructed reaches a height greater than 50 feet (15 240 mm) or four stories, or where an existing unoccupied building exceeding 50 feet (15 240 mm) in height is altered, at least one temporary lighted stairway shall be provided, unless one or more of the permanent stairways are erected or maintained as the construction progresses. Demolition work shall comply with item 6 of 3306.9.9.

- 3303.11.1.1 Maximum distance. The maximum distance between the working deck of such a building under construction or alteration and the highest floor accessible to a temporary or permanent stair shall be no more than 40 feet or 4 floors. In concrete construction, the working deck is the floor being formed. In steel construction the working

deck is the floor where the metal decking and steel components are being placed before concrete is poured.

3303.12 Temporary elevator or hoist. Whenever construction or demolition work reaches a height greater than 75 feet (22 860 mm), at least one elevator meeting the requirements of Chapter 30, or a hoist meeting the requirements of Section 3318 shall be kept in readiness at all times for Fire Department use. The maximum distance between the highest accessible floor from a temporary elevator or hoist and the working deck of the building under construction or demolition shall be no more than 75 feet (22 860 mm) or 7 floors. In concrete construction, the working deck is the floor being formed. In steel construction the working deck is the floor where the metal decking and steel components are being placed before concrete is poured.

If the travel of the hoist cannot be increased due to inclement weather, it shall be increased by the end of the next working day.

3303.13 Abandoned and discontinued operations.

3303.13.1 Fencing. If any construction or demolition operation is abandoned, discontinued or interrupted, a solid fence meeting the requirements of Section 3307.7 shall be provided to protect the public from potential hazards on the site.

3303.13.2 Filling and grading. When permits have expired and when no permits have been issued within three months of the cessation of excavation operations, the lot shall be filled and graded to eliminate all steep slopes, holes, obstructions, or similar sources of hazard.

Fill shall consist of clean, noncombustible material. The final surface shall be graded in such a manner as to drain the lot, eliminate pockets in the fill, and prevent the accumulation of water, without damaging any foundations on the premises or on adjoining property.

3303.14 Drainage. No condition shall be created as a result of construction or demolition operations that will interfere with natural surface drainage.

Water courses, drainage ditches, etc., shall not be obstructed by refuse, waste building materials, earth, stones, tree stumps, branches, or other debris that may interfere with surface drainage or cause the impoundment of surface waters.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

3303.5.5 renumbered and amended L.L. 8/2008 § 166, eff. July 1, 2008.

3303.5.5.1 renumbered L.L. 8/2008 § 166, eff. July 1, 2008.

3303.5.5.2 renumbered L.L. 8/2008 § 166, eff. July 1, 2008.

3303.5.5.3 renumbered L.L. 8/2008 § 166, eff. July 1, 2008.

3303.5.5.4 renumbered L.L. 8/2008 § 166, eff. July 1, 2008.

3303.11.1 amended L.L. 8/2008 § 166, eff. July 1, 2008.

3303.11.1.1 amended L.L. 8/2008 § 166, eff. July 1, 2008.

3303.12 open par amended L.L. 8/2008 § 166, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3304: EXCAVATION

NYC Administrative Code § 28-BC 3304

3304.1 Scope.

The provisions of this section shall apply to all excavations, including those made for the purposes of taking earth, sand, gravel, or other material, as well as for purposes of construction or demolition. During excavation, the provisions of Section 3309 for the protection of adjoining property shall also apply.

3304.2Excavation and fill.Excavation and fill operations shall be conducted in such a manner that life and property are not endangered.

3304.2.1Removal of wood.Stumps and roots shall be removed from the soil to a depth of at least 12 inches (305 mm) below the surface of the ground in the area to be occupied by the building. Wood forms which have been used in placing concrete, if within the ground or between foundation sills and the ground, shall be removed before a building is occupied or used for any purpose. Before completion, loose or casual wood shall be removed from direct contact with the ground under the building.

3304.3Notification.

3304.3.1Notification of the department.No earthwork within the property line shall commence unless the permit holder notifies the department, via phone or electronically, at least 24 hours, but no more than 48 hours prior to the commencement of such work. The notification shall state the date that such earthwork is to commence. Should the notification date fall on a weekend or official holiday, the permit holder shall notify the department on the last business day before the commencement date.

In the event that the earthwork does not begin on the date provided in the notification to the department, the permit holder shall notify the department of its cancellation not more than 24 hours prior to but no later than the date for which the earthwork was scheduled. Should the cancellation date fall on a weekend or an official holiday, the permit holder shall notify the department on the next business day after the intended commencement date. The permit holder shall

notify the department of a new intended commencement date pursuant to the provisions above.

The commissioner may issue a stop work order if there is a failure to provide notice as required in this section and if the work is found to violate any of the provisions of this code, the Zoning Resolution, or other applicable laws or rules. Upon the issuance of such stop work order, the work shall be stopped for a minimum of three business days to enable the department to take any other appropriate action to ensure that the earthwork is being performed in a safe manner. The earthwork shall not recommence until the stop work order has been lifted.

Exceptions:

1. Hand excavation work that extends 5 feet (1524 mm) or less below the grade existing at the time of earthwork commencement and is 2 feet (610 mm) or more from an existing foundation. This exception shall not apply to any hand excavation work performed anywhere in existing or demolished basements or cellars that adjoin existing foundations.

2. Excavations for geotechnical observation that do not exceed 10 feet (3048 mm) in length, width or diameter and that are excavated under the supervision of a registered design professional.

3. Work on cemetery grounds for burials.

4. Emergency work performed by the Department of Housing Preservation and Development (HPD) or other agency as directed by the commissioner or work on unsafe buildings performed by HPD or other agency pursuant to a precept.

3304.3.2 Notification of adjacent building owners. When an excavation to a depth of 5 to 10 feet (1524 mm to 3048 mm) is to be made within 10 feet (3048 mm) of an adjacent building, or when any excavation over 10 feet (3048 mm) is to be made anywhere on the site, the person causing an excavation to be made shall provide written notice to the owners of the adjacent building or buildings not less than 10 days prior to the scheduled starting date of the excavation. The written notice shall provide a description of the work to be performed, the timeframe and schedule, and contact information of the person causing the excavation and of the department. Foundation or earthwork that is to be done with the use of explosives shall also be subject to the notification requirements set forth in Sections 3307.5.3 and 3307.5.4 of the New York City Fire Code.

3304.3.3 Underground construction operations. Whenever excavation or drilling, for any purpose, to a depth greater than 100 feet (30 480 mm) is proposed in a block that has any part of its boundary falling within 500 feet (152 m) horizontal distance from the centerline of any water tunnel as measured at or near the surface (the "Corridor"), or whenever excavation of any depth is proposed within 200 feet (60 960 mm) of any subway, an approval and permit shall be obtained from the New York City Department of Environmental Protection and from the New York City Transit Authority, respectively. The owner of the premises or the contractor shall notify the New York City Department of Environmental Protection or the New York City Transit Authority prior to commencement of any such activity. The issuance of any permit or approval by the department shall not relieve the applicant of the obligation to comply with any approval or permitting requirements of the New York City Department of Environmental Protection or the New York City Transit Authority.

3304.3.3.1 Excavations requiring permit from the New York State Department of Environmental Conservation. Whenever drilling or excavation is planned deeper than five hundred (500) feet below grade, a permit may be required from the New York State Department of Environmental Conservation. The issuance of any permit or approval by the department shall not relieve the applicant of the obligation to comply with any approval or permitting requirements of the New York State Department of Environmental Conservation. Whenever any drilling for borings or geothermal wells is planned, the owner of the premises or the contractor shall notify the New York State Department of Environmental Conservation prior to commencement of such activity to determine if a permit is necessary.

3304.4 Protection of sides of excavations.

3304.4.1 Shoring and bracing and sheeting. The sides of all excavations, including related or resulting embankments, that are 5 feet (1524 mm) or greater in depth or height measured from the level of the adjacent ground surface to the deepest point of the excavation, shall be protected and maintained by shoring, bracing, sheeting, sheet piling, or by other retaining structures as may be necessary to prevent the sides of the excavation from caving in before permanent supports are provided. Such methods of protection shall be subject to special inspection in accordance with the provisions of Chapter 17.

Alternatively, excavation sides may be sloped not steeper than 45 degrees or stepped so that the average slope is not steeper than 45 degrees with no step more than 5 feet (1524 mm) high, provided such slope does not endanger any structure, including subsurface structures. Deviation from the foregoing limitations for cut slopes shall be permitted only upon the completion of a soil investigation report acceptable to the commissioner.

Exception: Rock cut excavation.

3304.4.1.1 Sheet piling and bracing. Sheet piling and bracing used in trench excavations shall be at least equivalent in strength to that specified in Tables 3304.4.1.1(1) and 3304.4.1.1(2). Table 3304.4.1.1 (1) Minimum Sizes of Timber Bracing and Timber Sheet Piling for Trenches Four Feet Wide or Less

Depth of Trench (ft.)	Sheet Piling Size (in.)	Horizontal Spacing (ft.)	Stringers Size (in.)	Vertical Spacing (ft.)	Cross Bracing Size (in.)	Horizontal Spacing (ft.)
Hard and solid soil	5-102x6	6	2x6	6	2x6	6
10-152x6	64	2x6	6	2x6	4	More than 152x6
tight	4x8	4	4x8	6	Soil likely to crack or crumble	5-102x6
3	2x6	5	2x6	5	10-152x6	2
2	2x6	4	2x6	4	More than 152x6	tight
4	2x6	4	2x6	4	More than 152x6	tight
4	4x10	4	4x10	6	Soft, sandy filled-in loose soil	5-102x6
tight	4x6	6	4x6	6	10-152x6	tight
4	2x6	5	4x6	6	More than 152x6	tight
4	4x12	4	4x12	6	Where hydrostatic pressure exists	To 102x6
tight	6x8	4	6x8	6	More than 103x6	tight
6	6x10	4	6x10	6	Note for Table 3304.4.1 (1): a Steel sheet piling and bracing of equivalent strength may be substituted for wood sheet piling and timber bracing.	Note: For SI: 1 inch = 25.4 mm

[SEE tabular material in printed version]

Note for Table 3304.4.1(2): a Steel sheet piling and bracing of equivalent strength may be substituted for wood sheet piling and timber bracing. Note: For SI: 1 inch = 25.4 mm

3304.4.2 Rainstorms. All sides or slopes of excavations or embankments shall be inspected after rainstorms, or any other hazard-increasing event, and safe conditions shall be restored.

3304.4.3 Fence. Every site with an excavation shall be enclosed with a fence that meets the requirements of Section 3307.7.

3304.4.4 Guardrail. A standard guardrail that meets the requirements of Section 3307.8, or a solid enclosure at least 3 feet 6 inches (1067 mm) high shall be provided along the open sides of excavations, except that such standard guardrail or solid enclosure may be omitted from a side or sides when access to the adjoining area is precluded, or where side slopes are one vertical to three horizontal or flatter.

3304.4.5 Placing of excavation equipment and excavated material. Excavated material and superimposed loads such as equipment and trucks shall not be placed closer to the edge of the excavation than a distance equal to one and one-half times the depth of such excavation, unless the excavation is in rock or unless the sides of the excavation have been sloped or sheet piled (or sheeted) and shored to withstand the lateral force imposed by such superimposed loads. When sheet piling is used, it shall extend at least 6 inches (152 mm) above the natural level of the ground. In the case of open excavations with side slopes, the edge of excavation shall be taken as the toe of the slope.

3304.4.6 Mechanical diggers. Where trenching more than 5 feet (1524 mm) in depth is done by a mechanical digger, the required protection shall follow the boom as closely as practical.

3304.5 Underpinning requirements. The requirements of Section 1814 shall apply.

3304.6 Retaining walls. The requirements of Section 1806 shall apply.

3304.7Access. Every excavation shall be provided with a safe means of ingress and egress that is kept available at all times.

3304.8Drainage. All excavations shall be drained and the drainage maintained as long as the excavation continues or remains. Where necessary, pumping shall be used, provided proper permits are obtained from the New York City Department of Environmental Protection.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

3304.3.2 amended L.L. 26/2008 § 8, eff. July 1, 2008.

3304.3.2 amended Int. No. 732-A of 2008 § 8, passed City Council May 28,

2008, eff. July 1, 2008 and upon the approval of the Mayor.



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SECTION BC 3305: ERECTION OPERATIONS

NYC Administrative Code § 28-BC 3305

3305.1 Protection of pedestrians and adjoining property.

During erection operations, the applicable provisions of Sections 3307, 3308, and 3309 shall apply.

3305.2 Structural steel assembly. The requirements of Section 2205.6.4 shall apply.

3305.3 Concrete formwork. The requirements of Section 1906 shall apply.



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SECTION BC 3306: DEMOLITION

NYC Administrative Code § 28-BC 3306

3306.1 Scope.

All full demolition and partial demolition operations shall be performed in accordance with the requirements of this section.

3306.2 Protection of pedestrians and adjoining property. Demolition operations shall not commence until the applicable pedestrian and adjoining property protection is in place as required by Sections 3307, 3308, and 3309.

3306.2.1 Safety zone. A safety zone approved by the commissioner shall be provided around the demolition area. Fences that meet the requirements of Section 3307.7 shall be erected to prevent persons other than workers from entering such safety zone.

Exception. Partial demolition operations limited to the interior components of the building where mechanical demolition equipment, other than handheld devices, are not used.

3306.3 Notification. The permit holder shall notify the department and adjoining building owners prior to the commencement of full and partial demolition operations in accordance with Sections 3306.3.1 and 3306.3.2.

3306.3.1 Notification of the department. The permit holder shall notify the department via phone or electronically, at least 24 hours, but no more than 48 hours prior to the commencement of such work.

3306.3.2 Notification of adjoining property owners. Adjoining property owners shall be notified of upcoming demolition operations in writing not less than 10 days prior to the scheduled starting date of the demolition. The written notice shall provide a description of the work to be performed, the timeframe and schedule, and contact information of the person causing the demolition and of the department. Demolition or removal work that is to be done with the use of explosives shall also be subject to the notification requirements set forth in Sections 3307.5.3 and 3307.5.4 of the New York City Fire Code.

Exception. Partial demolition operations limited to the interior components of the building where mechanical demolition equipment, other than handheld devices, are not used.

3306.4Mechanical demolition.Where mechanical demolition equipment, other than handheld devices, is to be used in the full or partial demolition of a building or is to be used to remove debris or move material, approval of the commissioner for the use of the mechanical demolition equipment must be obtained prior to the commencement of demolition operations.

Unless permitted by the commissioner, mechanical demolition equipment shall not be used where a building or portion thereof occupied by one or more persons is located within the safety zone.

3306.5Submittal documents for demolition.Where mechanical demolition equipment, other than handheld devices, are to be used in the full or partial demolition of a building from within the building, or are to be used within the building to remove debris or move material, documents prepared by or under the supervision of an engineer must be submitted and approved by the department before demolition work begins. The documents shall be signed and sealed by the engineer. The approved set of documents shall be kept at the site at all times and be accessible for inspection. At a minimum,the demolition documents shall include the following:

1. Plans, sections, and details of the building or portion thereof to be demolished clearly showing the extent, sequence, and means and methods of demolition.
2. Listing and description of all proposed demolition equipment, other than hand held devices, to be used in demolition, including the scope of equipment work and positioning of equipment on the existing structure. Description of equipment shall include calculations showing adequacy of the existing structure to support loads imposed by such equipment. If more than one piece of demolition equipment is proposed to be used at the same time, the effect of the simultaneous loads imposed on the existing structure shall be described and investigated.
3. Bracing and shoring necessary to support all demolition operations and equipment through all sequences of full or partial demolition.
4. Description of compliance with the provisions of Section 3306.9.

3306.5.1Partial Demolition operations.The registered design professional of record shall submit details of the partial demolition operation as part of the construction documents filed for alteration of the building provided:

1. Where mechanical demolition equipment, other than handheld devices, is used, construction documents shall show compliance with all the requirements of Section 3306.5.

2. Where mechanical demolition equipment is not used, the registered design professional shall show at a minimum:

- 2.1. Plans, sections, and details of the building or portion thereof to be demolished clearly showing the extent, sequence, and means and methods of demolition.

- 2.2. Bracing and shoring necessary to support all demolition operations through all sequences of the partial demolition.

- 2.3. Description of compliance with the applicable provisions of Section 3306.9.

3306.6Special inspection.Where mechanical demolition equipment, other than handheld devices, is to be used in the full or partial demolition of a building from within the building, or is to be used within the building to remove debris or move material, such demolition operation shall be subject to special inspection in accordance with the provisions of Chapter 17. The special inspector shall visit the site a minimum of three times: before demolition operations start,

during demolition, and at the conclusion of demolition.

3306.7Demolition of weakened structures.Where a structure to be demolished has been partially wrecked or weakened by fire, flood, explosion, age, or other causes, it shall be shored or braced to the extent necessary to permit orderly full demolition or partial demolition without collapse. The necessary measures to ensure a safe demolition shall be determined by the owner's registered design professional and shall be approved by the commissioner.

3306.8Full and partial demolition of structural steel, reinforced concrete, and heavy timber construction.Steel, reinforced concrete and heavy timber construction shall be demolished column length-by-column length and tier-by-tier. Any structural member that is being dismembered shall not support any load other than its own weight, and such member shall be chained or lashed in place to prevent any uncontrolled swing or drop.

Structural members shall not be thrown or dropped from the building, but shall be slowly and carefully lowered by hoists equipped with adequate brakes and non-reversing safety devices.

3306.9Full demolition and partial demolition operations.In addition to the requirements of Article 105 of chapter 1 of Title 28 of the Administrative Code, the following requirements shall apply to all full demolition and partial demolition operations.

3306.9.1Utilities and service lines.Service utility connections shall be discontinued and capped, and certifications to that effect issued by the representative utility company shall be filed with the department.

Exception. Partial demolition operations.

3306.9.2Party wall exits, fire exits.No party wall balcony or horizontal fire exit shall be demolished, removed, or obstructed in any manner that would destroy the full effectiveness of such fire exit as a means of egress, unless a substitute means of egress meeting the requirements of Chapter 10 has been provided.

3306.9.3Dust.Dust producing operations shall be wetted down to the extent necessary to control the dust.

3306.9.4Water accumulation.Provision shall be made to prevent the accumulation of water or water damage to any foundations on the premises or to the adjoining property.

3306.9.5Temporary elevators and standpipe systems.See Sections 3303.8 and 3303.12 for requirements.

3306.9.6Sprinkler systems.When existing sprinkler systems with siamese hose connections are present in structures undergoing full or partial demolition, such systems shall be maintained as a non-automatic sprinkler system. When demolition starts, the sprinkler risers shall be capped immediately below the floor being demolished so as to maintain the sprinkler system on all lower floors for Fire Department use. Siamese hose connections shall be kept free from obstruction and shall be marked by a metal sign reading "Sprinkler Siamese Connection" and by a red light at night.

3306.9.7Use of explosives.The use of explosives in demolition operations shall conform to the requirements and limitations imposed by the New York City Fire Code and Section 3312.

3306.9.8Hazards to be removed.Hazards shall be removed in accordance with the following requirements:

1. Before commencement of actual demolition, all glass in windows, doors, skylights, and fixtures shall be removed.

2. In any structure more than 25 feet high (7620 mm), any window or other exterior wall opening that is within 20 feet (6096 mm) of a floor opening used for the passage of debris from floors above shall be solidly boarded up or otherwise substantially covered, unless such window or opening is so located as to preclude the possibility of any person being injured by material that may fall from such window or opening.

3. Before demolition is started, the cellar and all floors shall be thoroughly cleaned of combustible materials and debris. All fixtures and equipment that would cause voids in the fill shall be removed. If the cellar is to be filled to grade, the first floor construction shall be removed and the existing cellar floor shall be broken up to the extent necessary to provide ground drainage and prevent accumulation of water. If the cellar is not to be filled, positive cellar drainage shall be provided.

4. All asbestos shall be removed and certifications to that effect shall be filed with the department and the Department of Environmental Protection.

3306.9.9Walls.Demolition of walls and partitions shall comply with the following requirements:

1. Demolition of walls and partitions shall proceed in a systematic manner, and all work above each tier of floor beams shall be completed before any of the supporting structural members are disturbed.

2. Sections of masonry walls shall not be loosened or permitted to fall in such masses as to affect the carrying capacity of floors or the stability of structural supports.

3. No wall, chimney, or other structural part shall be left in such condition that it may collapse or be toppled by wind, vibration or any other cause.

4. No section of wall with a height more than 22 times its thickness shall be permitted to stand without bracing designed by a registered design professional.

5. Where brick or masonry chimneys cannot be safely toppled or dropped, all materials shall be dropped down on the inside of such chimneys.

6. All enclosed vertical shafts and stairs shall be maintained enclosed at all floors except the uppermost floor being demolished, and all work on the uppermost floor shall be completed before stair and shaft enclosures on the floor below are disturbed. All hand rails and banisters shall be left in place until actual demolition of such floor is in progress.

3306.9.10Floors.No bearing partition shall be removed from any floor until the floor framing system on the floor above has been removed and lowered. All header beams and headers at stair openings and chimneys shall be carefully examined, and where required shall be shored from the cellar floor through successive floors. All operations shall be continually inspected as the work progresses to detect any hazards that may develop.

3306.9.11Storage of material.Material shall not be stored on catch platforms, working platforms, floors, or stairways of any structure, except that any one floor of a building to be demolished may be used for the temporary storage of material when such floor can be evaluated by an engineer and proven to be of adequate strength to support one and one-half times the load to be superimposed. Such evaluation by the engineer shall be maintained by the permit holder and made available to the department upon request.

Storage spaces shall not interfere with access to any stairway or passageway, and suitable barricades shall be provided so as to prevent material from sliding or rebounding into any space accessible to the public. All material shall be safely piled in such storage locations in a manner that will not overload any part of the structure or create any hazard.

3306.9.11.1Examination.Before any material is stored on any floor, the existing flooring adjacent to bearing walls, shear walls, beams and columns shall be removed and the connections of the floor framing system to the bearing walls, shear walls, beams and columns shall be carefully examined by a competent person to ascertain their condition and adequacy to support such material. If the connections are found to be in poor condition or inadequate to support the stored material, no material shall be deposited on the floor until these connections are shored from the cellar floor through each successive floor or otherwise strengthened to safely support such material.

3306.9.11.2 Removal of floor slabs for storage. In buildings of noncombustible construction, floor slabs to an elevation of not more than 25 feet (7620 mm) above the legally established curb level may be removed to provide temporary storage for debris, provided that:

1. The stored debris is piled with sufficient uniformity to prevent lateral displacement of interior walls or columns as determined by a registered design professional.
2. The height of the piled material will not burst the exterior walls due to horizontal loading as determined by a registered design professional.
3. The operation does not otherwise endanger the stability of the structure.

3306.9.11.3 Cellar storage. Debris stored in the cellar shall not be piled above the level of the adjacent exterior grade unless the contractor provides sheet-piling, shoring, bracing, or such other means necessary to insure the stability of the walls and to prevent any wall from collapsing due to horizontal loading created by the debris as determined by a registered design professional.

3306.9.12 Removal of material. Debris, bricks, and similar material shall be removed through openings in the floors of the structure, or by means of chutes, buckets, or hoists that comply with the provisions of this chapter. Openings in any floor shall not aggregate more than 25 percent of the area of that floor unless it can be shown by submission from a registered design professional to the satisfaction of the commissioner that larger openings will not impair the stability of the structure.

Every opening used for the removal of debris in every floor, except the top or working floor, shall be provided with a tight enclosure from floor to floor, equivalent to that afforded by planking not less than 2 inches (51 mm) in thickness. As an alternative, in buildings not more than 6 stories in height, such openings may be protected by a tight temporary covering equivalent to that afforded by planks not less than 2 inches (51 mm) in thickness and laid close. Wherever such covering has been temporarily removed to permit debris removal, floor openings shall be protected by standard guardrails that meet the requirements of Section 3307.8. Such covering shall be promptly replaced in position upon the ceasing of such work at the end of each workday.

Every opening not used for the removal of debris in any floor shall be solidly planked over.

3306.9.13 Rodent extermination. A licensed exterminator shall effectively treat the premises for rodent extermination as per the requirements of the Department of Health and Mental Hygiene.

Exception. Partial demolition operations.

3306.10 Completion of Demolition Operations. All work required for structural stability and permanent waterproofing of adjacent buildings must be completed prior to demolition sign-off.

At the completion of demolition operations, unless new construction is to follow within a period of three months, the site shall be graded, drained, or otherwise protected as provided in Section 3303.13.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

3306.3.2 amended L.L. 26/2008 § 9, eff. July 1, 2008.

3306.3.2 amended Int. No. 732-A of 2008 § 9, passed City Council May 28,

2008, eff. July 1, 2008 and upon the approval of the Mayor.

3306.5 amended L.L. 8/2008 § 167, eff. July 1, 2008.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3307: PROTECTION OF PEDESTRIANS

NYC Administrative Code § 28-BC 3307

3307.1 Protection required.

Pedestrians shall be protected during construction, alteration, remodeling, or demolition activities as required by this section and the rules of the Department of Transportation. Signs shall be provided to direct pedestrian traffic.

3307.1.1 Signs. Other than as specified in Section 3301.10, there shall be no information, pictorial representation, or any business or advertising messages posted on a sidewalk shed, bridge, fence, or other structure listed in this section that is erected at the construction or demolition site.

Where a protective structure required by this section obscures from view a lawful existing sign, a temporary sign may be installed in accordance with Section 3301.10.

No illuminated signs shall be permitted on any protective structure required by this section.

3307.2 Sidewalks and walkways. A sidewalk, walkway, or temporary walkway shall be provided for pedestrian travel in front of every construction or demolition site unless the Department of Transportation authorizes the sidewalk to be fenced or closed.

3307.2.1 Temporary walkways. Temporary walkways shall be of sufficient width to accommodate the pedestrian traffic, but in no case shall it be less than 5 feet (1524 mm) in width, and shall be provided with a durable walking surface.

All temporary walkways shall be illuminated at all times either by natural or artificial light. The level of illumination shall be the equivalent of that produced by 200 watt, 3400 lumen minimum, standard incandescent lamps enclosed in vandal-proof fixtures and spaced 15 feet (4572 mm) apart and 8 feet (2438 mm) above the floor level. Artificial lighting units shall be inspected nightly; and burned out or inoperative units shall be replaced or repaired immediately.

Temporary walkways shall be provided with adequate slopes so that they are accessible and shall be designed to support all imposed loads, and in no case shall the design live load be less than 150 pounds per square foot (732.3kg/m²).

Where permission has been granted by the Department of Transportation to locate a temporary walkway beyond the curb line, such temporary walkway shall be provided with a guardrail in accordance with the Department of Transportation's requirements.

3307.2.2Foot bridges.Foot bridges shall be of sufficient width to accommodate the pedestrian traffic, but in no case shall it be less than 5 feet (1524 mm) in width, and shall be provided with a durable walking surface.

All foot bridges shall be illuminated at all times either by natural or artificial light. The level of illumination shall be the equivalent of that produced by 200 watt, 3400 lumen minimum, standard incandescent lamps enclosed in vandal-proof fixtures and spaced 15 feet (4572 mm) apart and 8 feet (2438 mm) above the floor level. Artificial lighting units shall be inspected nightly; and burned out or inoperative units shall be replaced or repaired immediately.

Foot bridges shall be provided with adequate slopes so that they are accessible and shall be designed to support all imposed loads and in no case shall the design live load be less than 150 pounds per square foot (732.3 kg/m²). The walkway on such bridge shall be provided with guardrails for its entire length and shall have cleats to prevent slipping. Where planks are used to pave the walkway, they shall be laid close and securely fastened to prevent displacement. Planks shall be of uniform thickness, and all exposed ends on ramps shall be provided with beveled fillers to eliminate tripping hazards.

3307.3Protection of sidewalks, walkways and temporary walkways.Unless the street is officially closed to the public during construction or demolition operations pursuant to a permit from the Department of Transportation, the following minimum safeguards shall be provided for the protection of the public.

Exception. Partial demolition operations limited to the interior components of the building.

3307.3.1Sidewalk shed.A sidewalk shed that meets the requirements of Section 3307.6 shall be erected as follows:

1. When a structure higher than 40 feet (12 192 mm) is to be constructed and the horizontal distance from the top of the structure to the inside edge of the sidewalk, walkway or temporary walkway is equal to one-half or less of the height of the structure.

2. When a structure higher than 25 feet (7620 mm) is to be demolished and the horizontal distance from the top of the structure to the inside edge of the sidewalk, walkway or temporary walkway is equal to one-half or less of the height of the structure, or when a structure 25 feet (7620 mm) or less is to be demolished and a sidewalk shed is required by the commissioner as part of a safety zone per Section 3306.2.1.

3. When, regardless of the height of the structure or the horizontal distance between the structure and the sidewalk, walkway or temporary walkway, material or debris is to be moved by a hoist, crane, derrick, or chute over a sidewalk, walkway or temporary walkway that is not closed to the public.

4. When a portion of a facade over 40 feet (12 192 mm) above curb level is being altered or repaired and the horizontal distance from the portion of the structure being altered or repaired to the inside edge of the sidewalk, walkway or temporary walkway is less than one-half the height of the structure being altered or repaired.

Exception: Access to walkways that are not under the jurisdiction of the Department of Transportation, and that are located in an area that is within a distance equal to or less than half the height of the highest work area, may be closed off by the authority having jurisdiction in lieu of providing a sidewalk shed provided the walkway is not required as part of the means of ingress or egress for a building.

3307.3.2Fence.All new construction or demolition sites, regardless of the height of the building to be constructed or demolished, shall be enclosed with a fence that meets the requirements of Section 3307.7.

A fence may be used in lieu of a sidewalk shed when a structure higher than 40 feet (12 192 mm) is to be constructed, or a structure higher than 25 feet (7620 mm) is to be demolished, and the horizontal distance from the structure being built or demolished to the inside edge of the sidewalk, walkway or temporary walkway is between one-half and three-quarters of the height of the structure.

3307.3.3Guardrail.For cases that do not fall within the circumstances described in Sections 3307.3.1 and 3307.3.2, a standard guardrail that meets the requirements of Section 3307.8 may be constructed along the inside edge of the sidewalk, walkway or temporary walkway. The rail shall be returned at its ends to the extent necessary to effectively close off the site.

If permission to close the sidewalk has been obtained from the Department of Transportation, the railing may be constructed along the curb or outside of the curb to such extent as approved by the Department of Transportation.

3307.3.4Openings.Openings in sidewalk sheds, fences, barriers, and railings for loading and unloading purposes shall be kept closed at all times except during actual loading and unloading operations.

3307.4Warning signs and lights.Warning signs and lights shall be installed to protect the public from the hazards of construction or demolition sites in accordance with Sections 3307.4.1 to 3307.4.3.

3307.4.1Obstructions and openings.Where a material pile or other obstruction, or an excavation, opening, or other hazard is located in or adjacent to a public way, such hazard shall be indicated by red flags or signs during daylight hours, and by red lanterns, red lights, oil flares, flashing beacons, lighted signs, or equivalent devices from sunset to sunrise. Such warning devices shall be located no more than 30 feet (9144 mm) apart.

3307.4.2Dangerous areas.In areas where special danger to the public exists, such as at vehicle entrances and exits, hoisting areas, points of storage of explosives or highly flammable material, or discharge ends of chutes, descriptive warning signs shall be provided. Such warning signs shall contain the word "DANGER" in prominent letters and, where in, or adjacent to, a public way, shall be illuminated from sunset to sunrise. Barricades and/or designated personnel shall be provided to the extent necessary to keep the public away from such areas or to guide them around the areas.

3307.4.3Vehicular traffic.Whenever any work is being performed over, on, or in close proximity to a highway, street, or similar public way, control and protection of traffic shall be provided by barricades, signals, signs, flagperson, or other devices, equipment, and personnel in accordance with the requirements of the Department of Transportation.

3307.5Watchperson and flagperson.

3307.5.1Watchperson.Where a building being constructed or demolished occupies a ground area between 5,000 square feet (1524 m²), and 40,000 square feet (12 192 m²), a competent watchperson shall be on duty at the site during all hours when operations are not in progress. Where the construction or demolition area occupies a ground area of more than 40,000 square feet (12 192 m²), at least one additional watchperson shall be on duty for each additional 40,000 square feet (12 192 m²) of construction or demolition area, or fraction thereof. The watchperson shall be familiar with the location of street fire alarm boxes and the location and use of fire fighting equipment on the job site.

3307.5.2Flagperson.A flagperson shall be provided whenever intermittent operations are conducted on, or adjacent to, areas open to use by persons other than workers, or when dangerous operations, such as blasting, may affect such areas.

3307.6Sidewalk sheds.Sidewalk sheds shall be erected when required by Section 3307.3.1. No sidewalk shed shall be erected without a permit in accordance with the requirements of Chapter 1 of Title 28. Following the receipt of a

permit to erect a sidewalk shed, the permit holder shall post a sign on the sidewalk shed that meets the requirements of Section 3301.9.5.

Every sidewalk shed deck shall be designed and constructed as a heavy duty sidewalk shed to carry a live load of at least 300 pounds per square foot (1464.6 kg/m²). However, a light duty sidewalk shed constructed to carry a live load of 150 pounds per square (732.3 kg/m²) foot may be used when the building to be constructed, altered, or demolished is less than 100 feet (30 480 mm) in height.

Exception: Sidewalk sheds that provide a base for a scaffold or contractor's shed shall be designed by an engineer to have a live load capable of supporting the scaffold or contractor's shed plus an additional 200 pounds per square foot (976.4 kg/m²). No storage is allowed on sidewalk sheds that support scaffolds or contractor sheds unless the sidewalk shed has been designed to have a live load capable of supporting the scaffold or contractor's shed, the total storage load, and an additional 200 pounds per square foot (976.4 kg/m²). The ground where the shed is to be constructed shall be examined by an engineer to determine it is capable of supporting the total load.

3307.6.1 Sidewalk shed required. When a sidewalk shed is required for the construction or alteration of a structure, the work shall stop at a height of 40 feet (12 192 mm) unless, and until, the sidewalk shed has been completed. Such shed shall remain in place until the structure is enclosed, all exterior work completed and the sash is glazed above the second story, the exterior of the facade is cleaned down, and until completion of all outside handling of material, equipment and machinery, and all dismantling of material hoists, or climber or tower cranes including the use of a derrick in their removal, above the second story.

When a sidewalk shed is required for the demolition of a structure, the sidewalk shed shall be completed before any demolition work is performed. Such shed shall remain in place until the structure has been razed to the height of the shed.

3307.6.2 Areas to be protected. Protection shall be provided for those sidewalks or walkways that are in front of the building to be constructed, altered, or demolished. Sidewalks or walkways in a plaza or other similar space that lead from the street to an entrance or exit into or out of the building that cannot be officially closed shall be similarly protected.

Where deemed necessary by the commissioner, the deck shall cover the entire width of the sidewalk or walkway in front of the building, except for reasonably small clearances at the building line and the curb. In all other instances, the sidewalk shed shall protect the sidewalk or walkway to a minimum 5 foot (1524 mm) width. Sidewalk sheds may extend beyond the curb to such extent as may be approved by the Department of Transportation pursuant to a permit from such department.

Unless constructed solely to comply with Section 3307.3.1, item 3, sidewalk sheds shall extend 5 feet (1524 mm) past the building when the building is less than 100 feet (30 480 mm) in height, and 20 feet (6096 mm) past the building when the building is over 100 feet (30 480 mm) in height, regardless of whether such extensions are in front of the property being developed or in front of adjacent property. Extensions of sidewalk sheds complying with the foregoing shall be constructed so as not to unreasonably obstruct, either visually or physically, entrances, egress, driveways, and show windows of adjacent properties.

3307.6.3 Design of sidewalk sheds. All sidewalk sheds shall be designed by an engineer.

Exception: Sidewalk sheds that follow a standard design approved by the department or the Board of Standards and Appeals.

3307.6.4 Construction of sidewalk sheds. Sidewalk sheds shall be constructed in accordance with the following:

1. Sidewalk sheds shall be constructed out of wood, steel, or other materials having equivalent strength and

suitability.

2. The members of the sidewalk shed shall be adequately braced and connected to prevent displacement or distortion of the framework. Where posts supporting the shed deck are placed beyond the curb, such posts shall be protected against displacement by vehicles as directed by the Department of Transportation. Such placement shall require a permit from the Department of Transportation.

3. The upright members of the sidewalk shed shall be plumb. The tolerance is $L/100$. L is measured as the distance from the ground to the first x-brace or bottom of the beam.

4. The deck of the sidewalk shed shall consist of planking closely laid, and made tight.

5. Unless the top deck of the sidewalk shed is built solidly against the face of the structure in such a manner that no material can fall onto the sidewalk, the side of the shed toward the structure shall be solidly sealed with wood or other suitable material for the full height of the shed. Solid sliding or in swinging gates may be provided as necessary for the proper prosecution of the work.

6. The outer side and ends of the deck of the shed shall be provided with a substantial enclosure at least 3 feet 6 inches (1067 mm) high. Such enclosure may be vertical or inclined outward at approximately 45 degrees, and shall consist of boards laid close together and secured to braced uprights, of galvanized wire screen not less than no. 16 steel wire gage with a 1/2 inch (13 mm) mesh, of corrugated metal, or of solid plywood. Temporary removal of portions of the enclosure shall be permitted for handling material.

7. All sidewalk sheds shall provide protection for the full width of the shed extending upward at an angle of 45 degrees from the ends of the deck and outward a horizontal distance of at least 5 feet (1524 mm) beyond the ends of the shed. Such sloping end protection shall be constructed to meet the requirements of numbered items two and three with substantial outriggers bearing on and securely attached to the deck.

8. The passageway under the shed shall have a minimum clear ceiling height of 8 feet (2438 mm).

3307.6.5 Use and maintenance of sidewalk sheds. The use of sidewalk sheds shall be in accordance with the following:

1. Material and debris shall not be stored on sidewalk sheds unless the shed has been so designed for storage in accordance with rules promulgated by the commissioner.

2. The underside of sidewalk sheds shall be lighted at all times either by natural or artificial light. The level of illumination shall be the equivalent of that produced by 200 watt, 3400 lumen minimum, standard incandescent lamps enclosed in vandal-proof fixtures and spaced 15 feet (4572 mm) apart and 8 feet (2438 mm) above the floor level. Artificial lighting units shall be inspected nightly; and burned out or inoperative units shall be replaced or repaired immediately.

3307.7 Fences. When required by this code, fences shall be at least 8 feet (2438 mm) high, and constructed of wood or other suitable material. They shall be built solid for their entire length, except for openings with solid sliding or in swinging gates as are required for the proper prosecution of the work, and for viewing panels, which shall be blocked with plexiglass or equivalent nonfrangible material.

The fence shall be constructed along the inside edge of the sidewalk, walkway or temporary walkway. If permission to close the sidewalk has been obtained from the Department of Transportation, such fence may be erected along the curb or outside of the curb to such extent as approved by the Department of Transportation. The fence shall be returned at its ends to the extent necessary to effectively close off the site.

3307.8Standard guardrail.A standard guardrail shall consist of a 2 inch by 4 inch (51 by 102 mm) wood top rail or equivalent capable of withstanding, without failure, a force applied in any downward or horizontal direction at any point along its top edge of at least 200 pounds (90.7 kg). The guardrail shall be not less than 3 feet (914 mm) nor more than 3 feet 6 inches (1067 mm) above the platform and there shall be a 1 inch by 4 inch (25 by 102 mm) wood intermediate rail midway between the top rail and the floor or standard toeboard, both supported by 2 inch by 4 inch (51 by 102 mm) wood posts spaced not more than 8 feet (2438 mm) apart.

To provide necessary openings for intermittent operations one or more sections of a required railing may be hinged or supported in sockets. When supported in sockets, rails shall be so constructed that they cannot be jolted out. A button or hook may be used to hold the rail in a fixed position. Substantial chains or ropes may be used to guard such openings in standard railings. Where so used, the chains or ropes shall be taut at the same height as the rails of the standard railing.

In lieu of wood construction, posts and rails may be constructed of at least 1 1/4 inch (32 mm) diameter standard pipe of at least 2 inch by 2 1/4 inch (51 by 57 mm) angles. Spacing of rails and posts shall be as required above

3307.8.1Standard toeboard.Where a toeboard is required, it shall be at least 5 1/2 inches (140 mm) high and constructed of metal, wood, or other substantial material. It shall be installed along the edge of the floor, opening, platform, ramp, or runway. Such standard toeboard shall be securely fastened to the posts and installed so that no open space exists between the floor and the standard toeboard.

3307.9Safety netting.Safety netting shall be provided as required by Section 3308.

3307.10Repair, maintenance and removal.Pedestrian protection required by this chapter or by the Department of Transportation shall be maintained in place and kept in good order for the entire length of time pedestrians may be endangered. The owner or the owner's agent, upon the completion of the construction or demolition activity, shall immediately remove sidewalk sheds, fences, guard rails, temporary walkways, debris and other obstructions and leave such public property in as good a condition as it was before such work was commenced.

In the event the Department of Transportation must repair, maintain, or install intersection control signs or electrical equipment, including traffic signals or street lighting poles at a location where pedestrian protection required by this chapter is located, such pedestrian protection shall be removed as directed by the department of buildings as long as the removal is deemed to be safe and, if necessary, suitable appropriate pedestrian protection that does not interfere with the work of the Department of Transportation is installed.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3308: SAFETY NETTING

NYC Administrative Code § 28-BC 3308

3308.1 Safety netting during construction or demolition operations.

Horizontal and vertical safety netting shall be provided when required below. Safety netting is required in addition to the sidewalk sheds, fences, and other pedestrian protection required by Section 3307.

Exception: A supported scaffold may be used in lieu of horizontal safety netting provided the bottom, outer faces and ends of the scaffold are enclosed with debris netting or its equivalent so as to prevent the falling of material and debris.

3308.1.1 Vertical netting. When in the course of construction the building reaches a height of 4 stories or 40 feet (12 192 mm), vertical safety netting shall be maintained at each story except at the story at grade, the story immediately above the sidewalk shed and the roof level where a parapet is installed.

3308.1.2 Horizontal netting during exterior wall construction. When exterior walls are being constructed, altered or repaired at a height greater than 6 stories or 75 feet (22 860 mm), horizontal safety netting shall be provided on the sides of the structure where the structure is not enclosed. A structure shall be considered to be enclosed when the permanent facade is completed except for the windows. Such windows shall be protected to a height specified in Section 3308.3 unless there is a sill not less than 2 feet 6 inches (762 mm) in height and vertical mullions or piers with a maximum opening of 5 feet (1524 mm) and a non-corrosive wire cable capable of withstanding a load of at least 200 pounds (90.7 kg) applied in any direction except upward.

3308.1.3 Horizontal netting during new construction and structural additions. When during the course of construction the building reaches a height of 6 stories or 75 feet (22 860 mm), horizontal safety netting shall be maintained at a level not more than two stories or 30 feet (9144 mm) below the stripping operation on concrete structures or the uppermost finished (and walkable) concrete floor on steel frame structures. The horizontal safety netting may be removed after the formwork for the topmost level of concrete is removed or after the topmost level of concrete for a steel building is poured.

3308.1.4Horizontal netting during demolition. When demolition of the exterior walls or the roof of a structure occurs at a height greater than 6 stories or 75 feet (22 860 mm), horizontal safety netting shall be provided. The horizontal safety netting shall be constructed and maintained not more than two stories or 30 feet (9144 mm) below the story from which the exterior walls and roof are being removed until the demolition has progressed to within six stories or 75 feet (22 860 mm) off the ground or adjoining roof level

3308.1.5Horizontal netting and tarpaulins. When tarpaulins encase one or more floors immediately below the finished concrete floor in order to maintain temporary heat, the horizontal nets may be located no more than three floors below the finished concrete floor.

3308.1.6Designated crane and derrick lifting areas. Required horizontal safety netting may be omitted in designated crane and derrick lifting areas so long as such lifting area is as indicated on the crane application and on the site safety program.

3308.2Horizontal safety netting requirements. Horizontal safety netting shall consist of a horizontal system of nets and their supports that meet requirements set forth in department rules, and shall include a structural net lined with a debris net of a size and strength sufficient to catch falling tools and materials.

Horizontal safety netting shall project outward horizontally from the edge of the floor a minimum distance of 10 feet (3048 mm).

3308.3Vertical safety netting requirements. Vertical safety netting shall consist of a vertical system of nets and their supports that meet requirements set forth in department rules. Vertical safety netting shall be of a fine mesh of a size and strength sufficient to contain falling tools and materials. Wall opening screens, grills or tarpaulins may be used in lieu of vertical safety netting, provided that they shall be of such construction and mounting as to retain debris.

On every story where vertical safety netting is required, it shall extend from the floor to a height of not less than 60 inches (1524 mm). Vertical safety nets and their components shall also meet the requirements set forth in rules promulgated by the commissioner.

3308.4Responsibility. The holder of the work permit and his or her designee shall be responsible for the installation and maintenance of all horizontal and vertical netting, and for complying with the requirements of this section.

3308.5Appeals. Where requests are made regarding interpretations, consultations, and reconsiderations of safety netting, the commissioner may, in specific cases, modify these regulations where proper methods are proposed to be employed.

Any appeal shall state the specific relief requested and shall make reference to the Site Safety Program, where applicable, the practical difficulty, proposed equivalencies consistent with public safety, and any stipulations.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3309: PROTECTION OF ADJOINING PROPERTY

NYC Administrative Code § 28-BC 3309

3309.1 Protection required.

Adjoining public and private property shall be protected from damage during construction or demolition work. Protection must be provided for footings, foundations, party walls, chimneys, skylights and roofs. Provisions shall be made to control water run-off and erosion during construction or demolition activities.

3309.2 License to enter adjoining property. The responsibility of affording any license to enter adjoining property shall rest upon the owner of the adjoining property involved; and in case any tenant of such owner fails or refuses to permit the owner to afford such license, such failure or refusal shall be a cause for the owner to dispossess such tenant through appropriate legal proceedings for recovering possession of real property.

3309.3 Physical examination. When permission to enter upon adjoining property has been obtained, a physical examination of such property shall be conducted by the person causing the construction or demolition operations prior to the commencement of the operations and at reasonable periods during the progress of the work. Observed conditions shall be recorded by the person causing the construction or demolition operations, and such records shall be made available to the department upon request.

3309.4 Excavation or filling operations affecting adjoining property. Regardless of the excavation or fill depth, the person who causes an excavation or fill to be made shall, at all times and at his or her own expense, preserve and protect from damage any adjoining structures, provided such person is afforded a license in accordance with the requirements of Section 3309.2 to enter and inspect the adjoining buildings and property, and to perform such work thereon as may be necessary for such purpose. If the person who causes the excavation or fill is not afforded a license, such duty to preserve and protect the adjacent property shall devolve to the owner of such adjoining property, who shall be afforded a similar license with respect to the property where the excavation is to be made.

No excavation work to a depth of 5 to 10 feet (1524 mm to 3048 mm) within 10 feet (3048 mm) of an adjacent building, or an excavation over 10 feet (3048 mm) anywhere on the site shall commence until the person causing an

excavation to be made has documented the existing conditions of all adjacent buildings in a pre-construction survey.

3309.4.1 Additional safeguards during excavation. The following additional requirements shall apply during excavation:

1. The person causing the excavation shall support the vertical load of the adjoining structure by proper foundations, underpinning, or other equivalent means where the level of the foundations of the adjoining structure is at or above the level of the bottom of the new excavation.

2. Where the existing adjoining structure is below the level of the new construction or demolition, provision shall be made to support any increased vertical or lateral load on the existing adjoining structure caused by the new construction or demolition.

3. Where the new construction or demolition will result in a decrease in the frost protection for an existing foundation below the minimums established in Section 1805.2.1, the existing foundation shall be modified as necessary to restore the required frost protection.

3309.4.2 Support of party walls. Where a party wall will be affected by excavation, regardless of the depth, the person who causes the excavation to be made shall preserve such party wall at his or her own expense so that it shall be, and shall remain, in a safe condition. Where an adjoining party wall is intended to be used by the person causing an excavation to be made, and such party wall is in good condition and sufficient for the uses of the existing and proposed buildings, it shall be the duty of such person to protect such party wall and support it by proper foundations, so that it shall be and remain practically as safe as it was before the excavation was commenced.

3309.5 Underpinning. Whenever underpinning is required to preserve and protect an adjacent property from construction or excavation work, the person who causes the construction or excavation work shall, at his or her own expense, underpin the adjacent building provided such person is afforded a license in accordance with the requirements of Section 3309.2 to enter and inspect the adjoining buildings and property, and to perform such work thereon as may be necessary for such purpose. If the person who causes the construction or excavation is not afforded a license, such duty to preserve and protect the adjacent property shall devolve to the owner of the adjoining property, who shall be afforded a similar license with respect to the property where the excavation is to be made.

3309.6 Foundation operations affecting adjacent properties. Whenever subsurface operations are conducted that may impose loads or movements on adjoining property, such as driving of piles, compaction of soils, or soil solidification, the effects of such operations on adjoining property and structures shall be monitored.

Where placement of a foundation will cause changes in the ground water level under adjacent buildings, the effects of such changes on the stability and settlement of the adjacent foundations shall be investigated and provision shall be made to prevent damage to such buildings.

When, in the opinion of the commissioner, a potential hazard exists, elevations of the adjacent buildings shall be recorded by a registered design professional at intervals of 24 hours or less as determined by the commissioner to ascertain if movement has occurred.

3309.7 Retaining Structures. When the regulation of a lot requires the ground on such lot to be raised or lowered and kept higher than the ground of the adjoining lot, provided the ground of such adjoining lot is not maintained at a grade lower than in conformity with the street or streets on which it is situated, or where an excavation has been made or a fill placed on any lot meeting the curb level requirements, and the adjoining land is maintained at a grade in conformity with or lower than the streets or streets on which it is situated, and is without permanent structures other than frame sheds or similar structures, a retaining structure shall be constructed for the safe support of adjoining ground, unless the bank between the adjoining properties is maintained at a safe angle of repose. Any necessary retaining wall shall be built and maintained jointly by the owners on each side, unless otherwise agreed to by both owners.

3309.7.1 Surplus Retaining Structures. Where any owner maintains his or her ground either higher or lower than the legal regulation prescribed in the Administrative Code, the surplus retaining structure that may be necessary to support such height or provide for such excavation shall be made at the sole expense of such owner, and any additional thickness that may be required shall be built on the land of such owner.

3309.7.2 Removal of Retaining Structures. Any retaining structure erected as provided above, standing partly on the land of each owner, may be removed by either owner when the original reason for the erection of such retaining structure ceases to exist.

3309.8 Adjoining walls. When any construction or demolition operation exposes or breaches an adjoining wall, including load bearing and non load-bearing walls as well as party walls and non party walls, the person causing the construction or demolition operation shall, at his or her own expense, perform the following:

1. Maintain the structural integrity of such walls, have a registered design professional investigate the stability and condition of the wall, and take all necessary steps to protect such wall.

2. Maintain all required fire exits and passageways or provide substitutions meeting the requirements of this code.

3. Cut off close to the walls all beams in party walls, remove stub ends without weakening existing masonry, clean beam pockets of loose mortar, bend over all wall anchors at the beam ends in the standing wall, and brick-up all open beam holes with sound brick and cement mortar.

4. During demolition operations, where the floor beams of the adjacent building bear on the party wall, the person causing the demolition shall ascertain that such beams are anchored into the wall and, where such anchorage is lacking, shall provide anchorage or otherwise brace the standing wall.

5. During demolition operations, all non load-bearing chimney breasts, projections and any other debris exposed on party walls shall be examined and monitored by the person causing the demolition. Removal of such items shall be made under the supervision of a registered design professional only if the stability of the adjacent building or structure will not be affected. All openings shall be bricked up flush on the exterior side of the party wall. All masonry that is in poor condition shall be pointed and patched.

3309.9 Weatherproof integrity of adjoining buildings. Where the waterproof integrity of an adjoining wall or building has been impaired due to construction or demolition operations, the person causing the construction or demolition operations shall, at his or her own expense, provide all necessary measures to permanently waterproof the adjoining wall or building in order to restore the weatherproof integrity of such adjoining wall or building. This shall include, but is not limited to:

1. Bending over and flashing all roofing material of adjoining buildings;

2. Sealing and permanently waterproofing all doors or other openings in party walls;

3. Properly sealing all cornices, where cut;

4. Pointing up and making waterproof any walls and parapets and any walls that have been disturbed;

5. Removing all exposed furring, lath, and plaster on party walls; and

6. Removing, replacing, and firmly anchoring any loose wall material.

3309.10 Protection of roofs, skylights, chimneys, etc. Whenever any building is to be constructed or demolished above the roof of an adjoining building, it shall be the duty of the person causing such building to be constructed or demolished to protect the roof, skylights and other roof outlets of the adjoining building from damage, and to use every

reasonable means to avoid interference with the use of the adjoining building during the course of construction or demolition. Such person shall be afforded a license in accordance with the requirements of Section 3309.2 to enter and inspect the adjoining building and perform such work thereon as may be necessary for such purpose; otherwise, the duty of protecting the roof, skylights and other roof outlets of the adjoining building shall devolve upon the owner of such adjoining building.

In addition, any person having the duty to alter or maintain chimneys of any adjoining building under and pursuant to the provisions of this code or the New York City Mechanical Code or other applicable laws and rules, shall likewise be afforded a license in accordance with the requirements of Section 3309.2 to enter and inspect such adjoining building and perform such work thereon as may be necessary for such purpose; otherwise, such duty shall devolve upon the owner of such adjoining building.

3309.11Protection of trees.No trees outside the property line within the public right of way shall be disturbed or removed without the permission of the commissioner of the department of parks and recreation. Protection meeting the requirements of the department of parks and recreation shall be provided around the trunks of all such trees, and written notification shall also be made to the department of parks and recreation at least 48 hours prior to commencement of such work. No deleterious, caustic, or acid materials shall be dumped or mixed within 10 feet (3048 mm) of any such tree, nor shall salt for the removal of ice or snow be applied when runoff will drain to a tree.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3310: REQUIREMENTS FOR THE CONSTRUCTION OR DEMOLITION OF MAJOR BUILDINGS

NYC Administrative Code § 28-BC 3310

3310.1 Scope.

This section outlines the requirements for site safety programs for major building construction or demolition that are in addition to the other applicable requirements of this chapter. These requirements are not intended to supersede other applicable city, state or federal requirements that address site safety and construction or demolition activity.

3310.2Major buildings.A major building is a building proposed to have any of the following characteristics:

1. Be constructed to a height of 10 or more stories;
2. Be constructed to a height of 125 feet (38 100 mm) or more;
3. Have a lot coverage of 100,000 square feet (30 480 m²) or more regardless of height; or
4. As designated by the commissioner.

3310.3Site safety plan and site safety program required.No permit shall be issued for the construction or demolition of a major building, or for the alteration of the faade of a major building when a sidewalk shed is required until a site safety plan that meets the requirements of Chapter 1 of Title 28 of the Administrative Code has been approved by the department.

Exceptions:

1. A site safety plan and site safety program is not required for the alteration of the faade of a major building between 10 and 14 stories in height.
2. A site safety plan and site safety program is not required for partial demolition operations in major buildings where the partial demolition operation is limited to the interior components of the building and where mechanical

demolition equipment, other than handheld devices, are not used.

3310.4 Required signs. The requirements of Section 3301.9 shall apply.

3310.5 Requirement for a site safety manager or coordinator. A site safety manager certified by the department in accordance with the requirements of Chapter 4 of Title 28 of the Administrative Code is required for the construction or demolition of a major building, or the alteration of the facade of a major building when a sidewalk shed is required.

Exceptions:

1. A site safety coordinator certified by the department in accordance with the requirements of Chapter 4 of Title 28 of the Administrative Code may be used instead of a site safety manager for a major building that is:

1.1. Less than 15 stories in height;

1.2. Less than 200 feet (60 960 mm) in height; and

1.3. Less than 100,000 square feet (30 480 m²) of lot coverage.

2. A site safety manager or coordinator is not required for the alteration of the facade of a major building that is:

2.1. Less than 15 stories in height; and

2.2. Less than 200 feet (60 960 mm) in height; and

2.3. Less than 100,000 square feet (30 480 m²) of lot coverage.

3. A site safety manager or coordinator is not required for partial demolition operations in major buildings where the partial demolition operation is limited to the interior components of the building and where mechanical demolition equipment, other than handheld devices, are not used.

3310.6 Designation of site safety manager and site safety coordinator. It shall be the responsibility of the builder/owner, agent, construction manager, or general contractor (the "Contractor") to designate a site safety manager or coordinator who must be present on a construction or demolition site when required, and who shall be responsible for all site safety requirements as specified in this chapter.

In the event that an alternate manager or coordinator will be acting as the full-time safety manager or coordinator for a period longer than two weeks, the department must be so notified. Any permanent change of site safety manager or coordinator requires immediate notification of the department. No proposed alternate manager or coordinator shall have as his or her primary duty the job of site safety manager or coordinator on any other construction or demolition project.

3310.7 Contractor's responsibility. The contractor shall notify all of its supervisory personnel and all of its subcontractors working on the construction or demolition site of the name and responsibilities of the site safety manager or coordinator. The contractor shall state to its directly employed personnel and also to its subcontractors that the site safety manager or coordinator is responsible for monitoring compliance with laws and rules governing site safety, and that they are required to obey and implement all orders and directives relating to safety requirements.

In the event the site safety manager or coordinator discovers violation of the site safety regulations, he or she shall immediately notify the person or persons responsible for creating the violation, whether these persons are employed by the contractor or by subcontractors. If the site safety manager or coordinator is unable to obtain the cooperation of these persons in correcting the violation, he or she shall inform his or her direct supervisor immediately and request that the supervisor order the necessary corrective action. If the supervisor of the site safety manager or coordinator is not present at the site or is otherwise unavailable, the site safety manager or coordinator shall notify any other supervisory

personnel of the contractor present on the job or any other responsible manager or officer of the contractor. All such violations and corrective work shall be recorded in the daily log.

3310.8 Site safety manager's and coordinator's responsibility.

3310.8.1 Monitor compliance. It is the responsibility of the site safety manager or coordinator to monitor compliance with the safety requirements of this chapter and to perform all other safety duties assigned by the owner or contractor to meet legal requirements.

The site safety manager or coordinator) shall meet on a weekly basis with the designated representative of each subcontractor to ascertain that all subcontractors are complying with the applicable provisions of this chapter.

3310.8.2 Notification. The site safety manager or coordinator shall immediately notify the department directly if he or she discovers any of the following conditions in the routine performance of the job:

1. A person is operating a crane, derrick or hoisting equipment on the site without a permit and refuses to desist from operating the equipment;
2. A crane is being operated by an unlicensed operator and such unlicensed operator refuses to desist from operating the crane;
3. No flagperson is present during crane operation where required by this chapter;
4. Sidewalk sheds required by the site safety plan are not in place during construction or demolition activity;
5. Permits have not been issued for the sidewalk sheds;
6. The designer and/or supplier of sidewalk sheds has not certified that the sheds have been erected in accordance with the approved plans; or
7. There has been an accident involving the public, or private or public property.

3310.8.2.1 Responsibility. Upon proper notification to the department of the existence of any of the above-noted circumstances, any responsibility the site safety manager or coordinator has under this code arising out of, relating to, or as a result of the existence of that circumstance, shall cease.

3310.8.3 Inspections. It shall be the responsibility of the site safety manager or coordinator to inspect personally, on a regular basis, specific areas and items on the construction or demolition site, as prescribed by rules promulgated by the commissioner, and to notify responsible personnel employed by the general contractor, construction manager or any subcontractor when violations of this chapter occur. The site safety manager or coordinator shall maintain a log of the inspection in accordance with the requirements set forth in rules promulgated by the commissioner.

3310.8.4 Reasonable prudence. In addition to the above requirements, the site safety manager or coordinator shall use reasonable prudence to ensure that safety is maintained at the job site as job conditions dictate.

3310.9 Additional site safety personnel. The following additional personnel shall be employed to oversee concrete operations at major buildings as defined in section 3310.2 and such other classes of buildings or operations as the commissioner may designate by rule. These personnel shall coordinate directly with the site safety manager or coordinator designated in accordance with section 3310.6. In all instances, the designated site safety manager or coordinator retains responsibility for ensuring compliance with the provisions of section 3310 of this code and all applicable rules, and for signing the site safety log. The name and contact information of the additional site safety personnel shall be recorded in the site safety log.

3310.9.1 Concrete safety manager. Beginning January 1, 2009, a concrete safety manager shall be designated by the concrete contractor at those sites where the concrete portion of the project involves the pouring of a minimum of 2,000 cubic yards of concrete or such lesser amount as the commissioner may determine by rule. Concrete safety managers shall have five years of experience in concrete operations and shall have satisfactorily completed, by July 1, 2009 or within the five calendar years prior to registration, a thirty hour course approved by the commissioner that is sufficient to qualify the individual as a competent person under OSHA standards to oversee concrete operations, including such topics as formwork design, construction and stripping operations, rebar handling, and rigging. Concrete safety managers shall register with the department in the same manner as construction superintendents, and shall provide evidence of meeting the eligibility requirements set forth herein. As of July 1, 2009, no person shall perform the duties of a concrete safety manager without being registered as such with the department. The commissioner shall promulgate rules establishing the duration that such registration shall be valid and the requirements for renewal of the registration. The concrete safety manager shall be present during all concrete operations. For purposes of this section, "concrete operations" shall mean the pouring of concrete and the construction and stripping of concrete forms and related activities as specified by the commissioner.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

3310.5 amended L.L. 8/2008 § 168, eff. July 1, 2008.

3310.9 added L.L. 40/2008 § 1, eff. Jan. 1, 2009. [See Note 1]

NOTES:

1. L.L. 40/2008:

§ 2. This local law shall take effect on January 1, 2009, provided that the commissioner of buildings shall take such actions as necessary for its implementation prior to such effective date and shall approve the thirty hour course as required by New York city building code section 3310.9.1, as added by section one of this local law, no later than January 1, 2009 and shall consult with relevant stakeholders and officials at the Department of Labor's Occupational Safety and Health Administration in developing the curriculum for such course.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3311: EXPLOSIVE POWERED AND PROJECTILE TOOLS

NYC Administrative Code § 28-BC 3311

3311.1 Approved.

All explosive powered and projectile tools shall be approved by the commissioner or other approved agency.

3311.2 Projectile tools.

3311.2.1 Basic requirements. Design and construction of the tool must be such as to safely retain all internal pressures that may occur during its operation. The discharge mechanism shall be such that the projectile cannot be discharged by dropping the tool. The discharge mechanism shall be such that the discharge of each projectile shall be dependent on a separate and distinct act by the operator, and all safety features shall be durable.

A tool shall have such other characteristics as the commissioner may find necessary. Such other characteristics may include devices and materials external to the tool itself but associated with its function, and may also include in respect to high velocity projectile tools the basic requirements set forth above for explosive powered tools that discharge projectiles with comparable velocities.

3311.2.2 Maintenance. Every projectile tool shall be properly maintained. No such tool shall be used if any part necessary to retain internal pressures or to prevent accidental discharge of a projectile is not in sound and operable condition.

3311.2.3 Operation. The operation of projectile tools shall comply with the following:

1. A projectile tool shall be operated only by an authorized operator who shall be the owner, lessee, or other person having custody of the tool, or any other person whom he or she may authorize to operate it.
2. While a projectile tool is in the care and custody of an authorized operator, no other person shall handle or in any way utilize or modify it.

3. No authorized operator of a projectile tool shall leave it unattended while it is in a condition to discharge a projectile.

4. No person shall use a projectile tool for any purpose other than that for which it was manufactured.

5. No person shall point a projectile tool at another person or hold it at an angle that allows the projectile to fly free.

6. No person shall use a projectile tool in such a way as to endanger persons who may be in the vicinity.

3311.3 Explosive powered tools. The provisions of ANSI A10.3-1995, as modified in Section 3311.4 shall apply. The storage, handling and use of explosives shall comply with the New York City Fire Code and Section 3307.4.2.

3311.4 Modifications to ANSI A10.3-1995. The text of ANSI A10.3-1995 shall be modified as indicated in Sections 3311.4.1 through 3311.4.11.

3311.4.1 ANSI A10.3-1995, Section 4.2.2. Delete Sections 4.2.2.2, 4.2.2.3 and 4.2.2.4 in their entirety and modify Section 4.2.2.1 to read as follows:

4.2.2.1 Medium-velocity tools, indirect-acting (piston) type, as defined in section 3, shall not be accepted.

3311.4.2 ANSI A10.3-1995, Section 4.2.3. Delete Sections 4.2.3.2, 4.2.3.3 and 4.2.3.4 in their entirety and modify Section 4.2.3.1 to read as follows:

4.2.3.1 High velocity tools, direct-acting or indirect-acting type, as defined in section 3, shall not be accepted.

3311.4.3 ANSI A10.3-1995, Section 5.6. Add a new section 5.6 to read as follows:

5.6 Selection of load. No employer shall knowingly furnish to an employee for use in a tool any cartridge or load not suitable for safe use in that tool, whether by reason of excessive power, improper design or poor material. The operator shall use due care to select the proper cartridges or power loads, or other means of controlling the force of the explosion so that the tool develops no more than the necessary pressure to bring about the desired penetration. In doing so, the operator shall be guided by the manufacturer's specifications.

5.6.1 Proper Load. When doubt exists as to proper load, the operator shall make a trial shot to test the surface and the strength of the material to be penetrated. The trial shot shall be made with the lowest power level and then increasing strength until a proper fastening is made. During this test, the operator and all bystanders shall adhere to all safety rules including but not limited to wearing goggles and hard hats required for the job.

3311.4.4 ANSI A10.3-1995, Section 7.11. Add the following sentence at the beginning of section 7.11:

7.11 The operator shall always verify the thickness and type of material into which the stud, pin or fastener is to be driven.

3311.4.5 ANSI A10.3-1995, Section 9.4. Add a new section 9.4 to read as follows:

9.4 Storage of power loads shall be in accordance with the requirements of the New York City Fire Code and regulations of the Fire Department.

3311.4.6 ANSI A10.3-1995, Section 10.3.1. Add a new section 10.3.1 to read as follows:

10.3.1 The authorized instructors' card shall list the specific model(s) of powder actuated tool(s) for which training may be given.

3311.4.7 ANSI A10.3-1995, Section 10.6. Add a new section 10.6 to read as follows:

10.6 All authorized instructors shall hold a Certificate of Fitness issued by the Fire Department.

3311.4.8ANSI A10.3-1995, Section 11.4.1.Add a new section 11.4.1 to read as follows:

11.4.1 The qualified operator's card shall list the specific model(s) of powder actuated tool(s) that may be used.

3311.4.9ANSI A10.3-1995, Section 11.6.Add a new section 11.6 to read as follows:

11.6 All qualified operators shall hold a Certificate of Fitness issued by the Fire Department.

3311.4.10ANSI A10.3-1995, Section 12.Add a new section 12 to read as follows:

12 Equipment Acceptance.

12.1 Powder-actuated tools using ammunition (power loads) shall be approved by the commissioner or other approved agency.

12.2 Labeling. A certificate or label indicating that the tool is approved shall be attached to the toolbox or operator's manual and shall be made available for inspection upon request of the commissioner.

3311.4.11ANSI A10.3-1995, Section 13.Add a new section 13 to read as follows:

13 Fire Department Requirements.

13.1 The requirements of the New York City Fire Code and regulations of the Fire Department shall apply.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE

Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION

SECTION BC 3312: EXPLOSIVES AND BLASTING

NYC Administrative Code § 28-BC 3312

3312.1 General.

All handling, transporting, and use of explosives shall comply with the New York City Fire Code and Section 3307.4.2. The use of explosives is strictly prohibited unless the written consent of the commissioner and the Fire Department is obtained.



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SECTION BC 3313: FLAMMABLE AND COMBUSTIBLE MIXTURES, COMPRESSED GASES, AND OTHER
HAZARDOUS MATERIALS

NYC Administrative Code § 28-BC 3313

3313.1 General.

The transportation, handling, storage, installation, connection, ventilation, and use of all volatile flammable oils, flammable and combustible mixtures, compressed gases, and other hazardous materials shall comply with the New York City Fire Code, and shall also be safeguarded in accordance with the requirements of Section 3307.4.2.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3314: SCAFFOLDS

NYC Administrative Code § 28-BC 3314

3314.1 Scope.

All scaffolds shall be erected and maintained so that the safety of public and property will not be endangered by falling material, tools or debris, or by collapse of the scaffold.

3314.1.1 Notification prior to commencement of work. The permit holder or person directly in charge of any suspended scaffold supported by c-hooks or outrigger beams shall notify the department in a form and manner specified by the department at least 24 hours, but not more than 48 hours, prior to the installation or use of such scaffolding equipment.

3314.1.2 Notification of scaffolding accidents. The permit holder or person directly in charge of any scaffolding equipment shall immediately notify the commissioner following any accident involving scaffolding equipment. Following an incident, no person shall permit either of the following, without the permission of the commissioner:

1. Use of such scaffolding equipment; or
2. Removal of the scaffolding equipment or any part thereof from the area of the job site.

3314.2 Permit. Supported scaffolds 40 feet (12 192 mm) or more in height, outrigger scaffolds, and suspension scaffolds, including all supports, fastenings, connections and details, shall not be erected or installed unless and until a written permit has been issued by the commissioner on the basis of plans, drawings, and specifications. Copies of the permit shall be posted in a conspicuous location at the site visible to the general public. Copies of the approved plans shall be maintained at the site and made available to the commissioner upon request.

Exceptions:

1. Any two-point suspended scaffold supported by a parapet using C-hooks that meet the requirements of Section 3314.10.2 provided that prior notification is provided to the department in accordance with Section 3314.1.1.

2. Any suspended scaffold or outrigger scaffold on new construction, or on alterations where the operation of the scaffold is confined within the property and the site is protected in accordance with Section 3307.

3. Window washing equipment that is permanently anchored to the building or structure by a davit.

3314.2.1 Signs. Following the receipt of a permit to erect or suspend a scaffold, the permit holder shall post a sign that meets the requirements of Section 3301.9.6. Such sign shall be clearly visible from the street. Other than as required by Section 3301.10, there shall be no information, pictorial representation, or business or advertising messages posted on a scaffold.

3314.3 Design of scaffolds.

3314.3.1 Design. All supported scaffolds 40 feet (12 192 mm) or more in height, outrigger scaffolds, and suspension scaffolds, including all supports, fastenings, connections, and details shall be designed in accordance with the provisions below.

Each scaffold and its components shall be capable of supporting, without failure, its own weight and at least four times the maximum intended load applied or transmitted to it in accordance with Section 3314.3.3. Each suspension rope, including connecting hardware, used on non-adjustable suspension scaffolds shall be capable of supporting, without failure, at least six times the maximum intended load applied or transmitted to the rope.

Where applicable, scaffolds and their connections to the building or structure shall be designed for wind loads as prescribed in Section 1609.

Copies of the plans, drawings, and specifications for all supports, fastenings, connections, and details shall be kept at the site and made available to the commissioner upon request.

3314.3.1.1 Supported scaffolds. Supported scaffolds between 40 feet and 75 feet (12 192 mm and 22 860 mm) must be designed by a qualified person or company or a registered design professional. Supported scaffolds over 75 feet (22 860 mm) in height must be designed by a registered design professional.

3314.3.1.2 Outrigger scaffolds. Outrigger scaffolds must be designed by a registered design professional.

3314.3.1.3 Suspension scaffolds. Two-point suspended scaffolds having a support structure with a height from the roof or floor of less than 15 feet (4572 mm) must be designed by a licensed master or special rigger, or a registered design professional. All other suspension scaffolds must be designed by a registered design professional.

3314.3.1.4 Excess loads. Scaffolds with loads exceeding 75 pounds per square foot (366.15 kg/m²) shall be designed by a registered design professional.

3314.3.1.5 Frame scaffold brackets. Where brackets are used for any purpose other than the support of workers, the scaffold and brackets shall be designed by an engineer.

3314.3.1.6 Parapet clamps. Where parapet clamps are used to support a vertical load, a registered design professional shall verify that the supporting structure will not be overstressed.

3314.3.1.7 Multiple trades. When more than one trade is to use a scaffold simultaneously, the scaffold shall, at a minimum, be designed for a minimum of 50 pounds per square foot (244 kg/m²).

3314.3.2 Plans. When plans are required by this section, they shall include a plan view, an elevation view, details of anchorage, scaffold designation in accordance with Section 3314.3.3 and, for supported scaffolds, the number of planked levels and the number of levels to be loaded simultaneously.

3314.3.3Loading. All scaffolds shall be designed for one of the intended loads described in Section 3314.3.3.1 to 3314.3.3.4. No scaffold shall be loaded in excess of the maximum load for which it is designed. Loads shall not be concentrated so as to cause stresses in excess of the allowable values designated for the applicable material described in this code.

3314.3.3.1Light duty scaffold. The light duty scaffold is to be used for loads up to 25 pounds per square foot (122.05 kg/m²), and is intended for use by carpenters, painters, or others of similar trades. It shall not be used to support loads more severe than those imposed by such workers and a minimum amount of lightweight materials.

3314.3.3.2Medium duty scaffold. The medium duty scaffold is to be used for loads up to 50 pounds per square foot (244.1 kg/m²), and is intended for use by bricklayers, plasterers, pipe fitters or other similar trades. It shall not be used to support loads more severe than those imposed by such workers and a moderate amount of their materials.

3314.3.3.3Heavy duty scaffold. The heavy duty scaffold is to be used for loads up to 75 pounds per square foot (366.15 kg/m²), and is intended for use by stone masons. It shall not be used to support loads more severe than those imposed by such workers and a reasonable supply of their materials.

3314.3.3.4Extra heavy duty scaffold. The extra heavy duty scaffold is to be used for loads exceeding 75 pounds per square foot (366.15 kg/m²) and shall be designed in accordance with Section 3314.3.1.4.

3314.3.4Fire retardant construction. With the exception of the planking, the following scaffolds shall be constructed of noncombustible materials:

1. Exterior scaffolds exceeding 75 feet (22 860 mm) in height.
2. Interior scaffolds exceeding 21 feet (6.4 mm) in height.
3. All scaffolds used in the alteration, repair, or partial demolition of buildings in occupancy groups I-1 to I-4.

3314.4Installation and use of scaffolds.

3314.4.1Installation. Scaffolds that require a permit or design shall be erected and installed in accordance with the construction documents, drawings, and specifications for the scaffold. Upon completion of the installation of the scaffold, an inspection report verifying that the scaffold has been installed in accordance with the design drawings, construction documents and specifications shall be prepared by the designer, installer, or an approved inspection agency designated by both the designer and installer.

3314.4.2Maintenance and repair. All scaffolds shall be maintained in a safe condition. No scaffold shall be altered, removed or partially dismantled while it is in active use, unless done by a qualified person.

Every damaged or weakened scaffold shall be immediately repaired or secured and shall not be used until satisfactory repairs have been completed, and the scaffold is inspected under the provisions of Section 3314.4.3.

3314.4.3Inspections. All scaffolds, except for suspended scaffolds, shall be inspected daily before each use by a competent person designated by the trade(s) using the scaffold. A record of such daily inspections shall be maintained and available at the site where the scaffold has been erected. Suspended scaffolds shall be inspected in accordance with Section 3314.4.3.1.

3314.4.3.1Inspection of suspended scaffolds. Before use, all suspended scaffolds shall be inspected daily by the licensed rigger or his or her foreman in accordance with Section 404 of Title 28 of the Administrative Code, or the licensed sign hanger or his or her foreman in accordance with Section 415 of Title 28 of the Administrative Code, or the superintendent of construction if the work is not performed by or under the supervision of a licensed rigger or sign hanger in accordance with the exception to Section 404.1 of Title 28 of the Administrative Code and Section 415.2 of

Title 28 of the Administrative Code.

A record of such inspections shall be kept and maintained at the job site and shall be readily available and presented to department personnel upon request. The record shall be signed by the individual responsible for the inspection and shall also show the individual's name clearly and legibly printed.

3314.4.4Storage of material and debris. Material and debris susceptible to dislodgment shall not be stored on scaffolds while work is not being performed.

3314.4.5Requirements for workers who erect, repair, maintain, modify or remove supported scaffolds. Only workers with experience in erecting, repairing, maintaining, modifying, or removing supported scaffolds and with the training required by this paragraph shall be employed to perform this work. They shall be supervised by a designated superintendent or foreman who shall enforce such measures as necessary for the protection of the public and property.

No person shall knowingly permit or cause an individual who does not have the experience and training required by this paragraph to perform any of the work described in this paragraph.

Workers who erect, repair, maintain, modify or remove supported scaffolds 40 feet (12 192 mm) or more in height shall, at a minimum, have completed a department-approved training program or course that is at least 32 hours long, and shall complete a department-approved 8-hour refresher program or course every 4 years thereafter. The training program or course shall be based on the United States Department of Labor Occupational Safety and Health Department ("OSHA") scaffold safety and training guidelines and the scaffold requirements of this chapter. The training program or course shall be conducted by a registered New York State Department of Labor apprenticeship training program or by an educational institution or school chartered, licensed or registered by the New York State Department of Education or by a provider approved by the department and presented by an instructor(s) deemed qualified and competent in accordance with OSHA regulations.

Successful completion of the training program or course shall be evidenced by a dated scaffold certificate of completion issued by the provider of the training program or course. The certificate or a valid wallet card version of the certificate shall be readily available to the commissioner upon request, and shall be deemed valid for four years from its date of issuance.

Workers who erect, repair, maintain, modify, or remove a sidewalk shed that provides a base for a scaffold 40 feet (12 192 mm) or more in height are subject to the above requirements.

The requirement that a refresher program or course be completed every four years shall apply retroactively to individuals who satisfied such requirements prior to the effective date of this code.

3314.4.6Requirements for workers who use a supported scaffold. Every worker who uses a supported scaffold to perform his or her job tasks shall complete a department-approved four-hour training program or course, and a department-approved four-hour refresher program or course every four years thereafter, that includes instruction on the nature of electrical hazards, fall and falling object hazards, material handling on scaffolds, personal protection equipment, the nature of braces and tiebacks and their safe removal and the maximum intended load and load-handling capacities of scaffolds. The training program or course shall be conducted by a registered New York State Department of Labor apprenticeship training program or by an educational institution or school chartered, licensed or registered by the New York State Department of Education or by a provider approved by the department, and presented by an instructor(s) deemed qualified and competent in accordance with OSHA regulations.

Successful completion of the training program or course shall be evidenced by a dated scaffold user certificate issued by the provider of the training program or course. The certificate or a valid wallet card version of the certificate shall be readily available to the commissioner upon request, and shall be deemed valid for four years from its date of issuance.

No person shall knowingly permit or cause an individual who does not have the training required by this paragraph to use a supported scaffold.

The requirement that a refresher program or course be completed every four years shall apply retroactively to individuals who satisfied such requirements prior to the effective date of this code.

3314.4.7Exemptions.The provisions of paragraphs 3314.4.5 and 3314.4.6 of this subdivision shall not apply to:

1. the erection, dismantling, repair, maintenance or modification of any supported scaffold performed by an employee of a public utility when such supported scaffold is located within the interior of a building or structure owned or operated by such utility and when such utility has a safety training program of not less than 32 hours for its employees who erect, dismantle, repair, maintain or modify such scaffolds; or

2. employees of a public utility performing work while using a supported scaffold, provided that such employees are trained, pursuant to the United States department of labor occupational safety and health administration's requirements, to be able to recognize the hazards associated with the type of supported scaffold being used, and to understand the procedures to control those hazards; or

3. the erection, dismantling, repair, maintenance or modification of stand alone, one story sidewalk sheds; or

4. a registered architect or professional engineer who is using a supported scaffold to perform inspections, as long as the architect or engineer does not perform work from or participate in the erection, dismantling, repair, maintenance or modification of any building or structure, including the supported scaffold.

3314.4.8Requirements for workers who erect or use suspension scaffolds.Workers who erect, repair, maintain, modify, remove or use suspension scaffolds shall meet the requirements set forth in rules promulgated by the commissioner.

3314.5Platform construction.Platforms on all working levels of a scaffold shall be fully planked or decked between the front uprights and the guardrail system supports in accordance with Sections 3314.5.1 through 3314.5.6.

Exception: Platforms used solely as walkways or used solely by workers performing scaffold erection and dismantling shall be planked to provide safe working conditions.

3314.5.1Platform spacing.Each platform unit shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 1 inch (25 mm) wide except where a qualified person can demonstrate that a wider space is necessary.

3314.5.2Maximum span for wood plank.All lumber used in scaffolds or their supports shall be at least equal in strength and quality to construction grade lumber in accordance with Section 2301. See Table 3314.5.2 for the maximum span for scaffold planks.

Material	Full Thickness Undressed Lumber	Lumber of Nominal Thickness	Working Load (psf)
2x10	10	8	6
2x8	8	6	5
2x6	6	5	4

Note: For SI: 1 inch = 25.4 mm

3314.5.3Minimum overhang.The end of a platform shall extend over the centerline of its support a minimum of 6 inches (152 mm) unless cleated or otherwise restrained by hooks or equivalent means.

3314.5.4Maximum cantilever.

3314.5.4.1Ten feet or less.The end of a platform 10 feet (3048 mm) or less in length shall not extend over the centerline of its support more than 12 inches (305 mm) unless the platform and its tiedown are designed by a qualified person or the platform has guardrails to prevent access to the cantilevered end.

3314.5.4.2 More than ten feet. The end of a platform more than 10 feet (3048 mm) in length shall not extend over the centerline of its support more than 18 inches (457 mm) unless the platform and its tiedown are designed by a qualified person or the platform has guardrails to prevent access to the cantilevered end.

3314.5.5 Platform tiedown. All platforms shall be tied down, cleated or otherwise restrained by hooks or equivalent means to prevent dislodgment.

3314.5.6 Platform deflection. Platforms shall not deflect more than 1/60 of the span when loaded.

3314.6 Footings and anchorage. The footings and anchorage for every scaffold shall be sound and rigid, capable of carrying the maximum load without excessive settlement or deformation and secure against movement in any direction. Supports such as barrels, boxes, loose brick, loose stone, or other unstable materials shall not be used.

3314.6.1 Safe points of anchorage. Safe points of anchorage include structural members of a building. Window cleaners anchors, window frames, mullions, handrails, standpipes, vents and other piping systems, electrical conduit, outrigger beams, counterweights or similar elements shall not be used as anchors or braceback points.

3314.6.2 Lifeline anchorage. Lifeline anchorage shall be fastened to a fixed safe point of anchorage, shall be independent of the scaffold, and shall be protected from sharp edges and abrasion.

3314.6.3 Lifelines and suspension ropes. Lifelines, tiebacks, and suspension ropes shall each be attached to a different point of anchorage.

3314.6.4 Scaffolds supported on structure. Loads from supported and suspended scaffolds imposed on an existing roof or floor or similar structure shall not be concentrated so as to cause stresses in excess of the allowable values designated for the applicable material described in this code.

3314.7 Outrigger beams. Outrigger beams shall be made of structural metal or equivalent strength material and shall be restrained to prevent movement.

3314.7.1 Overhang. The overhang of outrigger beams shall not exceed that specified by the design and the inboard length of beam shall be at least one and one-half times the outboard length.

3314.7.2 Wire rope suspenders. The wire rope suspenders shall be securely fastened to the outrigger beams by steel shackles or equivalent means. The shackles and outrigger beams shall be placed so that the ropes will hang vertically.

3314.8 Guardrail system and toeboards. Except for scaffold platforms 6 feet (3048 mm) or less above the ground, the open sides and ends of every scaffold platform shall be provided with a guardrail system and toeboard, unless otherwise specified for the particular type of scaffold. The guardrail system shall be installed before the scaffold is released for use by workers other than the workers who are erecting or dismantling the scaffold.

3314.8.1 Mesh installation. Where it is possible for the public to pass under, or next to a scaffold, the space between the top rail and toeboard shall be enclosed with a wire screen composed of not less than no. 18 steel wire gage with a maximum 1/2 inch (13 mm) mesh or equivalent synthetic safety netting. For the purpose of this provision the term "where it is possible for the public to pass under, or next to a scaffold" shall mean when the setback from the scaffold to the area used by the public is a distance equal to or less than half the height of the scaffold.

3314.8.2 Top edge height. The top edge height of the top rails or equivalent member shall be installed between 38 inches and 45 inches (965 and 1143 mm) above the platform surface.

3314.8.3 Midrail installation. When midrails, screens, mesh, intermediate vertical members, solid panels, or equivalent structural members are used, they shall be installed between the top edge of the guardrail system and the scaffold platform.

3314.8.4Midrail height.When mid-rails are used, they shall be installed at a height approximately midway between the top edge of the guardrail system and the scaffold platform.

3314.8.5Screen or mesh height.When screens or mesh are used, they shall extend from the top edge of the guardrail system to the scaffold platform and along the entire opening between supports.

3314.8.6Intermediate support spacing.When intermediate supports such as ballisters or additional rails are used, they shall not be more than 19 inches (483 mm) apart.

3314.8.7Top rail design.Each top rail or equivalent member of a guardrail system shall be capable of withstanding, without failure, a force applied in any downward or horizontal direction at any point along its top edge of at least:

1. 100 pounds (45.4 kg) for any guardrail systems installed on a single-point adjustable suspension scaffold or a two-point adjustable suspension scaffold; or
2. 200 pounds (90.7 kg) for guardrail systems installed on all other scaffolds.

3314.8.8Top rail deflection.When loads specified in Section 3314.8.7 are applied in the downward direction, the top edge shall not drop below the heights above the scaffold platform as prescribed in Section 3314.8.2.

3314.8.9Midrail design.Midrails, screens, mesh intermediate vertical members, solid panels, and equivalent structural members of a guardrail system shall be capable of withstanding, without failure, a force applied in any downward or horizontal direction at any point along the midrail or other member of at least:

1. 75 pounds (34 kg) for any guardrail systems installed on a single-point adjustable suspension scaffold or a two-point adjustable suspension scaffold; or
2. 150 pounds (68 kg) for guardrail systems installed on all other scaffolds.

3314.8.10Toeboards.A toeboard shall be erected along the edge of the platform and shall be solid or with openings of not more than 1 inch (25 mm) along its longest dimension.

3314.8.10.1Toeboard design.Toeboards shall be capable of withstanding, without failure, a force of at least 50 pounds (22.7 kg) applied in any downward or horizontal direction at any point along the toeboard.

3314.8.10.2Toeboard height.The top edge of the toeboard shall be at least 31/2 inches (89 mm) high from the level of the walking/working surface and there shall be not more than a 1/4 inch (6 mm) clearance above the walking/working surface.

3314.9Supported scaffold.Supported scaffolds shall meet the following requirements:

3314.9.1Height-to-base ratio.A supported scaffold with a height-to-base ratio (including outriggers supports, if used) of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing or equivalent means as follows:

1. Guys, ties or braces shall be installed at locations where horizontal members support both inner and outer legs.
2. Guys, ties, or braces shall be installed according to the manufacturer's recommendations, or as designed in accordance with Section 3314.3, or at a minimum, the first guy, tie or brace shall be installed at a horizontal member and not more than a distance 4 times the least plan dimension from the base support and be repeated vertically at locations of horizontal members every 20 feet (6096 mm) or less thereafter for scaffolds 3 feet (914 mm) wide or less and every 26 feet (7925 mm) or less thereafter for scaffolds greater than 3 feet (914 mm) wide. The top guy, tie, or brace shall be placed no further than 4 times the least plan dimension from the top. Such guys, ties, or braces shall be

installed at each end of the scaffold and at horizontal intervals not to exceed 30 feet (9144 mm) measured from one end (not both) towards each other.

3. Guys, ties, braces, or outriggers shall be used to prevent tipping of supported scaffolds in all circumstances where an eccentric load, such as a cantilevered work platform, is applied or is transmitted to the scaffold.

3314.9.2Foundation. Supported scaffold poles, legs, posts, frames and uprights shall bear on base plates and mud sills or other adequate firm foundation.

3314.9.3Plumb. Supported scaffold poles, legs, posts, frames, and uprights shall be plumb and braced to prevent swaying and displacement. The tolerance shall not exceed $L/100$, where L is the distance measured from the ground or grade elevation to the first X-brace or bottom of the first bearer or frame horizontal member.

3314.10Suspended scaffold. Suspended scaffolds shall meet the requirements of Sections 3314.10.1 through 3314.10.10.

3314.10.1Installation and use. Suspended scaffolds shall be erected and operated in such a manner that suspension elements are vertical and in a plane parallel to the wall at all times. The installation or change of position of any suspended scaffold shall be performed under the supervision of a licensed master or special rigger, or a licensed sign hanger, or his designated foreman who shall ensure the safety of such operation.

Suspended scaffolds shall be inspected in accordance with the requirements of Section 3314.4.3.1.

3314.10.2Support. All suspended scaffold support devices, such as outrigger beams, C-hooks, parapet clamps, and similar devices shall rest on surfaces capable of supporting at least 4 times the load imposed on them by the scaffold operating at the rated load of the hoist. The support shall be inspected by a competent person prior to installation.

3314.10.3Outrigger beam location. Outrigger beams shall be placed perpendicular to the face of the building or structure.

Exception: Where a licensed rigger or engineer can demonstrate to the commissioner's satisfaction that it is not possible to place an outrigger beam perpendicular to the face of the building or structure, the outrigger beam may be placed at a different angle, provided opposing angle tiebacks are used.

3314.10.4Outrigger beam stabilization. The inboard ends of the suspended scaffold outrigger beam shall be stabilized by bolts or other direct connections to the floor or roof deck, or they shall have their inboard ends stabilized by counterweights.

Exception: Multi-point adjustable suspended scaffolds shall not be stabilized by counterweights.

3314.10.5Outrigger beam installation. Outrigger beams shall be installed with all bearing supports perpendicular to the beam centerline and shall set and maintain the web in a vertical position. The shackle or clevis with which the rope is attached to the outrigger beam shall be placed directly over the centerline of the stirrup.

3314.10.6Counterweight material. Counterweights shall be made of a non-flowable material. Sand, gravel and similar materials that can be easily dislocated shall not be used.

3314.10.7Counterweight securement. Counterweights shall be secured by mechanical means to the outrigger to prevent accidental dislodgment.

3314.10.8Counterweight removal. Counterweights shall not be removed from an outrigger beam until the scaffold is disassembled.

3314.10.9 Tieback location. Tiebacks shall be installed perpendicular to the face of the building, or opposing angle tiebacks shall be installed. Single tiebacks installed at an angle are prohibited.

3314.10.10 Support devices. Suspended scaffold support devices, such as C-hooks, cornice hooks, roof hooks, roof irons, parapet clamps or other similar devices shall meet the following requirements:

1. Support devices shall be made of steel, wrought iron or materials of equivalent strength.
2. Such devices shall be supported by bearing blocks.

3. Support devices shall be secured against movement by tiebacks installed at right angles to the face of the building or structure or by opposing angle tiebacks installed and secured to a structurally sound point of anchorage as prescribed in Section 3314.6.

4. Tiebacks shall be equivalent in strength to the hoisting rope.

3314.11 Suspension rope. When winding drum hoists are used on a suspended scaffold, they shall contain not fewer than four wraps of the suspension rope at the lowest point of scaffold travel. When other types of hoists are used, the suspension ropes shall be long enough to allow the scaffold to be lowered to the level below without the rope end passing through the hoist, or the rope end shall be configured or provided with means to prevent the end from passing through the hoist.

3314.11.1 Repaired rope. The use of repaired wire rope as suspension rope is prohibited.

3314.11.2 Rope replacement. Ropes shall be replaced or removed if any of the following conditions exist, and as otherwise prescribed by rule of the department:

1. Any physical damage that impairs the function and strength of the rope.
2. Presence of kinks that might impair the tracking or wrapping of the rope around the drum(s) or sheave(s).
3. Presence of abrasion, corrosion, scrubbing, flattening or peening causing the loss of more than one-third of the original diameter of the outside wires.
4. Heat damage caused by a torch or any damage caused by contact with electrical wires.
5. Evidence that the secondary brake has been activated during an overspeed condition and has engaged the suspension rope.

3314.11.3 Shielding. Suspension ropes shall be shielded from heat-producing processes.

3314.11.4 Corrosive substances. When acids or other corrosive substances are used on a scaffold, the ropes shall be shielded, treated to protect against corrosive substances, or made of a material that will not be damaged by the corrosive substance being used.

3314.11.5 Arcing prevention. Precautions shall be taken to prevent the possibility of arcing through the suspension wire rope.

3314.11.5.1 Insulated thimble. An insulated thimble shall be used to attach each suspension wire rope to its hanging support. Excessive suspension wire rope and any additional independent lines from grounding shall be insulated.

3314.11.5.2 Insulating material. The suspension wire rope shall be covered with insulating material extending at least 4 feet (1219 mm) above the hoist. If there is a tail line below the hoist, it shall be insulated to prevent contact with

the platform. The portion of the tail line that hangs free below the scaffold shall be guided or retained or both so that it does not become grounded.

3314.11.5.3 Protective covers. Each hoist shall be covered with insulated protective covers.

3314.11.5.4 Grounding conductor. In addition to a work lead attachment required by the welding process, a grounding conductor shall be connected from the scaffold to the structure. The size of the connector shall be at least the size of the welding process work lead, and this conductor shall not be in series with the welding process or the work piece.

3314.11.5.5 Disconnected grounding lead. If the scaffold grounding lead is disconnected at any time, the welding machine shall be shut off.

3314.11.5.6 Welding rod or lead. An active welding rod or uninsulated welding lead shall not be allowed to make contact with the scaffold or its suspension system.

3314.11.6 Wire rope clips. There shall be a minimum of three wire rope clips installed a minimum of six rope diameters apart. The clips shall be retightened to the manufacturer's specifications after initial loading. U-bolt clips shall not be used at the point of suspension. When U-bolt clips are used, the U-bolt shall be placed over the dead end of the rope and the saddle shall be placed over the live end of the rope.

3314.12 Wood pole scaffolds.

3314.12.1 Standard designs. All wood pole scaffolds 40 feet (12 192 mm) high or less shall be constructed in accordance with the minimum nominal sizes and maximum spacings shown in Tables 3314.12.1 (1) through 3314.12.1 (6). Wood pole scaffolds more than 40 feet (12 192 mm) high shall be designed in accordance with Section 3314.3.

Ledgers (minimum):

[SEE tabular material in printed version]
3]

Planking:

[SEE tabular material in printed version]

Toeboards

[SEE tabular material in printed version]
3]

Max. pole spacing (longitudinal):

[SEE tabular material in printed version]

Note for Table 3314.12.1(4): a[Total base dimension in both directions to be at least 25 percent of height. Note: For SI: 1 inch = 25.4 mm. 3]

Table 3314.12.1(5)

Minimum Size and Maximum Spacing Members
of Independent Wood Pole Medium Duty Scaffolds

[SEE tabular material in printed version]

Note for Table 3314.12.1(5): a[Total base dimension in both directions to be at least 25 percent of height. Note: For SI: 1 inch = 25.4 mm.

[SEE tabular material in printed version]

Note for Table 3314.12.1(6): a[Total base dimension in both directions to be at least 25 percent of height. Note: For SI: 1

inch = 25.4 mm.

3314.12.2Erection and removal. When a new working level is desired, the existing planks shall be left undisturbed until the new working level is framed. As the platform level is abandoned with the progress of the work, all members other than the planking, railing and toeboards shall be left intact. When removing a scaffold, the sequence of removing the members shall be the reverse of that used in erection.

3314.12.3Materials and construction for wood pole scaffolds. Wood pole scaffold materials and construction shall comply with the following requirements:

1. All lumber used in wood pole scaffolds or their supports shall be at least equal in strength and quality to construction grade lumber in accordance with Section 2301.

2. All lumber and timber shall be fastened at the various joints with sufficient nails or bolts of a suitable size to produce a secure joint capable of withstanding the design load. Table 3314.12.3 provides minimum requirements for size and number of nails. All nails shall be driven full length.

3. Any other suitable material, or dimensions other than those indicated, may be used for wood pole scaffold construction provided it is at least equivalent in strength and suitability to the comparable wood scaffold it is designed to replace, and approval of the commissioner has been obtained. Table 3314.12.3 Size and Number of Nails Required for Scaffold Construction

Thickness of Smaller Member (in.)	Trade Size of Nail	Length of Nail (in.)	1	8d	2	1/2	2	20d	4	3
60d	6	4 - 8	Width of Smaller Member (in.)	Minimum Number of Nails Required	4	2	6	3	8	4
					10	5	12	5		

Note: For SI: 1 inch = 25.4 mm.

3314.12.4Poles. Wooden scaffold poles shall be plumb and the foot ends shall be secured against lateral movement. Where wood poles are spliced, the squared end of the upper section shall bear uniformly on the squared end of the lower section and the two ends shall be rigidly fastened together with two or more wood splice plates, each at least 4 feet (1219 mm) in length. The plates shall be placed at right angles to each other, shall overlap the abutting ends of the pole equally, and shall have a combined sectional area not less than 50 percent of the cross sectional area of the pole. Splicing of adjacent poles shall be staggered. Splices shall be close to ledgers, but so located as not to interfere with the fastenings.

3314.12.5Bracing. Wood pole scaffolds shall be braced and stayed to prevent movement away from the building. Diagonal or equivalent bracing shall be provided to prevent the poles from moving in a direction parallel to the building face and shall be so installed that every spliced section of every pole is braced to adjacent poles.

3314.12.6Planking. Where planks are butted end to end, parallel putlogs or bearers shall be provided not more than 8 inches (203 mm) apart so that the butted ends rest on separate putlogs or bearers. Ends shall be nailed or cleated.

Where platform planks are used with overlapping ends, the ends of both the upper and lower planks shall overlap the putlog or bearer by at least 6 inches (152 mm).

Planks shall be laid close together and shall be of sufficient length to extend over three bearers.

3314.12.7Connections. Ledgers shall not be spliced between poles but shall overlap the poles at each end by at least 4 inches (102 mm). Where ledgers lap each other, bearing-blocks attached to the pole shall be provided to support the ledger.

The ends of all wooden braces shall overlap the nailed fastenings by an amount sufficient to prevent the ends of the braces from splitting.

3314.12.8Putlogs for single pole scaffolds. All putlogs shall be set with the greater dimension vertical and shall be

long enough to project beyond the outer edge of the poles by at least 12 inches (305 mm). Putlogs shall be supported on the ledger and located against the side of the poles and fastened to either the pole or the ledger. The other end of the putlog shall rest in the wall of the building, with at least a 4 inch (102 mm) bearing, and shall not be notched or cut down, except for light duty scaffolds, which may be notched or cut down to fit into a space made by the removal of a brick. In such cases, the notch shall be made on the top of the putlog just deep enough to permit it to be inserted in the hole in the wall.

3314.12.9Bearers for independent pole scaffolds.Bearers shall be set with their greater dimensions vertical, and shall be long enough to project over the ledgers beyond the outer row of poles by at least 12 inches (305 mm) and beyond the inner row of poles by at least 2 inches (51 mm). Bearers shall be supported on the ledgers, located against the sides of the poles and fastened to the ledgers.

3314.13Fabricated frame scaffolds.

3314.13.1Bracing.Frames and panels shall be braced by cross, horizontal or diagonal braces or a combination thereof, which secure vertical members together laterally.

3314.13.2Vertical joining.Frames and panels shall be joined together vertically by coupling or stacking pins or equivalent means. Where uplift can occur, the frames or panels shall be locked together vertically by pins or equivalent means.

3314.13.3Frame scaffold brackets.Brackets used to support cantilevered loads shall be seated with side-brackets parallel to the frame and end-brackets at 90 degrees to the frames, shall not be bent or twisted from these positions and shall be used only to support light duty loads as defined in Section 3314.3.3, unless the design provisions of Section 3314.3 have been met.

3314.14Outrigger scaffolds (thrust out).Outrigger scaffolds (thrust out) shall not be used for loading in excess of 50 pounds per square foot (244.1 kg/m²) (medium duty).

3314.14.1Outrigger beams.The fulcrum point of the beam shall rest on a secure bearing at least 6 inches (152 mm) in each horizontal dimension. The beam shall be secured against movement and shall be securely braced against tipping at both the fulcrum point and the inboard end.

3314.14.2Inboard supports.The inboard ends of outrigger beams shall be securely fixed to resist all vertical, horizontal, and torsional forces. Pull-out tests for adhesive and expansions anchors, if used, shall be approved by the commissioner.

3314.15Two-point adjustable suspension scaffolds.

3314.15.1Width and support.Two-point suspension platforms shall be at least 20 inches (508 mm) but not more than 36 inches (914 mm) in width unless designed by an engineer. Each end of the platform shall be supported by a stirrup or hanger that meets the requirements of Section 3315.15.2, and the platform shall be securely fastened thereto. Not more than two hangers or stirrups shall be used to support one scaffold.

3314.15.2Hangers or stirrups.Hangers or stirrups shall be of steel or wrought iron. Each such hanger shall be formed to properly fit the platform and the hoist mechanism. The hanger or stirrup shall be placed at least 6 inches (152 mm) but not more than 18 inches (457 mm) from the end of the platform unless the manufacturer specifies otherwise.

3314.15.3Fiber suspension rope.The use of fiber rope shall be limited to light duty two-point suspension scaffolds. Fiber rope shall be at least equivalent in strength and suitability to 3/4-inch (19 mm) grade 1 unspliced manila rope.

Fiber rope susceptible to damage from corrosive substances shall not be permitted for or near any work involving

the use of corrosive substances

Fiber rope shall not be used where the upper block is more than 100 feet (30 480 mm) or ten stories above the ground or roof setback.

All blocks shall fit the size of rope they carry, and shall be constructed so as not to chafe the rope.

3314.15.4Combination.Two or more two-point suspension scaffolds shall not be combined into one by bridging the distance between them or by any other form of connection.

3314.15.5Number of workers.Not more than two workers shall be permitted to work on one scaffold at one time except where the scaffold is designed to hold more. Written permission from the commissioner shall be required for more than two workers on the scaffold.

3314.15.6Device to raise, lower, and hold the scaffold.Every two-point suspension scaffold shall be equipped with an approved device to raise, lower or hold the scaffold in position.

3314.15.7Platforms.The platforms of every two-point suspension scaffold shall be ladder-type, plank-type, beam-type, light-metal type, or another type acceptable to the commissioner.

3314.16Corner and angle scaffolds.Corner and angle scaffolds shall comply with the following:

3314.16.1Motors.As many motors as needed shall be provided to maintain the stability of the platform under all operating conditions.

3314.16.2Maximum number of people.The number of people allowed on a corner or angle scaffold shall not be more than the number of motors required to keep the scaffold stable, unless otherwise designed by an engineer.

3314.16.3Permit application.The following equipment information shall be submitted by an engineer with the permit application for corner and angle scaffolds:

1. Plans and details of the equipment;
2. Load capacity and distribution charts;
3. Certification from the engineer that he/she has reviewed the manufacturer's design calculations and testing or prepared sufficient calculations of his/her own and found them to conform to this code; and
4. Any supporting data, drawings, or calculations.

3314.16.4Inspection.The equipment setting for corner and angle scaffolds shall be inspected by the department prior to its use. Additional inspection by the department shall be required each time the equipment is moved to a different position.

3314.17Multiple-point adjustable suspension scaffolds.Multiple-point suspension scaffolds shall comply with the following:

1. All multiple-point suspension scaffolds shall be supported by wire ropes. The use of fiber ropes is not permitted;
2. Provision shall be made to prevent supports from slipping off the ends of outrigger beams;
3. Platform bearers shall be of metal; and
4. During raising or lowering, the levels of the various sections of the scaffolds shall be kept uniform and the

differential height between sections shall be minimized.

3314.18Manually-propelled, free-standing scaffolds.All manually-propelled free-standing scaffolds shall meet the following requirements:

1. Work platforms shall be tightly planked for the full width of the scaffold, except for necessary entrance openings. Planks shall be secured in place;
2. Platforms shall have a guardrail system;
3. Where a ladder is used to approach a platform, the ladder shall be secured to the scaffold;
4. Handholds shall be provided for safe passage from the ladder to the platform;
5. Unless temporarily braced to an adjacent structure, the ratio of the platform height to the least base dimension shall be such as to assure stability, but in no case shall such height be more than four times the least base dimension;
6. Provisions shall be made to prevent the scaffold from falling during movement from one location to another;
7. While the scaffold is in use, it shall rest upon a stable footing and shall stand plumb. The casters or wheels shall be locked in position; and
8. While the scaffold is being moved, no person shall be permitted to ride on it, and all tools, equipment and material shall be removed.

3314.19Mast-climbing work platform.Mast-climbing work platforms, including all supports, fastenings, connections, and details shall not be erected or installed unless and until a written permit has been issued by the commissioner on the basis of construction documents, drawings, and specifications. Copies of the written permit application shall be kept at the site and made available to the commissioner upon request. Such permit shall be issued in accordance with rules promulgated by the commissioner.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

3314.1.1 added L.L. 8/2008 § 169, eff. July 1, 2008.

3314.1.2 renumbered (former 3314.1.1) L.L. 8/2008 § 169, eff. July 1, 2008.

3314.2 Exceptions item 1 amended L.L. 8/2008 § 170, eff. July 1, 2008.

3314.4.5 amended L.L. 24/2008 § 7, eff. July 1, 2008. [Note: This

amendment omitted the amendment by L.L. 8/2008 which is included

here]

3314.4.5 amended L.L. 8/2008 § 171, eff. July 1, 2008.

3314.4.6 amended L.L. 24/2008 § 7, eff. July 1, 2008. [Note: This

amendment omitted the amendment by L.L. 8/2008 which is included

here]

3314.4.6 amended L.L. 8/2008 § 171, eff. July 1, 2008.

3314.4.7 added L.L. 24/2008 § 8, eff. July 1, 2008.

3314.4.8 renumbered (former 3314.4.7) L.L. 24/2008 § 8, eff. July 1,

2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3315: STRUCTURAL RAMPS, RUNWAYS, AND PLATFORMS

NYC Administrative Code § 28-BC 3315

3315.1 Ramps and runways.

Ramps and runways (including elevated walkways) shall comply with the requirements of Section 3315.1.1 through 3315.1.5.

3315.1.1 Construction. All runways and ramps shall be constructed, braced and supported to resist lateral displacement and all vertical loads, including impact.

3315.1.2 For motor vehicle use. Runways and ramps for the use of motor vehicles may consist of an earthfill or may be structurally supported. Such runways and ramps shall have a clear width of not less than 12 feet (3658 mm) with timber curbs at least 8 inches by 8 inches (203 mm by 203 mm) placed parallel to, and secured to, the sides of the runway or ramp. The flooring of structurally supported ramps shall consist of no smaller than 3 inch (76 mm) planking full size, undressed, or equivalent material, with spans designed for the loads to be imposed.

3315.1.3 For use of workers. Runways and ramps for the use of workers shall be at least 1 foot 6 inches (457 mm) in clear width. Where used for wheelbarrows, handcarts, or hand-trucks, runways and ramps shall be at least 3 feet (914 mm) in clear width. Flooring shall consist of at least 2 inch (51 mm) planking spanning as permitted by Table 3314.5.2, laid close, butt-joined, and securely fastened.

3315.1.4 Slope limitations. Ramps shall have a slope not steeper than one in four. If the slope is steeper than one in eight, the ramp shall be provided with cleats spaced not more than 14 inches (356 mm) apart and securely fastened to the planking to afford a foothold. Spaces in the cleats may be provided for the passage of the wheels of vehicles. The total rise of a continuous ramp used by workers carrying material or using wheelbarrows, hand-carts, or hand-trucks shall not exceed 12 feet (3658 mm) unless broken by horizontal landings at least 4 feet (1219 mm) in length.

3315.1.5 Guardrail required. All runways and ramps located more than 5 feet (1524 mm) above the ground or floor shall be provided with a standard guardrail and standard toeboard that meets the requirements of Section 3307.8 on

open sides.

Where it is possible for the public to pass under, or next to, runways or ramps, the space between the top rail and the standard toeboard shall be enclosed with a wire screen composed of not less than no. 18 steel wire gage with a maximum 1/2 inch (12.7 mm) mesh.

3315.2 Platforms. Platforms shall comply with the requirements of Sections 3315.2.1 through 3315.2.2.

3315.2.1 Planking. Platforms used as working areas, or for the unloading of wheelbarrows, hand-trucks, or carts shall have a floor consisting of at least 2 inch (51 mm) planking spanning as permitted by Table 3314.5.2. Platforms for the use of motor trucks shall have a floor of at least 3 inch (76 mm) planking, full size, undressed or equivalent materials with spans designed for the loads to be imposed. Planking shall be laid close and shall be butt-joined and securely fastened.

3315.2.2 Guardrail required. Every platform more than 5 feet (1524 mm) above the ground or above a floor shall be provided with a standard guardrail and standard toeboard that meets the requirements of Section 3307.8, except that the side of the platform used for the loading or unloading of vehicles may be protected by a timber curb at least 8 inches by 8 inches (203 mm by 203 mm) for motor trucks or 4 inches by 4 inches (102 mm by 102 mm) for wheelbarrows and hand-trucks in lieu of the standard guardrail and standard toeboard.

Where it is possible for the public to pass under, or next to, platforms, the space between the top rail and the standard toeboard shall be enclosed with a wire screen composed of not less than no. 18 steel wire gage with a maximum 1/2 inch (12.7 mm) mesh.

3315.3 Special requirements where power buggies are used. Runways, ramps, platforms, and other surfaces upon which power buggies are operated shall meet the following minimum requirements:

1. They shall be designed by a qualified person.
2. They shall be able to sustain, without failure, at least four times the maximum live load for which they are intended.
3. The minimum width, inside of curbs, for any ramp, runway, or platform shall be 2 feet (610 mm) wider than the outside width of any power buggy operated thereon without passing, and 3 feet (914 mm) wider than twice such buggy width in the places where passing occurs.
4. All runways shall be essentially level transversely.
5. Curbs shall be furnished along all buggy traffic paths that are nearer than 10 feet (3048 mm) horizontally to any unenclosed area, shaft, or other open space into which or through which a fall of more than 12 inches (305 mm) from such surface is possible, except as set forth in numbered item seven.
6. Where curbs are not required because the buggy is operated on a surface not over 12 inches (305 mm) above another surface, the lower surface shall be strong enough to sustain the loaded vehicle in the event of a fall thereon.
7. Curbs may be omitted at actual dumping points more than 12 inches (305 mm) above other surfaces if the edge over which dumping occurs is provided with bumpers or other means that will effectively stop the buggy from running over the edge while dumping.
8. Curbs must be at least 7 inches (178 mm) high, securely fastened, and capable of resisting side impact, and shall be equivalent to at least 2 inch by 8 inch (51 mm by 203 mm) plank set on edge against uprights securely fastened and braced at not more than 4 foot (1219 mm) intervals.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3316: HOISTING EQUIPMENT

NYC Administrative Code § 28-BC 3316

3316.1 Scope.

Hoisting equipment shall meet and be used in accordance with the requirements of this section. Material hoists and bucket hoists shall also meet the requirements of Section 3317, personnel hoists shall also meet the requirements of Section 3318, and cranes and derricks shall also meet the requirements of Section 3319.

3316.2Requirements.Hoisting equipment, its supports and runback structures shall be installed, operated, and maintained to eliminate hazard to the public or to property. It shall be unlawful to operate any such equipment that is not provided with a positive means for preventing the unauthorized operation of such machine. The means whereby such machines may be made inoperative shall be accepted by the department.

3316.3Notification of hoisting accidents.The owner or person directly in charge of any hoisting equipment shall immediately notify the commissioner following any accident involving hoisting equipment. Following an incident, no person shall permit either of the following, without the permission of the commissioner:

1. Use of such hoisting equipment; or
2. Removal of the hoisting equipment or any part thereof from the area of the job site.

3316.4Permit.Permits for hoisting equipment shall comply with the requirements of Sections 3316.4.1 through 3316.4.5.

3316.4.1Acceptance of equipment.Hoists and all pre-manufactured runback structures shall be approved for use by the commissioner or other agency acceptable to the commissioner

Exception: Cranes and derricks shall meet the requirements of Section 3319.3.

3316.4.2Posting of permits.Permits, or duplicates of the permits, shall be posted in a conspicuous location in the car

or on the equipment.

3316.4.3Construction documents.Copies of the written permit application and approved construction documents shall be kept at the site and made available to the commissioner upon request.

3316.4.4Permit signage.Following the receipt of a permit to install a hoist, the permit holder shall post a sign that meets the requirements of Section 3301.9.6. Such sign shall be clearly visible from the street.

3316.4.5Other temporary signage.Other than as specified in Section 3301.10, there shall be no information, pictorial representation, or any business or advertising messages posted on the hoisting equipment or runback structure.

3316.5Design, construction and inspection.Hoisting equipment, its supports and runback structures shall be designed, constructed and inspected in accordance with rules promulgated by the commissioner.

3316.6Rope inspection and replacement.All ropes used in hoisting equipment shall meet the inspection and replacement requirements specified in rules promulgated by the commissioner.

3316.7Operation.Only operators designated by the person causing such hoisting equipment to be used shall operate such hoisting machinery. Operators and signalmen/signalwomen shall be qualified for the operation they perform. The operator shall be responsible for making the machine inoperative before he or she leaves the machine.

3316.7.1Use.Hoisting equipment, its supports and runback structures shall be operated in compliance with the manufacturing specifications, the requirements of this code, and rules promulgated by the commissioner. If there is a discrepancy, the stricter requirement shall be met.

3316.7.2Use during installation, jumping, dismantling, or alteration.Personnel and building materials connected with or related to the building project shall not be moved by the hoist while it is being installed, jumped, dismantled or altered.

3316.8Maintenance.Hoisting equipment, its supports and runback structures shall be maintained in compliance with the manufacturing specifications and rules promulgated by the commissioner. If there is a discrepancy, the stricter requirement shall be met.



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SECTION BC 3317: MATERIAL HOISTS AND BUCKET HOISTS

NYC Administrative Code § 28-BC 3317

3317.1 Scope.

Material hoists and bucket hoists shall meet the requirements of this section and Section 3316.

3317.2Permit.The equipment user or his or her designated representative shall obtain a written permit issued by the commissioner on the basis of construction documents, drawings and specifications prior to erecting or installing all power-operated, material hoists, including any runback structure or supports.

Exception: Power-operated, non-guided material hoists with a maximum capacity of one ton or less and installed on new construction, or on alterations where the operation of the hoist is confined within the property and the site is protected in accordance with Section 3307.

3317.3Design, inspection, and operation.Material hoists, bucket hoists and their components shall be designed, inspected, and operated in accordance with rules promulgated by the commissioner.

3317.4Construction.Material hoists, bucket hoists and their components shall be constructed in compliance with the manufacturing specifications, the requirements of this code, and rules promulgated by the commissioner. If there is a discrepancy, the stricter requirement shall be met.

Upon completion of the installation of the hoisting equipment and/or its runback structure, an inspection report verifying that the hoist has been installed in accordance with the design drawings, construction documents and specifications shall be prepared by the designer, installer or an approved inspection agency designated by both the designer and installer.

3317.5Operation.Notwithstanding any other provision of law, material hoists with a manufacturer's capacity over one ton shall be operated only by persons holding a Class A or Class B Hoisting Machine Operators License except during installation, jumping, dismantling or alteration operations.



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SECTION BC 3318: PERSONNEL HOISTS

NYC Administrative Code § 28-BC 3318

3318.1 Scope.

Personnel hoists shall meet and be used in accordance with the requirements of this section and Section 3316.

3318.2Permit.The equipment user or his or her designated representative shall obtain a written permit issued by the commissioner on the basis of construction documents, drawings and specifications prior to erecting or installing all power-operated, material hoists, including any runback structure or supports.

3318.3Design and inspection.Personnel hoists and their components shall be designed and inspected in accordance with rules promulgated by the commissioner.

3318.4Construction.Personnel hoists and their components shall be constructed in compliance with the manufacturer's specifications, this code, and rules promulgated by the commissioner. If there is a discrepancy, the stricter requirement shall be met.

Upon completion of the installation of the hoisting equipment and/or its runback structure, an inspection report verifying that the hoist has been installed in accordance with the design drawings, construction documents and specifications shall be prepared by the designer, installer or third party designated by both the designer and installer and acceptable to the commissioner.

3318.5Operation.Personnel hoists and their components shall be operated in accordance with this code and rules promulgated by the commissioner.

When the hoist is equipped with manual controls, the hoist shall be operated by a competent qualified operator. Only the operator authorized by the equipment user shall operate the hoist.

3318.5.1Making safety devices inoperative.No person shall at any time make any requiredsafety device or electrical protective device inoperative except when necessary during tests, inspections and maintenance.

Immediately upon completion of the tests, inspections and maintenance, such devices shall be restored to their normal operating condition in conformance with the applicable requirements of this section.



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SECTION BC 3319: CRANES AND DERRICKS

NYC Administrative Code § 28-BC 3319

3319.1 Scope.

The construction, installation, inspection, maintenance and use of cranes and derricks shall be in conformance with the requirements of this section, Section 3316, and with rules promulgated by the commissioner.

3319.2Operation.Riggers and hoisting machine operators shall be licensed as required by Chapter 4 of Title 28 of the Administrative Code.

3319.3Requirements.No owner or other person shall authorize or permit the operation of any crane or derrick without a certificate of approval, a certificate of operation and a certificate of on-site inspection.

Exceptions:

1. The requirements of this section shall not apply to excavating or earth-moving equipment, except cranes used with clamshells.
2. The requirements of this section shall not apply to cranes or derricks performing an emergency use pursuant to the lawful order of the head of any department.
3. The requirements of this section shall not apply to mobile cranes, including jibs and any other extensions to the boom not exceeding 50 feet (15 240 mm) in length and with a manufacturer's rated capacity of 3 tons (2722 kg) or less.
4. The requirements of this section shall not apply to mobile cranes, including jibs and any other extensions, exceeding 50 feet (15 240 mm) but not exceeding 135 feet (41 148 mm) in length, and with a manufacturer's rated capacity of 3 tons (2722 kg) or less, except that a certificate of operation, as provided for in Section 3319.5, shall be required. The requirement for a certificate of operation shall not apply to such a crane used exclusively as a man basket. The commissioner may, by rule, exempt other mobile cranes of limited size from any or all requirements of this section.

5. The requirements of this section shall not apply to hoisting machines permanently mounted on the bed of material delivery trucks that are used exclusively for loading and unloading such trucks, provided that the length of boom does not exceed the length of the truck bed by more than 5 feet (1524 mm) and that any material transported thereon shall not be raised more than 2 feet (610 mm) in the unloading process. Operators of such equipment shall be exempt from licensing requirements described in Chapter 4 of Title 28 of the Administrative Code.

6. The requirements of this section shall not apply to cranes or derricks used in industrial or commercial plants or yards not used for the construction of the facility. Floating cranes, floating derricks, and cranes and derricks used on floating equipment shall also be exempt from the requirements of this section. Operators of such equipment shall be exempt from the licensing requirements described in Chapter 4 of Title 28 of the Administrative Code.

7. The requirements of this section shall not apply to augurs, churn-drills and other drilling equipment not used for hoisting any objects. Operators of such equipment shall be exempt from the licensing requirements described in Chapter 4 of Title 28 of the Administrative Code.

8. The requirements of this section shall not apply to derricks having a maximum rated capacity not exceeding 1 ton (907 kg).

9. The requirements of this section shall not apply to mechanic's truck with a hoisting device when used in activities related to the maintenance and repair of construction-related equipment.

10. The requirements of this section shall not apply to articulating boom cranes that do not have an integral hoisting mechanism, and that are used exclusively for loading and unloading of trucks or trailers, provided that the length of boom does not exceed 135 feet (41 148 mm) and that any material transported thereon shall not be raised more than 100 feet (30 480 mm) in the unloading process. Operators of such equipment shall be exempt from licensing requirements described in Chapter 4 of Title 28 of the Administrative Code.

3319.4 Certificate of approval. Certificates of approval shall comply with the following:

1. The manufacturer, owner, or designated representative of a crane or derrick for which a certificate of approval is sought shall file an application for such certificate of approval and provide such information as set forth in rules promulgated by the commissioner.

2. Upon the department's approval of the application described in item 1 above, the department shall issue a certificate of approval for the equipment and an approval of the submitted load rating chart.

3. A new certificate of approval shall be required when a crane or derrick is modified or altered to increase the boom length, jibs or any extensions to the boom beyond the maximum approval length or when the load ratings are increased.

3319.5 Certificate of operation. Certificates of operation shall comply with the following:

1. The commissioner shall issue the initial certificate of operations for the crane or derrick with certificate of approval upon satisfactory inspection and test indicating that such crane or derrick is in a safe operating condition. The initial certificate of operation shall expire one year from the date of issuance.

2. The owner of a crane or derrick covered by the certificate of operation shall renew the certificate of operation each year.

3. If the owner of the covered crane or derrick applies for renewal of a certificate of operation within not more than 60 nor less than 30 days prior to the date of its expiration, such owner may continue to use the covered crane or derrick until the department grants or denies a new certificate;

4. When a crane or derrick configuration is changed to increase the boom length, jibs or any extensions to the boom beyond the maximum approval length or when the load ratings are increased, a new certificate of operation shall be required. In such a case, the crane or derrick may not be operated until the new certificate of operation is obtained.

5. An application for a new certificate of operation shall be submitted when attachments that affect the stability or structure of the crane or derrick are added. Calculations and load rating charts as required by rules promulgated by the commissioner shall be submitted with the renewal request.

3319.6Certificate of on-site inspection.Certificates of on-site inspection shall comply with the following:

1. The equipment user, or his or her designated representative, shall obtain a certificate of on site inspection for the use of any crane or derrick used for construction or demolition purposes at each job site. Such application for the certificate of on-site inspection shall include information set forth in rules promulgated by the commissioner.

2. Upon approval of the application, a copy of such approval shall be given to the applicant. It shall be unlawful to operate the equipment that is the subject of the approval until it has been inspected and found to be satisfactory by the department as set forth in rules promulgated by the commissioner. Upon inspection and a finding of satisfactory compliance, the approval shall be deemed a certificate of on-site inspection, which shall expire one year from the date of issuance. A certificate of on-site inspection may be renewed in accordance with rules promulgated by the commissioner;

3. The certificate of on-site inspection is y valid only if the conditions and statements contained in the approved application are complied with and the crane or derrick is operated in conformance with the provisions of this section and the rules applicable thereto.

4. A certificate of on-site inspection is not required for cranes or derricks performing work exempted from such requirement by rules promulgated by the commissioner.

3319.7Temporary certificates.The commissioner may issue temporary certificates of approval, operation and on-site inspection for any crane or derrick during the pendency of an application for certificates of approval and operation upon inspection and upon such analysis and testing as the commissioner may deem necessary. The commissioner may revoke such temporary certificates if the application is denied.

3319.8Special provisions for tower and climber cranes.Tower and climber cranes shall comply with the following requirements:

3319.8.1Plan for the erection, jumping, climbing, and dismantling of tower or climber cranes.An erection, jumping, climbing and dismantling plan for tower or climber cranes, other than truck and crawler mounted tower cranes, shall be submitted to the department by a licensed engineer. The plan must be prepared by a licensed engineer in conjunction with a licensed rigger and must be in compliance with the manufacturer's recommendation for erection, jumping, climbing, or dismantling of the specific crane where such manufacturer's recommendations exist. The plan must be filed with the certificate of on-site inspection application as required by section 3319.3. No erection, jumping, climbing, or dismantling of a tower or climber crane shall take place without the prior issuance of a certificate of on-site inspection by the cranes and derricks unit. The plan shall include the following:

1. Identification of the equipment proposed to be used; including all machines proposed to be used in the erection or dismantling;

2. A detailed identification of the assemblies and components required for the erection and dismantling of the equipment;

3. Location of the equipment, sidewalk sheds (or Department of Transportation street closing permits, if

applicable), surrounding buildings, protection for their roofs and the pick-up points, loads, and radius of swing of all loads. In addition, the safe load from the approved load radius chart shall be submitted for lift radius;

4. A weight list of all assemblies and components proposed to be lifted. Components are to be clearly marked with their weight painted on the assembly or stamped on metal tags attached to the assembly. The manufacturer of the climber or tower crane shall certify the weight of assemblies and components. Alternately, in lieu of painted weight markings or metal tags, or when the manufacturer's certification is not available, the licensed engineer applicant shall certify an erection, jumping, climbing or dismantling weight list indicating how such weights were determined;

5. The center of gravity of all asymmetrical components shall be located and shown;

6. A sequence of operation detailing the erection, jumping, climbing, and dismantling, along with the rigging materials to be used in such operations;

7. The certification of the calibration as required in item 6 of section 3319.8.8;

8. Cranes or derricks located either within the lot line or on the street and used to erect, jump, climb, or dismantle a tower or climber crane shall be indicated;

9. The names and contact information of the licensed master, climber or tower crane rigger, rigger foreman, and the crane safety coordinator or designee, along with the name and contact information of the company performing the erection, dismantling, climbing and/or jumping work.

3319.8.2 Safety coordination meeting. The general contractor must hold a safety coordination meeting prior to the initial erection, as well as the dismantling or initial jump down, of a climber or tower crane. No work related to the erection, climbing, jumping or dismantling of the tower or climber crane may be performed without the safety coordination meeting having taken place. The following parties must be present at the safety coordination meeting:

1. General contractor or designee;
2. Professional engineer of record for the crane or designee;
3. Licensed master, tower or climber crane rigger and rigger foreman;
4. Crane safety coordinator;
5. Site safety manager or coordinator, if required for the job by Chapter 33 of the code;
6. Licensed crane operator and oiler; and
7. Any other parties the department deems necessary.

3319.8.3 Pre-jump safety meeting. The general contractor must coordinate a pre-jump safety meeting no more than 24 hours prior to each instance of a tower or climber crane jump or climb. No work related to the jumping or climbing of the tower or climber crane may be performed without the pre-jump safety meeting having taken place. The following parties must be present at the pre-jump safety meeting:

1. General contractor or designee;
2. Licensed master, tower or climber crane rigger and rigger foreman;
3. Crane safety coordinator;
4. Site safety manager or coordinator, if required for the job by Chapter 33 of the building code;

5. Licensed crane operator and oiler;
6. "Jumping" crew and back-up personnel;
7. Flagman/woman where required;
8. Signalman/woman and communications personnel; and
9. Any other parties the department deems necessary.

3319.8.4 Department notification.

3319.8.4.1 Meeting notifications. The general contractor must notify the department at least 48 hours in advance of any safety coordination meeting or pre-jump safety meeting. No work related to the erecting, jumping, climbing, or dismantling of the tower or climber crane is to be performed without prior notice of the meeting having been given to the department.

3319.8.4.2 Time schedule. A time schedule including date and time of day that the erection, jumping, climbing, or dismantling is proposed to take place shall be provided as soon as it is known by the general contractor.

3319.8.5 Safety coordination and pre-jump safety meeting topics. The following topics are to be covered during safety coordination and pre-jump safety meetings:

1. Scope of work;
2. Roles and responsibilities;
3. Rigging to be used and the specific sequence of operations;
4. Inspection of all rigging equipment, materials, and tools prior to work;
5. Review of all equipment, including but not limited to, collars, ties, and bolts;
6. Permit validity;
7. Qualifications and training of personnel;
8. Relevant weather warnings;
9. Compliance with the manufacturer's manual; and
10. Softening mechanisms, if using nylon slings.

3319.8.6 Meeting log. The general contractor, or his or her designee, and/or the company erecting, jumping, climbing, or dismantling the tower or climber crane shall keep a log on site and available to the department at all times that shall include:

1. the dates and times of all safety coordination meetings and pre-jump safety meetings held;
2. the names, titles, and company affiliations of all those present at the meetings;
3. a summary of what was discussed during each meeting, including specific tasks and the name of the person to whom they were assigned;

4. a list of the decisions made at the meeting; and
5. certification of worker training pursuant to Section 3319.10.

3319.8.7 Inspection and certification by the engineer of record. Prior to jumping or climbing a tower or climber crane, the engineer of record for the crane must provide the department with a certified, signed, and sealed report stating that:

1. he or she (or his or her designee) has inspected the crane installation prior to the pre-jump safety meeting, and providing the date of inspection;
2. he or she has found no hazardous conditions during the crane inspection or any other condition within his or her purview that adversely affects the safety of erection, dismantling, climbing, or jumping operations;
3. the crane is installed according to the plans approved by the department as well as in accordance with the manufacturer's specifications to the extent applicable; and
4. the appropriate technical testing records for the crane, including torque, plumb, and magnetic particle or other appropriate reports comply with safety requirements and with the manufacturer's specifications.

3319.8.8 Erection, jumping, climbing, and dismantling operations. The erection, jumping, climbing, and dismantling operations for tower and climber cranes shall be subject to the following requirements:

1. The licensed master, tower or climber crane rigger, the rigger foreman, and the crane safety coordinator or designee, shall be present at the job site during erection, jumping, climbing, and dismantling of the tower or climber crane;
2. Cranes or derricks located either within the lot line or on the street, and used to erect, jump, climb, or dismantle tower or climber cranes, shall be subject to certificate of on-site inspection requirements;
3. A load radius chart approved by department shall be posted in the cabin of the crane;
4. The approved erection, jumping, climbing, or dismantling procedure and sequence, with weights of assemblies and components clearly marked, shall be given by the crane safety coordinator to the licensed operator of the crane or derrick and to the rigger prior to commencement of the work;
5. No tower or climber crane shall be placed, erected or disassembled in any roadway, sidewalk, or street unless a permit is first obtained from the New York City Department of Transportation;
6. All accepted or approved installed safety devices on a crane involved in the erection, jumping, climbing, or dismantling procedure shall have been calibrated within the time period provided by department rules or manufacturer's specifications; and
7. The safety devices of the tower or climber crane shall be inspected by the licensed crane operator as part of the inspection procedure.

3319.9 Slings. Slings shall be used in accordance with the following requirements and any rules promulgated by the commissioner.

3319.9.1 Use of nylon slings in conjunction with climber or tower crane erection, jumping, climbing, and dismantling. Nylon slings shall only be used in conjunction with climber or tower crane erection, jumping, climbing, and dismantling if the manufacturer's manual specifically states or recommends the use of nylon slings. Nylon slings shall not be used unless softening mechanisms have been applied to all sharp edges.

3319.9.2 Discarded rope. Discarded rope shall not be used for slings.

3319.10 Worker training.

3319.10.1 Training Requirements. All workers engaged in the erection, jumping, climbing, rigging, or dismantling of a climber or tower crane, including the licensed rigger and the rigger foreman, shall have satisfactorily completed a department-approved training course of not less than thirty hours. Such course shall, at a minimum, include instruction on fall protection, crane assembly and disassembly, pre-lift planning, weights and materials, the use of slings, lifting/lowering loads, signaling and other proper means of communication with the crane operator, crane and hoist inspections, rigging requirements, and generally how to avoid accidents with cranes and hoists. The commissioner may by rule identify additional types of cranes for which such training is necessary. Any person who, within the three years prior to the effective date of this section, has successfully completed at least a thirty-hour training course need not take a second thirty-hour course, provided such person can provide to the department a dated certificate as set forth in this section evidencing completion of such a training course. Such person shall, however, take a department-approved eight-hour re-certification course within three years of the initial course and every three years thereafter. Successful completion of the training or re-certification course shall be evidenced by a dated certificate issued by the provider of the training or re-certification course. The certificate shall include such information as specified by the department by rule. The certificate, or a valid wallet card version thereof, shall be readily available to the commissioner upon request.

3319.10.1.1 Training providers. Such training or refresher course shall be conducted (i) pursuant to a registered New York state department of labor training program, or (ii) by a provider approved by the department.

3319.10.2 Certification. Prior to erecting, jumping, climbing or dismantling the climber or tower crane, or other crane type the commissioner specifies by rule, the master, climber or tower crane rigger shall certify in the meeting log, described in Section 3319.8.6, that the rigger foreman and all other members of the "jumping crew" and back-up personnel have satisfactorily completed all training requirements.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

3319.8 added L.L. 46/2008 § 2, eff. Dec. 21, 2008.

3319.9 added L.L. 45/2008 § 1, eff. Oct. 22, 2008.

3319.10 added L.L. 44/2008 § 1, eff. Mar. 21, 2009.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 33: SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION
SECTION BC 3320: MATERIAL HANDLING EQUIPMENT

NYC Administrative Code § 28-BC 3320

3320.1 Scope.

Material handling equipment shall meet and be used in accordance with the requirements of this section.

3320.2Requirements. Material handling equipment shall be installed, operated, and maintained to eliminate hazard to the public or to property. It shall be unlawful to operate any such equipment that is not provided with a positive means for preventing the unauthorized operation of such machine. The means whereby such machines may be made inoperative shall be acceptable to the commissioner.

3320.3Operation. Only operators designated by the person causing such machinery to be used shall operate material handling machinery. Operators and signalmen/signalwomen shall be experienced at the operation they perform. The operator shall be responsible for making the machine inoperative before he or she leaves the machine.

3320.3.1Loading. Loading of material handling equipment shall be conducted in accordance with the following requirements:

1. Material handling equipment shall not be loaded in excess of the rated load specified by the manufacturer. When necessary, manufacturer load ratings shall be reduced to take into account effects of wind, ground condition and operating speed.
2. Rated load capacities and required charts shall be conspicuously posted on all material handling equipment or on the job site and shall be available to the commissioner at all times.
3. All loads shall be properly trimmed to prevent the dislodgment of any part during raising, lowering, swinging or transit.
4. Suspended loads shall be securely slung and properly balanced before they are set in motion.

3320.3.2Refueling. Refueling of material handling equipment shall be conducted in accordance with the following requirements:

1. The engine shall be stopped during refueling, except as otherwise provided in rules promulgated by the commissioner.
2. Open lights, flames, or spark-producing devices shall be kept at a safe distance while refueling an internal combustion engine.
3. No person shall smoke or carry lighted smoking material in the immediate vicinity of the refueling area.
4. "No smoking" signs shall be conspicuously posted in all fueling or fuel storage areas.
5. Fuel shall be kept in containers that meet the requirements of the Fire Department.
6. All other requirements of the Fire Department shall be satisfied.

3320.4Notification of accidents involving material handling equipment. The owner or person directly in charge of any material handling equipment shall immediately notify the commissioner following any accident involving material handling equipment. In such a case, no person shall permit either of the following without the permission of the commissioner:

1. Use of such material handling equipment; or
2. Remove of the material handling equipment or any part thereof from the area of the job site.

3320.5Conveyors. Conveyors shall meet the requirements of Sections 3320.5.1 through 3320.5.3.

3320.5.1Walkways. Walkways along belt conveyors or bucket conveyors shall be kept free of materials and, where 5 feet (127 mm) or more above the ground, shall be provided with a standard guardrail and standard toeboard that meets the requirements of Section 3307.8 along the outside of the walkway. The standard guardrail and standard toeboard may be omitted on the side toward the belt if the walkway is located adjacent to the conveyor.

3320.5.2Trippers. Where trippers are used to control discharge, a device for throwing the belt or bucket drive into neutral shall be installed at each end of the runway.

3320.5.3Spillage. Where conveyor belts cross any traveled way, trays shall be installed to catch spillage and overhead protection shall be provided for persons or traffic passing beneath.

3320.6Trucks. Trucks shall meet the requirements of Sections 3320.6.1 and 3320.6.2.

3320.6.1Maintenance. All parts and accessories of trucks shall be kept in repair. Brakes shall be maintained so that the vehicle with full load may be held on any grade that may be encountered on the job. Provision shall be made for the immediate application of wheel blocks to trucks traversing ramps steeper than one in ten.

3320.6.2Loading. Trucks shall not be loaded beyond the manufacturer's rated capacity, nor beyond the legal load limit, where applicable. The loads shall be trimmed before the truck is set in motion to prevent spillage. Loads that project beyond the sides of the truck, or that may be dislodged in transit, shall be removed or securely lashed in place.

3320.7Power buggies. Power buggies shall meet the requirements of Sections 3320.7.1 and 3320.7.2.

3320.7.1Responsibilities of employers and workers. Employers and workers shall have the following responsibilities regarding power buggies:

1. Every person causing a power buggy to be used shall provide trained and competent operators and shall carry out or enforce all provisions of this section pertaining to the use, operation, and maintenance thereof.

2. No person other than the operator assigned by the employer shall operate a power buggy. A power buggy shall be in the charge and custody of the operator assigned, and no other person shall in any way interfere with or handle it, nor shall the operator cause or permit any other person to do so.

3. No power buggy shall be operated unless it is in good operating condition and is so constructed that it is stable under conditions of normal use.

3320.7.2 Operation and construction. Power buggies shall be operated and constructed in accordance with the requirements of Section 3320.7.2.1 through 3320.7.2.4.

3320.7.2.1 Brakes. Every power buggy shall be provided with brakes and tire surfaces capable of bringing it to a full stop within 25 feet (635 mm) on a level surface that is similar to the one on which it will be used and at full rated load and maximum design speed. Brakes shall be capable of being fixed in engagement to hold the full load stationary on a 25 percent grade.

3320.7.2.2 Accidental starting. All movement controls of every power buggy shall be so arranged or shielded that they cannot be inadvertently engaged or the buggy accidentally set in motion.

3320.7.2.3 Parking on grades. No power buggy shall be left unattended on any grade sufficiently steep to cause it to coast if free of engine and brake resistance.

3320.7.2.4 Use on ramps, runways and platforms. Power buggies shall not be used on ramps, runways, or platforms that do not meet the requirements of Section 3315

3320.8 Lift and fork trucks. Lift and fork trucks shall meet the requirements of Sections 3320.8.1 through 3320.8.4.

3320.8.1 Load capacity. A metal plate with readily legible etched or stamped figures giving the capacity rating in pounds shall be attached to every lift or fork truck.

3320.8.2 Maintenance. All parts and accessories of lift or fork trucks shall be kept in repair and with brakes adequate to maintain the fully loaded vehicle on any grade that may be encountered on the job.

3320.8.3 Loading. No lift or fork truck shall be loaded beyond its capacity rating. No hand-operated pallet truck loaded so that any point on the load is at a greater height than 4 feet 6 inches (114 mm) above the floor shall be moved by pushing unless handled by two persons.

3320.8.4 Prohibited use. No lift or fork truck shall be in motion when the loaded forks are elevated higher than necessary to clear obstructions, except as may be required for positioning, picking up, or depositing the load.

3320.9 Hand propelled vehicles. Hand propelled vehicles shall be constructed and braked to withstand the loads to be carried and shall be maintained in repair. Vehicles with loose parts shall not be used.

3320.10 Mixing machines. Where the public may have access to the working area near charging skips, standard guardrails that meet the requirements of Section 3307.8 shall be erected to enclose the area under the raised skip and the mixing machine. Each time before raising or lowering the charging skip, the operator shall ascertain that no one is in the danger zone.

3320.11 Jacks. Jacks shall meet the requirements of Sections 3320.11.1 through 3320.11.5.

3320.11.1 Marking. The rated capacity of every jack shall be legibly marked in a prominent location on the jack by

casting or stamping. The manufacturer shall designate the intended supporting point of the load and the maximum permissible length of lever and force applied.

3320.11.2Overtravel to be limited. Every jack shall, where practicable, be provided with a positive stop to prevent overtravel; otherwise an indicator to clearly show overtravel shall be provided on the jack.

3320.11.3Maintenance. Lubrication and operation of jacks shall be in accordance with the recommendations of the manufacturer.

3320.11.4Foundations. Jacks shall rest on a firm, level foundation adequate to support the load.

3320.11.5Blocking required. When the object has been lifted to the desired height, blocking or cribbing shall be immediately placed under it if the jack does not have built-in safety devices such as stop-rings, locknuts, or place-in cylinder sleeves.

3320.12Cableways. The construction, installation, inspection, maintenance and use of cableways shall be in conformance with rules promulgated by the commissioner.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 35: REFERENCED STANDARDS
SECTION BC 3501: GENERAL

NYC Administrative Code § 28-BC 3501

3501.1 General.

This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title and the section or sections of this document that reference the standard.

3501.2 Subsequent additions, modifications, or deletions. Refer to the rules of the department for any subsequent additions, modifications or deletions that may have been made to these standards in accordance with Section 28-103.19 of the Administrative Code.

3501.3 Applicability. The application of the referenced standards shall be as specified in Section 102.4.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE

Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY

SECTION BC 401: SCOPE

NYC Administrative Code § 28-BC 401

401.1 Detailed use and occupancy requirements.

In addition to the occupancy and construction requirements in this code, the provisions of this chapter apply to the special uses and occupancies described herein.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 402: COVERED MALL BUILDINGS

NYC Administrative Code § 28-BC 402

402.1 Scope.

The provisions of this section shall apply to buildings or structures defined herein as covered mall buildings not exceeding three floor levels at any point nor more than three stories above grade. Except as specifically required by this section, covered mall buildings shall meet applicable provisions of this code.

Exceptions:

1. Foyers and lobbies of Groups B, R-1 and R-2 are not required to comply with this section.
2. Buildings need not comply with the provisions of this section where they fully comply with other applicable provisions of this code.

402.1.1Occupancy classification.A mall in compliance with the provisions of this section shall be classified as occupancy group M.

402.2Definitions.The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

ANCHOR BUILDING. An exterior perimeter building of a group other than H having direct access to a covered mall building but having required means of egress independent of the mall.

COVERED MALL BUILDING. A single building enclosing a number of tenants and occupants such as retail stores, drinking and dining establishments, entertainment and amusement facilities, passenger transportation terminals, offices, and other similar uses wherein two or more tenants have a main entrance into one or more malls. For the purpose of this chapter, anchor buildings shall not be considered as a part of the covered mall building.

FOOD COURT. A Public seating area located in the mall that serves adjacent food preparation tenant spaces.

GROSS LEASABLE AREA. The total floor area designed for tenant occupancy and exclusive use. The area of tenant occupancy is measured from the centerlines of joint partitions to the outside of the tenant walls. All tenant areas, including areas used for storage, shall be included in calculating gross leasable area.

MALL. A roofed or covered common pedestrian area within a covered mall building that serves as access for two or more tenants and not to exceed three levels that are open to each other.

402.3Lease plan.Each covered mall building owner shall provide the department and the Fire Department with a lease plan showing the location of each occupancy and its exits after the certificate of occupancy has been issued. No modifications or changes in occupancy or use shall be made from that shown on the lease plan without prior approval of the commissioner.

402.4Means of egress.The covered mall building shall be provided with means of egress as required by this code. Where there is a conflict between the requirements of this code and the requirements of this section, the requirements of this section shall apply.

402.4.1Occupant load.The calculated occupant load used to determine the required number of means of egress shall be in accordance with this section.

402.4.1.1Occupant load of tenant spaces.The occupant load permitted in any individual tenant space in a covered mall building shall be determined in accordance with Chapter 10. Means of egress requirements for individual tenant spaces shall be based on the occupant load thus determined.

402.4.1.2Occupant load of mall.In determining required means of egress of the mall, the total occupant load in the mall shall include the occupant load attributed to the mall as determined by Equation 4-1, plus the occupant load of the food court if any, plus the occupant load discharged into the mall from individual tenant spaces.

402.4.1.2.1Occupant load formula.To determine the occupant load attributed to the mall, the number of square feet of floor area of the mall, excluding any food court, shall be divided by the occupant load factor (OLF) value determined by Equation 4-1.

(Equation 4-1)

$$OLF = (0.00007) (GLA) ; pl 25$$

where:

OLF = The occupant load factor (square feet per person).

GLA = The gross leasable area (square feet).

402.4.1.2.2OLF range.The occupant load factor (OLF) is not required to be less than 30 and shall not exceed 50.

402.4.1.2.3Food courts.The occupant load of a food court shall be determined in accordance with Section 1004 and shall be added to the occupant load of the mall.

402.4.1.3Anchor buildings.The occupant load of anchor buildings opening into the mall shall not be included in computing the total number of occupants for the covered mall building.

402.4.2Number of means of egress.The required number of means of egress shall be determined in accordance with this section.

402.4.2.1Number of means of egress within tenant spaces.Wherever the distance of travel to the mall from any

location within a tenant space used by persons other than employees exceeds 75 feet (22 860 mm) or the tenant space exceeds an occupant load of 50, no fewer than two means of egress shall be provided.

402.4.2.2Number of means of egress from the mall.The number of means of egress from the mall shall be determined in accordance with Chapter 10 and shall be based upon an occupant load calculated in accordance with Section 402.4.1.2.

402.4.3Arrangements of means of egress.Means of egress shall be arranged in accordance with this section.

402.4.3.1Anchor building means of egress.Required means of egress for anchor buildings shall be provided independently from the mall means of egress system. The occupant load of anchor buildings opening into the mall shall not be included in determining means of egress requirements for the mall. The path of egress travel of malls shall not exit through anchor buildings. Malls terminating at an anchor building where no other means of egress has been provided shall be considered as a dead-end mall.

402.4.3.2Tenant spaces requiring more than one means of egress.Where more than one means of egress is required from an individual tenant space as determined by Chapter 10, not more than 50 percent of the occupant load shall discharge into the mall.

402.4.3.3Large assembly occupancy.Assembly occupancies with an occupant load of 500 or more shall be so located in the covered mall building such that their entrance will be immediately adjacent to a principal entrance to the mall and shall have not less than one-half of their required means of egress opening directly to the exterior of the covered mall building.

402.4.4Distance to exits.The maximum permitted travel distance to exits in covered mall buildings shall be in accordance with this section.

402.4.4.1Distance to exits within tenant spaces.The maximum travel distance from any point within an individual tenant space to its entrance to the mall or to an exit shall not exceed 200 feet (60 960 mm).

402.4.4.2Distance to exits within the mall.The maximum distance of travel from any point within a mall to an exit shall not exceed 200 feet (60 960 mm).

402.4.5Access to exits.Where more than one exit is required, they shall be so arranged that it is possible to travel in either direction from any point in a mall to separate exits. However, in dead ends not exceeding a length equal to twice the width of the mall measured at the narrowest location within the dead end portion of the mall, one direction of travel shall be permitted. The minimum width of an exit passageway or corridor from a mall shall be 66 inches (1676 mm).

402.4.5.1Exit passageway enclosures.Where exit passageway enclosures provide a secondary means of egress from a tenant space, doors to the exit passageway enclosures shall be minimum 1-hour fire doors with panic hardware. Such doors shall be self-closing and be so maintained or shall be automatic closing by smoke detection.

402.4.6Service areas fronting on exit passageways.Mechanical rooms, electrical rooms, building service areas and service elevators are permitted to open directly into exit passageways provided that the exit passageway is separated from such rooms by fire barriers providing the same fire-resistance rating as required for the exit passageway. Door swings from these rooms shall not project into the minimum width of such exit passageways.

402.5Mall width.For the purpose of providing required egress, malls are permitted to be considered as corridors but need not comply with the requirements of Section 1005.1 of this code where the width of the mall is as specified in this section.

402.5.1Minimum width.The minimum width of the mall shall be 20 feet (6096 mm). The mall width shall be

sufficient to accommodate the occupant load served. There shall be a minimum of 10 feet (3048 mm) clear width to a height of 8 feet (2438 mm) between any projection of a tenant space bordering the mall and the nearest kiosk, vending machine, bench, display opening, food court or other obstruction to means of egress travel.

402.6Types of construction.Covered mall buildings, including anchor buildings, shall be only of Type I, II, and IV construction. Their areas shall not be limited provided that the covered mall building and attached anchor buildings and parking garages are surrounded on all sides by a permanent open space of not less than 60 feet (18 288 mm) and the anchor buildings do not exceed three stories in height. The height of covered mall buildings, including anchor buildings, of Type IIB construction shall be limited to one story. The allowable height and area of anchor buildings greater than three stores in height shall comply with Section 503, as modified by Sections 504 and 506. The construction type of open parking garages and enclosed parking garages shall comply with Sections 406.3 and 406.4, respectively.

402.7Fire-resistance-rated separation.Fire-resistance-rated separation is not required between tenant spaces and the mall. Fire-resistance-rated separation is not required between a food court and adjacent tenant spaces or the mall.

402.7.1Attached garage.An attached parking garage for the storage of passenger vehicles having a capacity of not more than nine persons and open parking garages shall be considered as a separate building where it is separated from the covered mall building by a fire barrier having a fire-resistance rating of at least 2 hours. Openings in such barrier shall be 11 hour fire-rated self-closing or shall be automatic closing upon the activation of a smoke detector or fire alarm.

Exception: Where an open parking garage or enclosed parking garage is separated from the covered mall building or anchor building by a distance greater than 10 feet (3048 mm), the provisions of Table 602 shall apply. Pedestrian walkways and tunnels that attach the open parking garage or enclosed parking garage to the covered mall building or anchor building shall be constructed in accordance with Section 3104.

402.7.2Tenant separations.Each tenant space shall be separated from other tenant spaces by a fire partition complying with Section 708. A tenant separation wall is not required between any tenant space and the mall.

402.7.3Anchor building separation.An anchor building shall be separated from the covered mall building by fire walls complying with Section 705.

Exception: Anchor buildings of not more than three stories above grade that have an occupancy classification of the same uses permitted as tenants of the covered mall building shall be separated by 2-hour fire resistive fire barriers complying with Section 706. Openings between such buildings and the mall need not be protected.

402.8Automatic sprinkler system.The covered mall building and buildings connected shall be provided throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, that shall comply with the following:

1. The automatic sprinkler system shall be complete and operative throughout occupied space in the covered mall building prior to occupancy of any of the tenant spaces. Unoccupied tenant spaces shall be similarly protected unless provided with approved alternate protection.

2. Sprinkler protection for the mall shall be independent from that provided for tenant spaces or anchors. Where tenant spaces are supplied by the same system, they shall be independently controlled.

Exception: An automatic sprinkler system shall not be required in spaces or areas of open parking garages constructed in accordance with Section 406.2.

402.8.1Standpipe system.The covered mall building shall be equipped throughout with a standpipe system as required by Section 905.3.3.

402.9Smoke control.A smoke control system shall be provided in accordance with Section 909 for malls greater than one story in height.

402.10Kiosks.Kiosks and similar structures (temporary or permanent) shall meet the following requirements:

1. Combustible kiosks or other structures shall not be located within the mall unless constructed of any of the following materials:

1.1. Fire-retardant-treated wood complying with Section 2303.2.

1.2. Foam plastics having a maximum heat release rate not greater than 100 kW (105 Btu/h) when tested in accordance with the exhibit booth protocol in UL 1975.

1.3. Aluminum composite material (ACM) having a flame spread index of not more than 25 and a smoke-developed index of not more than 450 when tested as an assembly in the maximum thickness intended for use in accordance with ASTM E 84.

2. Kiosks or similar structures located within the mall shall be provided with approved fire suppression and detection devices.

3. The minimum horizontal separation between kiosks or groupings thereof and other structures within the mall shall be 20 feet (6096 mm).

4. Each kiosk or similar structure or groupings thereof shall have a maximum area of 300 square feet (28 m²).

402.11Security grilles and doors.Horizontal sliding or vertical security grilles or doors that are a part of a required means of egress shall conform to the following:

1. They shall remain in the full open position during the period of occupancy by the general public.

2. Doors or grilles shall not be brought to the closed position when there are more than 10 persons occupying spaces served by a single exit or 50 persons occupying spaces served by more than one exit.

3. The doors or grilles shall be openable from within without the use of any special knowledge or effort where the space is occupied.

4. Where two or more exits are required, not more than one-half of the exits shall be permitted to include either a horizontal sliding or vertical rolling grille or doors.

402.12Emergency power.Covered mall buildings exceeding 50,000 square feet (4645 m²) shall be provided with emergency power systems that are capable of operating the emergency voice/alarm communication system.

402.13Emergency voice/alarm communication system.Covered mall buildings exceeding 50,000 square feet (4645 m²) in total floor area shall be provided with an emergency voice/alarm communication system. Emergency voice/alarm communication systems serving a mall, required or otherwise, shall be accessible to the Fire Department. The system shall be provided in accordance with Section 907.2.12.2.

402.14Plastic signs.Within every store or level and from sidewall to sidewall of each tenant space facing the mall, plastic signs shall be limited as specified in Sections 402.14.1 through 402.14.5.

402.14.1Area.Plastic signs shall not exceed 20 percent of the wall area facing the mall.

402.14.2Height and width.Plastic signs shall not exceed a height of 36 inches (914 mm), except if the sign is

vertical, the height shall not exceed 96 inches (2438 mm) and the width shall not exceed 36 inches (914 mm).

402.14.3Location. Plastic signs shall be located a minimum distance of 18 inches (457 mm) from adjacent tenants.

402.14.4Plastics other than foam plastics. Plastics other than foam plastics used in signs shall be light-transmitting plastics complying with Section 2606.4 or shall have a self-ignition temperature of 650(degrees)F (343(degrees)C) or greater when tested in accordance with ASTM D 1929, and a flame spread index not greater than 75 and smoke-developed index not greater than 450 when tested in the manner intended for use in accordance with ASTM E 84 or meet the acceptance criteria of Section 803.2.1 when tested in accordance with NFPA 286.

402.14.4.1Encasement. Edges and backs of plastic signs in the mall shall be fully encased in metal.

402.14.5Foam plastics. Foam plastics used in signs shall have flame-retardant characteristics such that the sign has a maximum heat-release rate of 150 kilowatts when tested in accordance with UL 1975 and the foam plastics shall have the physical characteristics specified in this section. Foam plastics used in signs installed in accordance with Section 402.14 shall not be required to comply with the flame spread and smoke-developed indexes specified in Section 2603.3.

402.14.5.1Density. The minimum density of foam plastics used in signs shall not be less than 20 pounds per cubic foot (pcf) (320 kg/m³).

402.14.5.2Thickness. The thickness of foam plastic signs shall not be greater than 1/2-inch (12.7 mm).

402.15Fire Department access to equipment. Rooms or areas containing controls for air-conditioning systems, automatic fire-extinguishing systems or other detection, suppression or control elements shall be identified for use by the Fire Department.



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Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 403: HIGH-RISE BUILDINGS

NYC Administrative Code § 28-BC 403

403.1 Applicability.

The provisions of this section shall apply to buildings having occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access.

Exception: The provisions of this section shall not apply to the following buildings and structures:

1. Buildings occupied entirely by Group R-3 classification.
2. Open parking garages in accordance with Section 406.3.
3. Buildings with an occupancy in Group A-5 in accordance with Section 303.1.
4. Low-hazard special industrial occupancies in accordance with Section 503.1.2.
5. Buildings with an occupancy in Group H-1, H-2 or H-3 in accordance with Section 415.

403.2 Automatic sprinkler system. Buildings and structures shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. A secondary water supply shall be provided where required by Section 903.3.5.2 and in any building having occupied floors more than 300 feet (91 440 mm) above the lowest level of fire department vehicle access.

403.3 Reserved.

403.4 Emergency escape and rescue. Emergency escape and rescue openings required by Section 1025 are not required.

403.5 Automatic fire detection. Smoke detection shall be provided in accordance with Section 907.2.12.1.

403.6 Emergency voice/alarm communication systems. An emergency voice/alarm communication system shall be provided in accordance with Section 907.2.12.2.

403.7 Fire Department communications system. A two-way fire department communications system shall be provided for Fire Department use in accordance with Section 907.2.12.3.

403.8 Fire command. A fire command center complying with Section 911 shall be provided in a location approved by the Fire Department.

403.9 Elevators. Elevator operation and installation shall be in accordance with Chapter 30.

403.9.1 Elevator lobbies. Elevator lobbies shall be provided in accordance with Sections 403.9.1.1 and 403.9.1.2.

403.9.1.1 Applicability. Elevator lobbies shall be provided at the following locations:

1. Elevators opening onto a fire-resistance-rated corridor. In all occupancy groups, elevator lobbies shall be provided at any location where an elevator opens onto a fire-resistance rated corridor.

2. Elevators serving B occupancies. Notwithstanding item 1, Elevators that serve four or more stories that contain space classified in occupancy Group B, inclusive of any lobby or entrance level, shall provide elevator lobbies at every level served by such elevator.

Exceptions: Elevator lobbies are not required under the following conditions:

1. Street-floor lobbies. Street-floor lobbies provided that the entire street floor is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.

2. Elevators without shafts. Elevators that are not required to be located in a shaft in accordance with Section 707.2.

3. Zero-clearance doors. Elevator openings provided with zero-clearance doors in addition to hoistway doors and elevator car doors. Such zero-clearance doors shall be tested in accordance with UL 1784 without an artificial bottom seal. When serving as an accessible route, such additional doors shall operate automatically and in compliance with Chapter 11.

4. Small floor areas. On floors with less than 2,500 square feet (232 m²), the commissioner may accept an alternative design or construction method that accomplishes the purposes of this section, or if the commissioner determines that compliance with this section is impracticable in whole or in part, the commissioner may authorize an exemption from the requirements of this section.

5. Pressurized elevator shafts. When the elevator is pressurized in accordance with the requirements of the commissioner.

6. Group R-2 occupancy.

403.9.1.2 Construction. Elevators lobbies shall be constructed in accordance with the following:

1. The lobbies shall be constructed as a smoke partition complying with Section 710.

2. The lobbies shall separate the elevator from all other spaces on the story.

3. The lobbies shall have at least one means of egress complying with Chapter 10 and other provisions of this code.

4. Access to an exit on any story through an elevator lobby shall be permitted provided that access to at least one other required exit does not require passing through the elevator lobby.

403.9.2 Impact resistant elevator shafts. Elevator shafts shall be constructed of impact resistant walls. Minimum impact resistance standards shall be established by rules of the department.

403.10 Reserved.

403.11 Emergency power systems. An emergency power system complying with Section 2702 shall be provided for emergency power loads specified in Sections 403.11.1 and 403.11.2.

403.11.1 Emergency power loads in occupancies other than R-2. In buildings of any occupancy group other than Group R-2, the following are classified as emergency power loads:

1. Exit signs and means of egress illumination required by Chapter 10; and
2. Elevator car lighting; and
3. Emergency voice/alarm communications systems; and
4. Automatic fire detection systems; and
5. Fire alarm systems; and
6. Power and lighting for the fire command center required by Section 403.8; and
7. Electrically powered fire pumps; and
8. Ventilation and automatic fire detection equipment for smokeproof enclosures; and
9. Elevators in accordance with Section 3003; and
10. Stair pressurization systems when provided.

403.11.2 Emergency power loads in Group R-2 occupancies. Group R-2 occupancies in buildings greater than 125 feet (38 100 mm) in height shall be required to provide an emergency power system to support the following loads:

1. Exit signs and means of egress illumination required by Chapter 10;
2. At least one elevator serving all floors, or one elevator per bank where different banks serve different portions of the building;
3. Emergency voice communications systems; and
4. Electrically powered fire pumps, unless electrical power to the motor is taken ahead of the main from the street side of the house service switch.

Where a generator is used as the emergency power system, diesel or gas shall be permitted as the fuel source in accordance with Section 2702.1.

403.12 Stairway door operation. Doors opening into interior stair enclosures shall not be locked from either side. However, a door locked from the stair side may be permitted provided that such door is equipped with an automatic fail safe system for opening in the event of the activation of any automatic fire detection system, or when any elevator recall

is activated, or when any signal is received from the fire command center. Such door shall be deemed as openable from the stair side. Stair reentry signs shall be posted throughout the stairway indicating that reentry is provided only during fire emergencies. Such signs shall be in accordance with Section 1026.4.2.

403.12.1 Stairway communications system. A telephone or other two-way communications system connected to an approved constantly attended station shall be provided at not less than every fifth floor in each required stairway where stair side doors are locked.

403.13 Smokeproof exit enclosures. Every required stairway serving occupied floors more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access shall comply with Sections 909.20 and 1019.1.8.

Exception for R-2 occupancies: Smokeproof enclosures are not required in occupancy Group R-2 unless provided pursuant to Exception 2 of Section 912.1.

403.14 Seismic considerations. For seismic considerations, see Chapter 16.

403.15 Impact resistant stair enclosures. Exit stair enclosures shall be constructed of impact resistant walls. Minimum impact resistance standards shall be established by rules of the department.

403.16 Exit path markings. All high-rise buildings shall be provided with photoluminescent exit path markings conforming to Section 1026.

Exception: Exit paths serving Group R-2.

403.17 Outdoor air intakes. For high-rise buildings, outdoor air intakes serving spaces above the second story and serving spaces greater than 10,000 square-feet (929 m²) of floor area shall be located in accordance with Section 401.5 of the New York City Mechanical Code.

Exception: Group R-2 occupancy.

403.18 Open web steel joists. The use of open web steel joists shall be prohibited in high-rise buildings until the commissioner promulgates rules establishing minimum acceptable fireproofing methods.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 404: ATRIUMS

NYC Administrative Code § 28-BC 404

404.1 General.

In other than Group H occupancies, and where permitted by Exception 5 in Section 707.2, the provisions of this section shall apply to buildings or structures containing vertical openings defined herein as atriums.

404.1.1 Definition. The following word and term shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

ATRIUM. An opening connecting three or more stories other than enclosed stairways, elevators, hoistways, escalators, plumbing, electrical, air-conditioning or any other vertical openings that are not required to be enclosed by other provisions of this code, which is closed at the top and not defined as a mall. Stories, as used in this definition, do not include balconies within assembly groups or mezzanines that comply with Section 505.

404.2 Use. The floor of the atrium shall not be used for other than low fire hazard uses, and only approved materials and decorations in accordance with the New York City Fire Code shall be used in the atrium space.

Exception: The atrium floor area is permitted to be used for any approved use where the individual space is provided with an automatic sprinkler system in accordance with Section 903.3.1.1.

404.3 Automatic sprinkler protection. An approved automatic sprinkler system shall be installed throughout the entire building.

Exceptions:

1. That area of a building adjacent to or above the atrium need not be sprinklered provided that portion of the building is separated from the atrium portion by a 2-hour fire barrier wall or horizontal assembly or both.
2. Where the ceiling of the atrium is more than 55 feet (16 764 mm) above the floor, sprinkler protection at the

ceiling of the atrium is not required.

404.4Smoke control.A smoke control system shall be installed in accordance with Section 909.

Exception: Smoke control is not required for floor openings meeting the requirements of Section 707.2, Exceptions 2 and 8.

404.5Enclosure of atriums.Atrium spaces shall be separated from adjacent spaces by a 2-hour fire barrier wall.

Exceptions:

1. A glass or glass-block wall forming a smoke partition where automatic sprinklers are spaced 6 feet (1829 mm) or less along both sides of the separation wall, or on the room side only if there is not a walkway on the atrium side, and between 4 inches and 12 inches (102 mm and 305 mm) away from the glass and so designed that the entire surface of the glass is wet upon activation of the sprinkler system. The glass shall be installed in a gasketed frame so that the framing system deflects without breaking (loading) the glass before the sprinkler system operates.

2. The adjacent spaces of any three floors of the atrium shall not be required to be separated from the atrium where such spaces are included in computing the atrium volume for the design of the smoke control system.

404.6Emergency power.Equipment required to provide smoke control shall be connected to an emergency power system in accordance with Section 909.11.

404.7Interior finish.The interior finish of walls and ceilings of the atrium shall not be less than Class B with no reduction in class for sprinkler protection.

404.8Travel distance.In other than the lowest level of the atrium, where the required means of egress is through the atrium space, the portion of exit access travel distance within the atrium space shall not exceed 200 feet (60 960 mm).

404.9Types of construction.Buildings containing atriums shall be only of Type I, IIA, and IV construction.



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SECTION BC 405: UNDERGROUND BUILDINGS

NYC Administrative Code § 28-BC 405

405.1 General.

The provisions of this section apply to building spaces having a floor level used for human occupancy more than 30 feet (9144 mm) below the lowest level of exit discharge.

Exceptions:

1. One- and two-family dwellings, sprinklered in accordance with Section 903.3.1.3.
2. Parking garages with automatic fire suppression systems in compliance with Section 405.3.
3. Fixed guideway transit systems.
4. Grandstands, bleachers, stadiums, arenas and similar facilities.
5. Where the lowest story is the only story that would qualify the building as an underground building and has an area not exceeding 1,500 square feet (139 m²) and has an occupant load less than 10.

405.2 Construction requirements. The underground portion of the building shall be of Type I construction.

405.3 Automatic sprinkler system. The highest level of exit discharge serving the underground portions of the building and all levels below shall be equipped with an automatic sprinkler system installed in accordance with Section 903.3.1.1. Water-flow switches and control valves shall be supervised in accordance with Section 903.4.

405.4 Compartmentation. Compartmentation shall be in accordance with Sections 405.4.1 through 405.4.3.

405.4.1 Number of compartments. A building having a floor level more than 60 feet (18 288 mm) below the lowest level of exit discharge shall be divided into a minimum of two compartments of approximately equal size. Such

compartmentation shall extend through the highest level of exit discharge serving the underground portions of the building and all levels below.

Exception: The lowest story need not be compartmented where the area does not exceed 1,500 square feet (139 m²) and has an occupant load of less than 10.

405.4.2Smoke barrier penetration.The separation between the two compartments shall be of minimum 2-hour fire barrier wall construction that shall extend from floor slab to floor deck above. Openings between the two compartments shall be limited to plumbing and electrical piping and conduit penetrations firestopped in accordance with Section 712. Doorways shall be protected by door assemblies that are automatic-closing by smoke detection in accordance with Section 715.3 and shall be provided with gasketing and a drop sill to minimize smoke leakage. Where provided, each compartment shall have an air supply and an exhaust system independent of the other compartments.

405.4.3Elevators.Where elevators are provided, each compartment shall have direct access to an elevator. Where an elevator serves more than one compartment, an elevator lobby shall be provided and shall be separated from each compartment by a 2-hour fire barrier wall. Doors shall be gasketed, have a drop sill, and be automatic-closing by smoke detection installed in accordance with Section 907.10.

405.5Smoke control system.A smoke control system shall be provided in accordance with Sections 405.5.1 and 405.5.2.

405.5.1Control system.A smoke control system is required to control the migration of products of combustion in accordance with Section 909 and the provisions of this section. Smoke control shall restrict movement of smoke to the general area of fire origin and maintain means of egress in a usable condition.

405.5.2Smoke exhaust system.Where compartmentation is required, each compartment shall have an independent smoke control system. The system shall be automatically activated and capable of manual operation in accordance with Section 907.2.18.

405.6Fire alarm systems.A fire alarm system shall be provided where required by Section 907.2.19.

405.7Public address.A public address system shall be provided where required by Section 907.2.19.1.

405.8Means of egress.Means of egress shall be in accordance with Sections 405.8.1 and 405.8.2.

405.8.1Number of exits.Each floor level shall be provided with a minimum of two exits. Where compartmentation is required by Section 405.4, each compartment shall have a minimum of one exit and shall also have an exit access doorway into the adjoining compartment.

405.8.2Smokeproof enclosure.Every required stairway serving floor levels more than 30 feet (9144 mm) below its level of exit discharge shall comply with the requirements for a smokeproof enclosure as provided in Section 1019.1.8.

405.9Reserved.

405.10Emergency power.An emergency power system complying with Section 2702 shall be provided for emergency power loads specified in Section 405.10.1.

405.10.1Emergency power loads.The following loads are classified as emergency power loads:

1. Emergency voice/alarm communications systems.
2. Fire alarm systems.

3. Automatic fire detection systems.
4. Elevator car lighting.
5. Means of egress and exit sign illumination as required by Chapter 10.
6. Smoke control system.
7. Ventilation and automatic fire detection equipment for smokeproof enclosures.
8. Fire pumps.
9. Elevators in accordance with Section 3003.
10. Stair pressurization systems when provided.

405.11 Standpipe system. The underground building shall be provided throughout with a standpipe system in accordance with Section 905.



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SECTION BC 406: MOTOR VEHICLE-RELATED OCCUPANCIES

NYC Administrative Code § 28-BC 406

406.1 Private garages and carports.

406.1.1 Classification. Private garages and carports, as defined by this section, shall be classified as Group U occupancy.

406.1.2 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

CARPORT. A structure or portion of a structure, accessory to a Group R-2 or R-3 occupancy, open on at least two sides and unenclosed for at least 50 percent of perimeter, used for the parking or storage of passenger motor vehicles. Such facility shall not exceed 650 square feet (60.45 m²) in area and one story in height

PRIVATE GARAGE. An enclosed structure or portion of a structure, accessory to a Group R-2 or R-3 occupancy, used for the parking or storage of passenger motor vehicles. Such facility shall not exceed 650 square feet (60 m²) in area and one story in height.

406.1.3 Floor construction. Private garage and carport floors shall be of concrete or equivalent noncombustible material that will not absorb flammable liquids. The area of floor used for parking of vehicles shall be sloped to facilitate the movement of liquids to a drain. The sills of all door openings connecting a dwelling unit to a private garage shall be raised at least 4 inches (102 mm) above the floor level of the garage.

Exception: Asphalt surfaces shall be permitted at ground level in carports.

406.1.3.1 Ramps. Ramps shall have a gradient not exceeding one in seven, with nonslip surfaces, and shall be located entirely within the property line. However, upon application to the commissioner, steeper gradients may be accepted, but in no event greater than one in three.

406.1.4 Separation. Separations shall comply with the following:

1. The private garage shall be separated from the dwelling unit and its attic area by means of a minimum 1-hour fire-rated construction. Garages beneath habitable rooms shall be separated from all habitable rooms above by not less than 1-hour fire-rated construction. Openings from a private garage directly into a room used for sleeping purposes shall not be permitted.

2. No air used for heating, cooling, or ventilation shall be circulated through private garages to dwelling areas.

3. A separation is not required between a Group R-3 occupancy and a carport, provided the carport does not have any enclosed areas above.

406.2 Parking garages, open or enclosed.

406.2.1 Classification. Parking garages shall be either open, as per Section 406.3, or enclosed, as per Section 406.4. Parking garages shall also comply with the special provisions of Section 509.

406.2.2 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

PARKING GARAGE. A structure or portion of a structure, other than a private garage or carport, used for the parking or storage of motor vehicles.

406.2.3 General requirements. All parking garages, open or enclosed, shall comply with the general provisions of this section.

406.2.3.1 Clear height. The clear height of each floor level in vehicle and pedestrian traffic areas shall not be less than 7 feet (2134 mm). Vehicle and pedestrian areas accommodating van-accessible parking required by Section 1106.5 shall conform to ICC A117.1.

406.2.3.2 Guards. Guards shall be provided in accordance with Section 1012 at exterior and interior vertical openings on floor and roof areas where vehicles are parked or moved and where the vertical distance to the ground or surface directly below exceeds 30 inches (762 mm).

406.2.3.3 Vehicle barriers. Parking areas shall be provided with exterior or interior walls or vehicle barriers, except at pedestrian or vehicular accesses, designed in accordance with Section 1607.7. Vehicle barriers not less than 2 feet (610 mm) high shall be placed at the ends of drive lanes and at the end of parking spaces where the difference in adjacent floor elevation is greater than 1 foot (305 mm).

406.2.3.4 Ramps. Ramps shall have a gradient not exceeding one in seven, with non-slip surfaces. A level landing having a minimum dimension of 20 feet (6096 mm) shall be provided at the discharge point of all ramps at the street level, within the property line. Ramps used for the movement of motor vehicles need not be enclosed when serving tiers above grade. Vehicle ramps may serve as part of a means of egress provided that such ramp complies with the requirements of Sections 1018.1.1 and 1018.1.2.

406.2.3.5 Floor surface. Parking surfaces shall be of concrete or similar noncombustible and nonabsorbent materials. The area of floor used for parking of vehicles shall be sloped to facilitate the movement of liquids to a drain.

Exception: Asphalt parking surfaces are permitted at ground level.

406.2.3.6 Separation. Parking garages shall be separated from other occupancies in accordance with Section 508.

406.2.3.6.1 Openings prohibited. Openings from a parking garage directly into a room used for sleeping purposes shall not be permitted.

406.2.3.6.2 Special hazards. Openings from a parking garage to any room in which there is a fuel-fired appliance shall be by means of a vestibule providing a two-doorway separation. Such vestibule and doorway shall be minimum 1-hour rated construction.

Exception: A single door, in compliance with Table 715.3, shall be permitted, provided the sources of ignition in the appliance are at least 18 inches (457 mm) above the floor.

406.2.3.7 Fire fighter aisles. In any parking garage or lot, one or more aisles, at least 24 inches (610 mm) in width, shall be provided to permit access by fire fighting personnel to all parts of the garage or lot. There shall not be more than three rows of parked motor vehicles between aisles.

406.3 Open parking garages.

406.3.1 Scope. Except where specific provisions are made in the following subsections, other requirements of this code shall apply.

406.3.2 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

MECHANICAL-ACCESS OPEN PARKING GARAGES. Open parking garages employing parking machines, lifts, elevators or other mechanical devices for vehicles moving from and to street level and in which public occupancy is prohibited above the street level.

OPEN PARKING GARAGE. A structure or portion of a structure with the openings as described in Section 406.3.3.1 that is used for the parking or storage of private motor vehicles as described in Section 406.3.4.

RAMP-ACCESS OPEN PARKING GARAGES. Open parking garages employing a series of continuously rising floors or a series of interconnecting ramps between floors permitting the movement of vehicles under their own power from and to the street level.

406.3.3 Construction. Open parking garages shall be of Type I, II or IV construction. Open parking garages shall meet the design requirements of Chapter 16. For vehicle barriers, see Section 406.2.3.3.

406.3.3.1 Openings. For natural ventilation purposes, the exterior side of the structure shall have openings equal to 50 percent of the perimeter walls. The aggregate length of the openings considered to be providing natural ventilation shall constitute a minimum of 40 percent of the perimeter of the tier. Interior walls shall be at least 20 percent open.

406.3.4 Uses. Mixed uses shall be allowed in the same building as an open parking garage subject to the provisions of Sections 508, 402.7.1, 406.3.13, 509.3, 509.4 and 509.7.

406.3.5 Area and height. Area and height of open parking garages shall be limited as set forth in Chapter 5 for Group S-2 occupancies.

406.3.5.1 Single use. When the open parking garage is used exclusively for the parking or storage of private motor vehicles, with no other uses in the building, the area and height shall be permitted to comply with Table 406.3.5.

Exception: The grade-level tier is permitted to contain an office, waiting and toilet rooms having a total combined area of not more than 1,000 square feet (93 m²). Such area need not be separated from the open parking garage. In open parking garages having a spiral or sloping floor, the horizontal projection of the structure at any cross section shall not

exceed the allowable area per parking tier. In the case of an open parking garage having a continuous spiral floor, each 9 feet 6 inches (2896 mm) of height, or portion thereof, shall be considered a tier. The clear height of a parking tier shall not be less than 7 feet (2134 mm), except that a lower clear height is permitted in mechanical-access open parking garages where approved by the commissioner.

Table 406.3.5 Open Parking Garages Area and Height Type of Construction Area Per Tier (square feet) Height (in tiers) Ramp Access Mechanical Access Automatic Sprinkler System

No	Yes	1A	Unlimited	Unlimited	Unlimited	Unlimited	IB	Unlimited	12 tiers	12 tiers	18 tiers	IIA	50,000	10 tiers	10 tiers
15 tiers	IIB	50,000	8 tiers	8 tiers	12 tiers	IV	50,000	4 tiers	4 tiers	4 tiers	For SI:	1 square foot = 0.0929 m ² .			

406.3.6Reserved.

406.3.7Exterior walls.Exterior walls and openings in exterior walls shall comply with Tables 601 and 602. The distance from an adjacent property line shall be determined in accordance with Table 602 and Section 704.

406.3.8Means of egress.Open parking garages shall meet the means of egress requirements of Chapter 10. However, where no persons other than parking attendants are permitted, required exit stairways shall not be less than 36 inches (914 mm) wide.

406.3.9Standpipes.Standpipes shall be installed where required by the provisions of Section 905.

406.3.10Sprinkler systems.Automatic sprinkler systems and standpipes shall be installed in accordance with the provisions of Section 903. An automatic dry sprinkler system may be installed in unheated garages.

406.3.11Enclosure of vertical openings.Enclosure shall not be required forvertical openings.

406.3.12Ventilation.Openings specified in Section 406.3.3.1 shall satisfy natural ventilation requirements. Additional mechanical ventilation shall not be required.

406.3.13Prohibitions.The following uses and alterations are not permitted:

1. Vehicle repair work.
2. Parking of commercial vehicles, buses, trucks and similar vehicles.
3. Partial or complete closing of required openings in exterior walls by tarpaulins or any other means.

406.4Enclosed parking garages.Parking garages and portions thereof that do not meet the definition of open parking garages shall be classified as an enclosed parking garage and shall meet the requirements of this section.

406.4.1Heights and areas.Enclosed parking garages shall be limited to the allowable heights and areas specified in Table 503. Permitted roof parking shall not be considered as a separate story.

406.4.2Ventilation.A mechanical ventilation system shall be provided in accordance with the New York City Mechanical Code.

406.5Motor fuel-dispensing facilities.

406.5.1Construction.Motor fuel-dispensing facilities shall be designed and constructed in accordance with the New York City Fire Code and this section.

406.5.2Canopies.Canopies under which fuels are dispensed shall have a clear, unobstructed height of not less than 14 feet (4267 mm) to the lowest projecting element in the vehicle drive-through area. Canopies and their supports over pumps shall be of noncombustible materials. However, panels constructed of light-transmitting plastic materials shall be

permitted to be installed in canopies erected over motor vehicle fuel-dispensing station fuel dispensers, provided the panels are located at least 10 feet (3048 mm) from any building on the same property and face yards or streets not less than 40 feet (12 192 mm) in width on the other sides. The aggregate areas of plastics shall not exceed 1,000 square feet (93 m²). The maximum area of any individual panel shall not exceed 100 square feet (9.3 m²).

406.5.3Storage tanks.Motor fuel storage tanks shall be installed below ground, except as authorized by the rules of the Fire Department. The installation and venting of storage tanks shall be in accordance with the rules of the Fire Department and the requirements of the New York City Fire Code. Storage tanks installed below ground shall comply with the following:

1. The top of the storage tanks shall be at least 24 inches (below finished grade and at least 24 inches (610 mm) below the level of any cellar or basement floor within 10 feet (3048 mm) of the tanks.

2. Storage tanks shall be located so that the forces from any building foundation and support loads are not transmitted to the tanks. The distance from any part of a storage tank to the nearest wall of any basement, pit or cellar, or from any property line that may be built upon, shall not be less than 36 inches (914 mm).

3. Storage tanks shall be covered with a structurally supported reinforced concrete slab at least 8 inches (203 mm) thick, extending at least 12 inches (305 mm) beyond the horizontal outlines of the storage tanks, and placed over a cover of suitable clean backfill material. Such slab shall be designed and reinforced in accordance with ACI 318. All concrete shall have a minimum compressive strength of 4,000 pounds per square inch (27 580 kPa) at 28 days.

4. Storage tanks shall be placed on a 12-inch (305 mm) thick concrete base slab or installed in such other manner, secured against flotation, and approved by the department.

406.6Repair garages.

406.6.1General.Repair garages shall be constructed in accordance with the New York City Fire Code and this section. This occupancy shall not include motor fuel-dispensing facilities, as regulated in Section 406.5.

406.6.2Mixed uses.Mixed uses shall be allowed in the same building as a repair garage subject to the provisions of Section 508.

406.6.3Ventilation.Repair garages shall be mechanically ventilated in accordance with the New York City Mechanical Code. The ventilation system shall be controlled at the entrance to the garage.

406.6.4Floor surface.Repair garage floors shall be of concrete or similar noncombustible and nonabsorbent materials.

Exception: Slip-resistant, nonabsorbent, interior floor finishes having a critical radiant flux not more than 0.45 W/cm², as determined by NFPA 253, shall be permitted.

406.6.5Heating equipment.Heating equipment shall be installed in accordance with the New York City Mechanical Code.

406.6.6Gas detection system.Repair garages used for repair of vehicles fueled by CNG, LNG, or hydrogen, shall be provided with an approved flammable gas-detection system.

406.6.6.1System design.The flammable gas-detection system shall be calibrated to the types of fuels or gases used by vehicles to be repaired. The gas detection system shall be designed to activate when the level of flammable gas exceeds 25 percent of the lower explosive limit. Gas detection shall also be provided in lubrication or chassis repair pits of garages used for repairing nonodorized LNG-fueled vehicles.

406.6.6.2 Operation. Activation of the gas detection system shall result in all of the following:

1. Initiation of distinct audible and visual alarm signals in the repair garage.
2. Deactivation of all heating systems located in the repair garage.
3. Activation of the mechanical ventilation and exhaust system, where the system is interlocked with gas detection.

406.6.6.3 Failure of the gas detection system. Failure of the gas detection system shall result in the deactivation of the heating system, activation of the mechanical ventilation system when the system is inter-locked with the gas detection system and cause a trouble signal to sound in an approved location.

406.7 Open Parking Lots.

406.7.1 General. The provisions of this section shall govern the construction of open parking lots and to all such existing premises hereafter enlarged or changed in location.

406.7.2 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

OPEN PARKING LOT. An exterior space with surfacing at grade used for the storage or sale of more than four motor vehicles, including but not limited to parking lots, motor vehicles sales lots, and accessory open parking spaces.

406.7.3 Permit required. Any premise intended to be occupied for the storage or sale of motor vehicles on an open parking lot shall require an application to be filed with the department in order to obtain a Certificate of Occupancy. Such Certificate of Occupancy shall indicate the maximum number of vehicles to be accommodated and the type of vehicle, whether private passenger or commercial, to be stored. An application for or including an open parking lot shall be accompanied by a plan exhibiting the following:

1. Dimensions of the lot and its location in relation to adjoining streets; and
2. Any structure(s) existing or to be erected on the plot; and
3. The relative elevations of the parking area, curbs and adjoining yards or courts; and
4. Structures, retaining walls, and open spaces on adjoining premises; and
5. Retaining walls to be built; and
6. Location and dimensions of curb cuts, driveways, and enclosures; and
7. Drainage diagram; and
8. Specification of surfacing material; and
9. Parking stall layout with dimensions; and
10. Analysis exhibiting compliance with the New York City Zoning Resolution; and
11. Other information as may be requested by the commissioner.

A copy of the plan or diagram approved by the department shall be kept on the premises. Certified, reduced size, legible copies may be used for this purpose. When an attendant's shelter is provided on the parking lot, the Certificate of

Occupancy issued shall be posted and maintained under glass in the shelter.

406.7.4Locations prohibited.All vehicular activities associated with the operation of open parking lots shall be entirely within the property lines of the premises. Vehicles shall not be permitted to encroach upon the sidewalks. No motor vehicle may be stored or parked in any location where it would obstruct a required window or required exit of any adjacent building.

406.7.5Surfacing.All driveways, parking stalls, and open spaces used for the parking or storage of motor vehicles shall be surfaced with concrete asphalt, or equivalent durable, dustless material.

406.7.5.1Drainage.Open parking lots shall be graded and maintained such that no drainage will flow onto abutting sidewalks and adjoining properties.

406.7.5.2Non-porous surfaces.Where the surface paving of an open parking lot is non-porous, such lot shall be drained as required by the New York City Plumbing Code.

406.7.5.3Resurfacing.Resurfacing of existing open parking lots shall comply with this section.

406.7.6Curb cuts.For the purpose of this section, a curb cut shall include all splays when determining the total length of cut curb. Unless otherwise required by the New York City Zoning Resolution, all curb cuts shall comply with the following requirements:

1. The aggregate length of curb cuts shall not exceed 60 percent of any street frontage 100 feet (30 480 mm) or less in length. No single curb cut shall exceed 30 feet (9144 mm) in length, and there shall not be more than two curb cuts on any street frontage 100 feet (30 480 mm) or less in length. The minimum distance between two curb cuts shall be 5 feet (1524 mm).
2. For each 50 feet (15 240 mm) of street frontage length over 100 feet (30 480 mm), an additional curb cut no greater than 30 feet (9144 mm) in length may be permitted.
3. No curb cut shall commence within 8 feet (2438 mm) of a side lot line, except that on corner lots and lots with street frontage length of 50 feet (15 240 mm) or less, the curb cut may commence 30 inches (762 mm) from the side lot line.
4. No curb cut, including splays, shall be less than 10 feet (3048 mm) in length.

406.7.7Driveways.Driveways serving passenger vehicles shall be a minimum of 8 feet (2438 mm) in width and shall not exceed the length of the curb cut, not including the lengths of the splays. For all other motor vehicles, the minimum width of driveways shall be 10 feet (3048 mm). Portions of the driveway located between the curb line and the lot line shall be paved in accordance with the requirements of the Department of Transportation for the construction of sidewalks.

406.7.8Curbs and bumpers.Open parking lots shall be completely separated from adjoining premises and public sidewalks by curbs or bumpers of concrete, masonry, steel, heavy timber, or other similar and equally substantial materials, and shall be securely anchored so as to stop motor vehicles. Curbs and bumpers shall be at least 8 inches (203 mm) high and 8 inches (203 mm) wide.

406.7.8.1Openings.Openings in required perimeter curbs and bumpers shall be permitted only for drainage, for motor vehicle entrances and exits, and for pedestrian entrances and exits. The width of an opening for motor vehicle access shall not exceed the length of the curb cut, not including the lengths of the splays. When an opening for pedestrian access is adjacent to a motor vehicle access opening, the two openings shall be separated by a permanent and substantial post. In no case shall any pedestrian entrance or exit exceed 5 feet (1524 mm) in width.

406.7.9 Accessory uses and occupancies. Parking lot offices, attendant shelters, storage facilities, and similar structures used in conjunction with open parking lots may be provided as an accessory use and shall comply with the applicable code provisions. Such accessory structures may be constructed of combustible materials subject to the limitations of Section D105.1 of Appendix D.

406.7.9.1 Motor fuel-dispensing facilities. Motor fuel-dispensing facilities, accessory to open parking lots, shall comply with the requirements of Section 406.5 of this code and the New York City Fire Code. Motor fuel pumps shall be located at least 30 feet (9144 mm) from any parking space or interior lot line.

406.7.10 Special provisions applicable to large open parking lots. Open parking lots storing ten or more motor vehicles shall also be subject to the special provisions of this section.

406.7.10.1 Curbs and bumpers. Bumpers shall be situated not less than 1 foot (305 mm) from the perimeter edge of the open parking lot where vehicles are parked parallel to such perimeter edge, and not less than 4 feet (1219 mm) from the perimeter edge where vehicles are parked perpendicular to such perimeter edge. Openings shall be limited as provided for in Section 406.7.8.1.

Exception: A steel guardrail or other substantial barrier designed in accordance with the provisions of Section 1607.7.3, that will prevent any part of a vehicle from extending across a property line, may be accepted in lieu of bumpers.

406.7.10.2 Screen enclosures. Open parking lots shall provide a perimeter screen enclosure as per this section unless otherwise required by the New York City Zoning Resolution. Such screen enclosure may be constructed as a masonry wall, woven wire fence, iron picket fence, or uniformly painted fence of fire-resistant material at least 4 feet (1219 mm) high, but not more than 8 feet (2438 mm) above finished grade, subject to the limitations of Section 3111. Such enclosures shall completely separate the lot from adjoining premises and public sidewalks. Openings shall be limited as provided for in Section 406.7.8.1.

Exception: Screening shall not be required for any portion of the lot adjacent to an existing wall located at the lot line.

406.7.10.3 Illumination. Open parking lots operating between 6 p.m. and 6 a.m. shall be adequately illuminated to a minimum of 1 foot-candle measured at grade level, distributed over the entire area. Illumination provided with reflectors or floodlights shall be arranged such that the illumination is directed downward and away from adjacent premises.

406.7.10.4 Fire fighter aisles. In any open parking lot, one or more aisles, at least 24 inches (610 mm) in width, shall be provided to permit access by fire fighting personnel to all parts of the garage or lot. There shall not be more than three rows of parked motor vehicles between aisles.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

406.2.1 amended L.L. 8/2008 § 76, eff. July 1, 2008.

406.2.3.6 amended L.L. 8/2008 § 76, eff. July 1, 2008.

406.3.4 amended L.L. 8/2008 § 76, eff. July 1, 2008.

406.3.5 amended L.L. 8/2008 § 76, eff. July 1, 2008.

406.6.2 amended L.L. 8/2008 § 76, eff. July 1, 2008.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 407: GROUP I-2

NYC Administrative Code § 28-BC 407

407.1 General.

Occupancies in Group I-2 shall comply with the provisions of this section and other applicable provisions of this code.

407.2 Corridors. Corridors in occupancies in Group I-2 shall be continuous to the exits and separated from other areas in accordance with Section 407.3 except spaces conforming to Sections 407.2.1 through 407.2.4.

407.2.1 Spaces of unlimited area. Waiting areas and similar spaces constructed as required for corridors shall be permitted to be open to a corridor, only where all of the following criteria are met:

1. The spaces are not occupied for patient sleeping units, treatment rooms, hazardous or incidental use areas as defined in Section 508.2.
2. The open space is protected by an automatic fire detection system installed in accordance with Section 907.
3. The corridors onto which the spaces open, in the same smoke compartment, are protected by an automatic fire detection system installed in accordance with Section 907, or the smoke compartment in which the spaces are located is equipped throughout with quick-response sprinklers in accordance with Section 903.3.2.
4. The space is arranged so as not to obstruct access to the required exits.

407.2.2 Nurses' stations. Spaces for doctors' and nurses' charting, communications and related clerical areas shall be permitted to be open to the corridor, when such spaces are constructed as required for corridors.

407.2.3 Mental health treatment areas. Areas wherein mental health patients who are not capable of self-preservation are housed, or group meeting or multipurpose therapeutic spaces other than incidental use areas as defined in Section 508.2, under continuous supervision by facility staff, shall be permitted to be open to the corridor, where the following criteria are met:

1. Each area does not exceed 1,500 square feet (140 m²).
2. The area is located to permit supervision by the facility staff.
3. The area is arranged so as not to obstruct any access to the required exits.
4. The area is equipped with an automatic fire detection system installed in accordance with Section 907.2.
5. Not more than one such space is permitted in any one smoke compartment.
6. The walls and ceilings of the space are constructed as required for corridors.

407.2.4 Gift shops. Gift shops less than 500 square feet (46 m²) in area shall be permitted to be open to the corridor provided the gift shop and storage areas are fully sprinklered and storage areas are protected in accordance with Section 508.2.

407.3 Corridor walls. Corridor walls shall be constructed as smoke partitions.

407.3.1 Corridor doors. Corridor doors, other than those in a wall required to be rated by Section 508.2 or for the enclosure of a vertical opening or an exit, shall not have a required fire protection rating and shall not be required to be equipped with self-closing or automatic-closing devices, but shall provide an effective barrier to limit the transfer of smoke and shall be equipped with positive latching. Roller latches are not permitted. Other doors shall conform to Section 715.3.

407.3.2 Locking devices. Locking devices that restrict access to the patient room from the corridor, and that are operable only by staff from the corridor side, shall not restrict the means of egress from the patient room except for patient rooms in mental health facilities.

407.4 Smoke barriers. Smoke barriers shall be provided to subdivide every story used by patients for sleeping or treatment and to divide other stories with an occupant load of 50 or more persons, into at least two smoke compartments. Such stories shall be divided into smoke compartments with an area of not more than 22,500 square feet (2090 m²) and the travel distance from any point in a smoke compartment to a smoke barrier door shall not exceed 200 feet (60 960 mm). The smoke barrier shall be in accordance with Section 709.

407.4.1 Refuge area. At least 30 net square feet (2.8 m²) per patient shall be provided within the aggregate area of corridors, patient rooms, treatment rooms, lounge or dining areas and other low-hazard areas on each side of each smoke barrier. On floors not housing patients confined to a bed or litter, at least 6 net square feet (0.56 m²) per occupant shall be provided on each side of each smoke barrier for the total number of occupants in adjoining smoke compartments.

407.4.2 Independent egress. A means of egress shall be provided from each smoke compartment created by smoke barriers without having to return through the smoke compartment from which means of egress originated.

407.5 Automatic sprinkler system. Smoke compartments containing patient sleeping units shall be equipped throughout with an automatic fire sprinkler system in accordance with Section 903.3.1.1. The smoke compartments shall be equipped with approved quick-response or residential sprinklers in accordance with Section 903.3.2.

407.6 Automatic fire detection. Corridors in nursing homes (both intermediate-care and skilled nursing facilities), detoxification facilities and spaces permitted to be open to corridors by Section 407.2 shall be protected by an automatic fire detection system installed in accordance with Section 907.

Exceptions:

1. Corridor smoke detection is not required where patient sleeping units are provided with smoke detectors that comply with UL 268. Such detectors shall provide a visual display on the corridor side of each patient sleeping unit and an audible and visual alarm at the nursing station attending each unit.

2. Corridor smoke detection is not required where patient sleeping unit doors are equipped with automatic door-closing devices with integral smoke detectors on the unit sides installed in accordance with their listing, provided that the integral detectors perform the required alerting function.

407.7Secured yards.Grounds are permitted to be fenced and gates therein are permitted to be equipped with locks, provided that safe dispersal areas having 30 net square feet (2.8 m²) for bed and litter patients and 6 net square feet (0.56 m²) for ambulatory patients and other occupants are located between the building and the fence. Such provided safe dispersal areas shall notbe located less than 50 feet (15 240 mm) from the building they serve.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

407.2.1 amended L.L. 8/2008 § 77, eff. July 1, 2008.

407.2.3 amended L.L. 8/2008 § 77, eff. July 1, 2008.

407.2.4 amended L.L. 8/2008 § 77, eff. July 1, 2008.

407.3.1 amended L.L. 8/2008 § 77, eff. July 1, 2008.



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Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 408: GROUP I-3

NYC Administrative Code § 28-BC 408

408.1 General.

Occupancies in Group I-3 shall comply with the provisions of this section and other applicable provisions of this code (see Section 308.4).

408.1.1Occupancy conditions.Buildings of Group I-3 shall be classified as one of the occupancy conditions indicated in Sections 408.1.1.1 through 408.1.1.5.

408.1.1.1Condition 1.This occupancy condition shall include buildings in which free movement is allowed from sleeping areas, and other spaces where access or occupancy is permitted, to the exterior via means of egress without restraint. A Condition 1 facility is permitted to be constructed as Group R.

408.1.1.2Condition 2.This occupancy condition shall include buildings in which free movement is allowed from sleeping areas and any other occupied smoke compartment to one or more other smoke compartments. Egress to the exterior is impeded by locked exits and exit is not under an occupant's control.

408.1.1.3Condition 3.This occupancy condition shall include buildings in which free movement is allowed within individual smoke compartments, such as within a residential unit comprised of individual sleeping unit(s) and/or group activity spaces, where egress is impeded by remote-controlled door release, leading by means of egress from such a smoke compartment to another smoke compartment.

408.1.1.4Condition 4.This occupancy condition shall include buildings in which free movement is restricted from an occupied space. Remote-controlled release is provided to permit movement from sleeping units, activity spaces and other occupied areas within the smoke compartment to other smoke compartments and egress to the outside is impeded by locked exit and remote door release.

408.1.1.5Condition 5.This occupancy condition shall include buildings in which free movement is restricted from

an occupied space. Staff-controlled manual release is provided to permit movement from sleeping units, activity spaces and other occupied areas within the smoke compartment to other smoke compartments.

408.2Mixed occupancies.Portions of buildings with an occupancy in Group I-3 that are classified as a different occupancy shall meet the applicable requirements of this code for such occupancies. Where security operations necessitate the locking of required means of egress, provisions shall be made for the release of occupants at all times. Means of egress from detention and correctional occupancies that traverse other use areas shall, as a minimum, conform to requirements for detention and correctional occupancies.

Exception: It is permissible to exit through a horizontal exit into other contiguous occupancies that do not conform to detention and correctional occupancy egress provisions but that do comply with requirements set forth in the appropriate occupancy, as long as the occupancy is not a high-hazard use.

408.3Means of egress.Except as modified or as provided for in this section, the provisions of Chapter 10 shall apply.

408.3.1Door width.Doors to resident sleeping units shall have a clear width of not less than 28 inches (711 mm).

408.3.2Sliding doors.Where doors in a means of egress are of the horizontal-sliding type, the force to slide the door to its fully open position shall not exceed 50 pounds (220 N) with a perpendicular force against the door of 50 pounds (220 N).

408.3.3Spiral stairs.Spiral stairs that conform to the requirements of Section 1009.9 are permitted for access to and between staff locations.

408.3.4Exit discharge.Exits are permitted to discharge into a fenced or walled courtyard. Enclosed yards or courts shall be of a size to accommodate all occupants, a minimum of 50 feet (15 240 mm) from the building with a net area of 15 square feet (1.4 m²) per person.

408.3.5Sallyports.A sallyport shall be permitted in a means of egress where there are provisions for continuous and unobstructed passage through the sallyport during an emergency egress condition.

408.3.6Vertical exit enclosures.One of the required vertical exit enclosures in each building shall be permitted to have glazing installed in doors and interior walls at each landing level providing access to the enclosure, provided that the following conditions are met:

1. The vertical exit enclosure shall not serve more than four floor levels.
2. Vertical exit enclosure doors shall not be less than 3/4-hour fire doors complying with Section 715.3
3. The total area of glazing at each floor level shall not exceed 5,000 square inches (3.23 m²) and individual panels of glazing shall not exceed 1,296 square inches (0.84 m²).
4. The glazing shall be protected on both sides by an automatic fire sprinkler system. The sprinkler system shall be designed to wet completely the entire surface of any glazing affected by fire when actuated.
5. The glazing shall be in a gasketed frame and installed in such a manner that the framing system will deflect without breaking (loading) the glass before the sprinkler system operates.
6. Obstructions, such as curtain rods, drapery traverse rods, curtains, drapes or similar materials shall not be installed between the automatic sprinklers and the glazing.

408.4Locks.Egress doors are permitted to be locked in accordance with the applicable use condition. Doors from an

area of refuge to the exterior are permitted to be locked with a key in lieu of locking methods described in Section 408.4.1. The keys to unlock the exterior doors shall be available at all times and the locks shall be operable from both sides of the door.

408.4.1 Remote release. Remote release of locks on doors in a means of egress shall be provided with reliable means of operation, remote from the resident living areas, to release locks on all required doors. In Occupancy Conditions 3 or 4, the arrangement, accessibility and security of the release mechanism(s) required for egress shall be such that with the minimum available staff at any time, the lock mechanisms are capable of being released within 2 minutes.

Exception: Provisions for remote locking and unlocking of occupied rooms in Occupancy Condition 4 are not required provided that not more than 10 locks are necessary to be unlocked in order to move occupants from one smoke compartment to a refuge area within 3 minutes. The opening of necessary locks shall be accomplished with not more than two separate keys.

408.4.2 Power-operated doors and locks. Power-operated sliding doors or power-operated locks for swinging doors shall be operable by a manual release mechanism at the door, and either emergency power or a remote mechanical operating release shall be provided.

Exception: Emergency power is not required in facilities with 10 locks or less complying with the exception to Section 408.4.1.

408.4.3 Redundant operation. Remote release, mechanically operated sliding doors or remote release, mechanically operated locks shall be provided with a mechanically operated release mechanism at each door, or shall be provided with a redundant remote release control.

408.4.4 Relock capability. Doors remotely unlocked under emergency conditions shall not automatically relock when closed unless specific action is taken at the remote location to enable doors to relock.

408.5 Vertical openings. Vertical openings shall be enclosed in accordance with Section 707.

Exception: A floor opening between floor levels of residential housing areas is permitted without enclosure protection between the levels, provided that both of the following conditions are met:

1. The entire normally occupied areas so interconnected are open and unobstructed so as to enable observation of the areas by supervisory personnel.
2. Means of egress capacity is sufficient to provide simultaneous egress for all occupants from all interconnected levels and areas.

The height difference between the highest and lowest finished floor levels shall not exceed 23 feet (7010 mm). Each story, considered separately, has at least one-half of its individual required means of egress capacity provided by exits leading directly out of that story without traversing to another story within the interconnected area.

408.6 Smoke barrier. Occupancies in Group I-3 shall have smoke barriers complying with Section 709 to divide every story occupied by residents for sleeping, or any other story having an occupant load of 50 or more persons, into at least two smoke compartments.

Exception: Spaces having direct exit to one of the following, provided that the locking arrangement of the doors involved complies with the requirements for doors at the compartment barrier for the use condition involved:

1. A public way.
2. A building separated from the resident housing area by a 2-hour fire-resistance-rated assembly or 50 feet (15 240

mm) of open space.

3. A secured yard or court having a holding space 50 feet (15 240 mm) from the housing area that provides 6 square feet (0.56 m²) or more of refuge area per occupant, including residents, staff and visitors.

408.6.1Smoke compartments.The maximum number of residents in any smoke compartment shall be 200. The travel distance to a door in a smoke barrier from any room door required as exit access shall not exceed 150 feet (45 720 mm). The travel distance to a door in a smoke barrier from any point in a room shall not exceed 200 feet (60 960 mm).

408.6.2Refuge area.At least 6 net square feet (0.56 m²) per occupant shall be provided on each side of each smoke barrier for the total number of occupants in adjoining smoke compartments. This space shall be readily available wherever the occupants are moved across the smoke barrier in a fire emergency.

408.6.3Independent egress.A means of egress shall be provided from each smoke compartment created by smoke barriers without having to return through the smoke compartment from which means of egress originates.

408.7Subdivision of resident housing areas.Sleeping areas and any contiguous day room, group activity space or other common spaces where residents are housed shall be separated from other spaces in accordance with Sections 408.7.1 through 408.7.4.

408.7.1Occupancy Conditions 3 and 4.Each sleeping area in Occupancy Conditions 3 and 4 shall be separated from the adjacent common spaces by a smoke-tight partition where the travel distance from the sleeping area through the common space to the exit access corridor exceeds 50 feet (15 240 mm).

408.7.2Occupancy Condition 5.Each sleeping area in Occupancy Condition 5 shall be separated from adjacent sleeping areas, corridors and common spaces by a smoke-tight partition. Additionally, common spaces shall be separated from the exit access corridor by a smoke-tight partition.

408.7.3Openings in room face.The aggregate area of openings in a solid sleeping room face in Occupancy Conditions 2, 3, 4 and 5 shall not exceed 120 square inches (77 419 mm²). The aggregate area shall include all openings including door undercuts, food passes and grilles. Openings shall be not more than 36 inches (914 mm) above the floor. In Occupancy Condition 5, the openings shall be closeable from the room side.

408.7.4Smoke-tight doors.Doors in openings in partitions required to be smoke tight by Section 408.7 shall be substantial doors, of construction that will resist the passage of smoke. Latches and door closures are not required on cell doors.

408.8Windowless buildings.For the purposes of this section, a windowless building or portion of a building is one with nonopenable windows, windows not readily breakable or without windows. Windowless buildings shall be provided with an engineered smoke control system to provide ventilation (mechanical or natural) in accordance with Section 909 for each windowless smoke compartment.



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Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 409: MOTION PICTURE PROJECTION ROOMS

NYC Administrative Code § 28-BC 409

409.1 General.

The provisions of this section shall apply to rooms in which ribbon-type cellulose acetate or other safety film is utilized in conjunction with electric arc, xenon or other light-source projection equipment that develops hazardous gases, dust or radiation. The projection, use or storage of film having a nitrocellulose base (commonly known as nitrate film) shall not be permitted except under conditions specified in special permits when issued by the Fire Department. Safety film meeting the specification and test standards of NFPA 40 may be projected, used or stored.

409.1.1 Projection room required. Every motion picture machine projecting film as mentioned within the scope of this section shall be enclosed in a projection room. Appurtenant electrical equipment, such as rheostats, transformers and generators, shall be within the projection room or in an adjacent room of equivalent construction.

409.2 Construction of projection rooms. Every projection room shall be of permanent construction consistent with the construction requirements for the type of building in which the projection room is located. Openings are not required to be protected. The room shall have a floor area of not less than 80 square feet (7.44 m²) for a single machine and at least 40 square feet (3.7 m²) for each additional machine. Each motion picture projector, floodlight, spotlight or similar piece of equipment shall have a clear working space of not less than 30 inches by 30 inches (762 mm by 762 mm) on each side and at the rear thereof, but only one such space shall be required between two adjacent projectors. The projection room and the rooms appurtenant thereto shall have a ceiling height of not less than 7 feet 6 inches (2286 mm). The aggregate of openings for projection equipment shall not exceed 25 percent of the area of the wall between the projection room and the auditorium. Openings shall be provided with glass or other approved material, so as to close completely the opening.

409.3 Projection room and equipment ventilation. Ventilation shall be provided in accordance with the New York City Mechanical Code.

409.3.1 Projection room.

409.3.1.1Supply air.Each projection room shall be provided with adequate air supply inlets so arranged as to provide well-distributed air throughout the room. Air inlet ducts shall provide an amount of air equivalent to the amount of air being exhausted by projection equipment. Air is permitted to be taken from the outside; from adjacent spaces within the building, provided the volume and infiltration rate is sufficient; or from the building air-conditioning system, provided it is so arranged as to provide sufficient air when other systems are not in operation.

409.3.1.2Exhaust air.Projection rooms are permitted to be exhausted through the lamp exhaust system. The lamp exhaust system shall be positively interconnected with the lamp so that the lamp will not operate unless there is the required airflow. Exhaust air ducts shall terminate at the exterior of the building in such a location that the exhaust air cannot be readily recirculated into any air supply system. The projection room ventilation system is permitted to also serve appurtenant rooms, such as the generator and rewind rooms.

Each projection machine shall be provided with an exhaust duct that will draw air from each lamp and exhaust it directly to the outside of the building. The lamp exhaust is permitted to serve to exhaust air from the projection room to provide room air circulation. Such ducts shall be of rigid materials, except for a flexible connector approved for the purpose. The projection lamp or projection room exhaust system, or both, is permitted to be combined but shall not be interconnected with any other exhaust or return system, or both, within the building.

409.4Lighting control.Provisions shall be made for control of the auditorium lighting and the means of egress lighting systems of theaters from inside the projection room and from at least one other convenient point in the building.

409.5Miscellaneous equipment.Each projection room shall be provided with rewind and film storage facilities.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 410: STAGES AND PLATFORMS

NYC Administrative Code § 28-BC 410

410.1 Applicability.

The provisions of this section shall apply to all parts of buildings and structures that contain stages or platforms and similar appurtenances as herein defined.

410.2 Definitions. The following words and terms shall, for the purposes of this section and as used elsewhere in this code, have the meanings shown herein.

FLY GALLERY. A raised floor area above a stage from which the movement of scenery and operation of other stage effects are controlled.

GRIDIRON. The structural framing over a stage supporting equipment for hanging or flying scenery and other stage effects.

PINRAIL. A rail on or above a stage through which belaying pins are inserted and to which lines are fastened.

PLATFORM. A raised area within a building used for worship, the presentation of music, plays or other entertainment; the head table for special guests; the raised area for lecturers and speakers; boxing and wrestling rings; theater- in-the-round stages; and similar purposes wherein there are no overhead hanging curtains, drops, scenery or stage effects other than lighting and sound. A temporary platform is one installed for not more than 30 days.

PROSCENIUM WALL. The wall that separates the stage from the auditorium or assembly seating area.

STAGE. A space within a building utilized for entertainment or presentations, which includes overhead hanging curtains, drops, scenery or stage effects other than lighting and sound. Stage area shall be measured to include the entire performance area and adjacent backstage and support areas not separated from the performance area by fire-resistance-rated construction. Stage height shall be measured from the lowest point on the stage floor to the highest point of the roof or floor deck above the stage.

410.3Stages.Stage construction shall comply with Sections 410.3.1 through 410.3.7.

410.3.1Stage construction.Stage floors shall be constructed of materials as required for floors for the type of construction of the building in which such stages are located. Where areas below the stage are used for other occupancies, such stage floor shall be constructed in accordance with the requirements for separated occupancies as per Chapter 5.

Exceptions:

1. Stages of Type IIB or IV construction with a nominal 2-inch (51 mm) wood deck, provided that the stage is separated from other areas in accordance with Section 410.3.4.

2. In all types of construction, the finished floor shall be constructed of wood or approved noncombustible materials. Openings through stage floors shall be equipped with tight-fitting, solid wood trap doors with approved safety locks. The room or space below the stage into which the traps or lifts open shall be completely enclosed by construction having at least the fire-resistance rating required for the stage floor, and such room or space shall not be used as a workshop or storage area. Storage shall not be deemed to include the location in this area of scenery or scenic elements used during a performance. However, no combustible material that has a flame spread rating greater than 25 or that has not been rendered flameproof in accordance with the rules of the Fire Commissioner may be stored in this location at any time.

410.3.1.1Stage height and area.Stage areas shall be measured to include the entire performance area and adjacent backstage and support areas not separated from the performance area by fire-resistance-rated construction. Stage height shall be measured from the lowest point on the stage floor to the highest point of the roof or floor deck above the stage.

410.3.2Galleries, gridirons, catwalks and pinrails.Beams designed only for the attachment of portable or fixed theater equipment, gridirons, galleries and catwalks shall be constructed of noncombustible materials. Floors of fly galleries and catwalks shall be constructed of noncombustible material. These areas shall not be considered to be floors, stories, mezzanines or levels in applying this code.

410.3.3Exterior stage doors.Where protection of openings is required, exterior exit doors shall be protected with fire doors that comply with Section 715. Exterior openings that are located on the stage for means of egress or loading and unloading purposes, and that are likely to be open during occupancy of the theater, shall be constructed with vestibules to prevent air drafts into the auditorium.

410.3.4Proscenium wall.Where the stage height is greater than 50 feet (15 240 mm), all portions of the stage shall be completely separated from the seating area by a proscenium wall with not less than a 2-hour fire-resistance rating extending continuously from the foundation to the roof.

410.3.5Proscenium curtain.The proscenium opening of every stage with a height greater than 50 feet (15 240 mm) shall be provided with a curtain of approved material or an approved water curtain complying with Section 903.3.1.1. The curtain shall be designed and installed to intercept hot gases, flames and smoke, and to prevent a glow from a severe fire on the stage from showing on the auditorium side for a period of 20 minutes. The closing of the curtain from the full open position shall be affected in less than 30 seconds, but the last 8 feet (2438 mm) of travel shall require not less than 5 seconds.

410.3.5.1Activation.The curtain shall be activated by rate-of-rise heat detection installed in accordance with Section 907.10 operating at a rate of temperature rise of 15 to 20(degrees)F per minute (8 to 11(degrees)C per minute), and by an auxiliary manual control.

410.3.5.2Fire test.A sample curtain with a minimum of two vertical seams shall be subjected to the standard fire test specified in ASTM E 119 for a period of 30 minutes. The curtain shall overlap the furnace edges by an amount that

is appropriate to seal the top and sides. The curtain shall have a bottom pocket containing a minimum of 4 pounds per linear foot (58 N/m) of batten. The exposed surface of the curtain shall not glow, and flame or smoke shall not penetrate the curtain during the test period. Unexposed surface temperature and hose stream test requirements are not applicable to the proscenium fire safety curtain test.

410.3.5.3Smoke test.Curtain fabrics shall have a smoke-developed rating of 25 or less when tested in accordance with ASTM E 84.

410.3.5.4Tests.The completed proscenium curtain shall be subjected to operating tests prior to the issuance of a certificate of occupancy.

410.3.6Scenery.All scenery or scenic elements shall be of noncombustible materials, or of materials having a flame-spread rating not exceeding 25, or of materials that have been rendered flameproof in compliance with the rules of the Fire Commissioner. Scenery and scenic elements not complying with the above requirements may be used only when expressly permitted by the Fire Department.

410.3.7Stage ventilation.Emergency ventilation shall be provided for stages larger than 1,000 square feet (93 m²) in floor area, or with a stage height greater than 50 feet (15 240 mm). Such ventilation shall comply with Section 410.3.7.1 or 410.3.7.2.

410.3.7.1Roof vents.Two or more vents constructed to open automatically by approved heat-activated devices and with an aggregate clear opening area of not less than 5 percent of the area of the stage shall be located near the center and above the highest part of the stage area. Supplemental means shall be provided for manual operation of the ventilator. Curbs shall be provided as required for skylights in Section 2610.2. Vents shall be labeled.

410.3.7.2Smoke control.Smoke control in accordance with Section 909 shall be provided to maintain the smoke layer interface not less than 6 feet (1829 mm) above the highest level of the assembly seating or above the top of the proscenium opening where a proscenium wall is provided in compliance with Section 410.3.4.

410.4Platform construction.Permanent platforms shall be constructed of materials as required for the type of construction of the building in which the permanent platform is located. Permanent platforms are permitted to be constructed in accordance with the following:

1. The area below the platform shall be enclosed on all sides with solid construction.
2. Platforms constructed of untreated wood shall not exceed an area of 400 square feet (37 m²). Platforms constructed of fire retardant treated wood shall not exceed an area of 1,200 square feet (111 m²). Platforms constructed of noncombustible materials shall not be limited in area.
3. Where wood is used, the floor of the platform shall be a least 1 inch (25 mm) nominal thickness. Such floor shall be laid on a solid, noncombustible backing, or shall have all spaces between supporting members fire blocked with noncombustible material.

Where the space beneath the permanent platform is used for storage or any other purpose other than equipment, wiring or plumbing, the floor construction shall not be less than 1-hour fire-resistant construction. Where the space beneath the permanent platform is used only for equipment, wiring or plumbing, the underside of the permanent platform need not be protected.

410.4.1Temporary platforms.Platforms installed for a period of not more than 30 days are permitted to be constructed of any materials permitted by the code. The space between the floor and the platform above shall only be used for plumbing and electrical wiring to platform equipment.

410.5Dressing and appurtenant rooms.Dressing and appurtenant rooms shall comply with Sections 410.5.1 through 410.5.4.

410.5.1Separation from stage.Where the stage height is greater than 50 feet (15 240 mm), the stage shall be separated from dressing rooms, scene docks, property rooms, workshops, storerooms and compartments appurtenant to the stage and other parts of the building by a fire barrier wall and horizontal assemblies, or both, with not less than a 2-hour fire-resistance rating with approved opening protectives. For stage heights of 50 feet (15 240 mm) or less, the required stage separation shall be a fire barrier wall and horizontal assemblies, or both, with not less a 1-hour fire-resistance rating with approved opening protectives.

410.5.2Separation from each other.Dressing rooms, scene docks, property rooms, workshops, storerooms and compartments appurtenant to the stage shall be separated from each other by fire barrier wall and horizontal assemblies, or both, with not less than a 1-hour fire-resistance rating with approved opening protectives.

410.5.3Opening protectives.Openings other than to trunk rooms and the necessary doorways at stage level shall not connect such rooms with the stage, and such openings shall be protected with fire door assemblies that comply with Section 715.

410.5.4Stage exits.At least one approved means of egress shall be provided from each side of the stage; and from each side of the space under the stage. At least one means of escape shall be provided from each fly gallery and from the gridiron. A steel ladder, alternating tread stairway or spiral stairway is permitted to be provided from the gridiron to a scuttle in the stage roof.

410.6Automatic sprinkler system.Stages shall be equipped with an automatic fire-extinguishing system in accordance with Chapter 9. The system shall be installed under the roof and gridiron, in the tie and fly galleries and in places behind the proscenium wall of the stage and in dressing rooms, lounges, workshops and storerooms accessory to such stages:

1. Automatic sprinklers shall be placed above all rigging lofts; and above all stage areas, other than those portions of stage areas specifically designated on approved plans as performing areas that do not have rigging lofts above and that are not at any time used for storage purposes. Sprinklers above rigging lofts shall be located so that no gridiron or other obstruction intervenes between the sprinkler heads and the scenery or scenic elements.

2. When any part of a stage is sprinklered in accordance with the provisions of Item 1 of this section, or when rigging lofts are provided, such stage areas and rigging lofts shall be completely separated from audience areas by a deluge sprinkler system designed to form a vertical water curtain, with heads spaced to provide a water density of at least 3 gallons per minute per linear foot. A deluge valve actuated by a "rate of rise system "and" fixed temperature system shall control the water curtain system. The heat actuating devices shall be located on not more than 10 foot (3048 mm) centers around the perimeter of the sprinklered area or as otherwise required for the type of device used to assure operation of the system. In addition to the automatic controls, manual-operating devices shall be located at the voice/alarm communication system required by Section 410.8, and adjacent to at least one exit from the stage. Such exit shall be remote from the voice/alarm communication system.

3. When openings are provided in the stage floor for stage lifts, trap doors or stairs, sprinklers spaced 5 feet (1524 mm) on centers shall be provided around the opening at the ceiling below the stage, and baffles at least 12 inches (305 mm) in depth shall be installed around the perimeter of the opening.

4. All valves controlling sprinkler supplies shall be provided with tamper switches wired to an annunciator panel located at the voice/alarm communication system required by Section 410.8.

5. The operation of any section of the sprinkler system and the deluge system shall activate the emergency ventilating equipment required in Section 410.3.7 and shall be provided with central station supervision in addition to

the required local alarm.

6. The water flow alarm, tamper switches and deluge system equipment shall be provided with central station supervision in addition to the required local alarm.

Exception: Sprinklers are not required under stage areas less than 4 feet (1219 mm) in clear height utilized exclusively for storage of tables and chairs, provided the concealed space is separated from the adjacent spaces by not less than 5/8-inch (15.9 mm) Type X gypsum board.

410.7 Standpipes. Standpipe systems shall be provided in accordance with Section 905.

410.8 Voice/alarm communication system. Stages shall be provided with a voice/alarm communication system in accordance with Section 907.2.1.1.

410.9 Construction in seating areas.

410.9.1 Scenery and scenic elements in seating areas. Scenery or scenic elements may be placed in seating sections if such elements:

1. Are noncombustible, or of materials that have been rendered flameproof in accordance with the rules of the Fire Commissioner, or have a flame spread rating of 25 or less.

2. Are adequately braced or secured.

3. Do not obstruct the required visibility of, or paths of travel to, exit openings.

410.9.2 Platforms or runways in seating areas. Platforms or runways for performances, to accommodate the operation of cameras, electronic equipment, or motion picture projection machines not using carbon-arc or other light source that emits a gaseous discharge may be constructed in seating sections, provided such platforms or runways comply with the requirements of Section 410.4, except Item 1 and Section 410.8.

410.10 Stage lighting. Stage lights shall be placed such that they will not develop temperatures on the surface of any material that will cause that material to ignite, or smoke, or cause its flame proofing to deteriorate.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

410.3.1 amended L.L. 8/2008 § 78, eff. July 1, 2008.



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SECTION BC 411: SPECIAL AMUSEMENT BUILDINGS

NYC Administrative Code § 28-BC 411

411.1 General.

Special amusement buildings having an occupant load of 75 or more shall comply with the requirements for the appropriate Group A occupancy and this section. Amusement buildings having an occupant load of less than 75 shall comply with the requirements for a Group B occupancy and this section.

Exception: Amusement buildings or portions thereof that are without walls or a roof and constructed to prevent the accumulation of smoke. All decorative material shall be non-combustible or composed of flame retardant fabric.

411.2Special amusement building.A special amusement building is any temporary or permanent building or portion thereof that is occupied for amusement, entertainment or educational purposes and that contains a device or system that conveys passengers or provides a walkway along, around or over a course in any direction so arranged that the means of egress path is not readily apparent due to visual or audio distractions or is intentionally confounded or is not readily available because of the nature of the attraction or mode of conveyance through the building or structure.

411.3Automatic fire detection.Special amusement buildings shall be equipped with an automatic fire detection system, in accordance with Section 907.

411.4Automatic sprinkler system.Special amusement buildings shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. Where the special amusement building is temporary, the sprinkler water supply shall be of an approved temporary means.

Exception: Automatic fire sprinklers are not required where the total floor area of a temporary special amusement building is less than 1,000 square feet (93 m²) and the travel distance from any point to an exit is less than 50 feet (15 240 mm).

411.5Alarm.Actuation of a single smoke detector, the automatic sprinkler system or other automatic fire detection

device shall immediately sound an alarm at the building at a constantly attended location from which emergency action can be initiated including the capability of manual initiation of requirements in Section 907.2.11.2.

411.6Emergency voice/alarm communications system.An emergency voice/alarm communications system shall be provided in accordance with Sections 907.2.11 and 907.2.12.2, which is also permitted to serve as a public address system and shall be audible throughout the entire special amusement building.

411.7Exit marking.Exit signs shall be installed at the required exit or exit access doorways of amusement buildings. Approved directional exit markings shall also be provided. Where mirrors, mazes or other designs are utilized that disguise the path of egress travel such that they are not apparent, approved low-level exit signs and directional path markings shall be provided and located not more than 8 inches (203 mm) above the walking surface and on or near the path of egress travel. Such markings shall become visible in an emergency. The directional exit marking shall be activated by the automatic fire detection system and the automatic sprinkler system in accordance with Section 907.2.11.2.

411.8Interior finish.The interior finish shall be Class A in accordance with Section 803.1.



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SECTION BC 412: AIRCRAFT-RELATED OCCUPANCIES

NYC Administrative Code § 28-BC 412

412.1 Reserved.

412.2 Reserved.

412.3 Reserved.

412.4 Reserved.

412.5 Heliports and helistops.

412.5.1 General. Heliports and helistops may be erected on buildings or other locations where they are constructed in accordance with this section.

412.5.2 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

HELIPORT. An area of land or water or a structural surface that is designed or used for the landing and taking off of helicopters, and any appurtenant areas that are designed or used for heliport facilities and operations.

HELISTOP. An area of land or water or a structural surface that is designed or used for the landing or takeoff of helicopters, and any appurtenant areas, but that is not designed or used for fueling, defueling, maintenance, repairs or storage of helicopters.

412.5.3Size. The touchdown or landing area for helicopters of less than 3,500 pounds (1588 kg) shall be a minimum of 20 feet (6096 mm) in length and width. The touchdown area shall be surrounded on all sides by a clear area having a minimum average width at roof level of 15 feet (4572 mm) but with no width less than 5 feet (1524 mm).

412.5.4Design. Helicopter landing areas and the supports thereof on the roof of a building shall be noncombustible construction. Landing areas shall be designed to confine any flammable liquid spillage to the landing area itself and provisions shall be made to drain such spillage away from any exit or stairway serving the helicopter landing area or from a structure housing such exit or stairway. For structural design requirements, see Section 1605.5.

412.5.5Means of egress. The means of egress from heliports and helistops shall comply with the provisions of Chapter 10. Landing areas located on buildings or structures shall have two or more means of egress. For landing platforms or roof areas less than 60 feet (18 288 mm) in length, or less than 2,000 square feet (186 m²) in area, the second means of egress may be a fire escape or ladder leading to the floor below.

412.5.6Rooftop heliports and helistops. Rooftop heliports and helistops shall comply with NFPA 418 and the New York City Fire Code.



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SECTION BC 413: COMBUSTIBLE STORAGE

NYC Administrative Code § 28-BC 413

413.1 General.

Storage of combustible materials in attics, under-floor spaces, concealed spaces, and below-grade storage rooms shall comply with this section.

413.2Attic, under-floor and concealed spaces.Attic, under-floor and concealed spaces used for storage of combustible materials shall be protected on the storage side as required for 1-hour fire-resistant construction. Openings shall be protected by assemblies that are self-closing and are of noncombustible construction or solid wood core not less than 13 inch (45 mm) in thickness.

Exceptions:

1. Areas protected by approved automatic sprinkler systems.
2. Group R-3 and U occupancies.
3. Groups S-1 and S-2 occupancies.

413.3High-piled stock or rack storage.High-piled stock or rack storage in any occupancy group shall comply with the New York City Fire Code.



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SECTION BC 414: HAZARDOUS MATERIALS

NYC Administrative Code § 28-BC 414

414.1 General.

The provisions of this section shall apply to buildings and structures occupied for the manufacturing, processing, dispensing, use or storage of hazardous materials.

414.1.1 Other provisions. Buildings and structures with an occupancy in Group H shall also comply with the applicable provisions of Section 415 and the New York City Fire Code, including, but not limited to, location, installation, and mechanical provisions.

414.1.2 Materials. The safe design of hazardous material occupancies is material dependent. Individual material requirements are also found in Sections 307 and 415, and in the New York City Mechanical Code and the New York City Fire Code.

414.1.2.1 Aerosols. Level 2 and 3 aerosol products shall be stored and displayed in accordance with the New York City Fire Code.

414.1.3 Information required. Separate floor plans shall be submitted for buildings and structures with an occupancy in Group H, identifying the locations of anticipated contents and processes so as to reflect the nature of each occupied portion of every building and structure. A report identifying hazardous materials including, but not limited to, materials representing hazards that are classified in Group H to be stored or used, shall be submitted and the methods of protection from such hazards shall be indicated on the construction documents. The opinion and report shall be prepared by a qualified person, firm or corporation approved by the commissioner and shall be provided without charge to the department.

414.2 Control areas. Control areas shall be those spaces within a building where quantities of hazardous materials not exceeding the maximum quantities allowed by this code are stored, dispensed, used or handled.

414.2.1 Construction requirements. Control areas shall be separated from each other by not less than a 1-hour fire barrier constructed in accordance with Chapter 7.

414.2.2 Number. The maximum number of control areas within a building shall be in accordance with Table 414.2.2. Table 414.2.2 Design and Number of Control Areas

Floor Level Percentage of the Maximum Allowable Quantity Per Control Area^a Number of Control Areas Per Floor^b Fire-Resistance Rating for Fire Barriers in Hours^c Above grade Higher than 9 7-9 6 5 4 3 2 1 5 5 12.5 12.5 12.5 50 75 100 1 2 2 2 2 3 4 2 2 2 2 1 1 1 Below grade 1 2 Lower than 2 75 50 Not Allowed 3 2 Not Allowed 1 1 Not Allowed a. Percentages shall be of the maximum allowable quantity per control area shown in Tables III 307.7(1) and 307.7(2), with all increases allowed in the notes to those tables. b. There shall be a maximum of two control areas per floor in Group M occupancies and in buildings or portions of buildings having Group S occupancies with storage conditions and quantities in accordance with Section 414.2.4.c. Fire barriers shall include walls and floors as necessary to provide separation from other portions of the building.

414.2.3 Separation. The required fire-resistance rating for fire barrier assemblies shall be in accordance with Table 414.2.2. The floor construction of the control area, and the construction supporting the floor of the control area, shall have a minimum 2-hour fire-resistance rating and shall comply with the additional requirements of the New York City Fire Code.

414.2.4 Hazardous material in Group M display and storage areas and in Group S storage areas. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials permitted within a single control area of a Group M or S occupancy or an outdoor control area is permitted to exceed the maximum allowable quantities per control area specified in Tables 307.7(1) and 307.7(2) without classifying the building or use as a Group H occupancy, provided that the materials are displayed and stored in accordance with the New York City Fire Code and quantities do not exceed the maximum allowable specified in Table 414.2.4.

414.2.4.1 Below-grade storage of flammable or combustible mixtures accessory to Group M establishments. Class I liquids shall not be stored in below-grade locations. Storage of Class II and Class III liquids, accessory to retail stores, and partly or completely below grade shall be permitted, provided that such below-grade area is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 and enclosed by fire barriers having a fire-resistance rating of at least 2 hours, constructed in accordance with the construction type of the building. Openings shall be protected by self-closing assemblies having a fire-resistance rating of at least 1 1/2 hours.

Exception: Class IIIB liquids may be stored in below-grade locations that are not provided throughout with an automatic sprinkler system when such liquids are stored in a room that is separated, vertically and horizontally, from surrounding spaces by fire barriers of not less than 2-hour fire-resistance rating and such room is provided with an automatic sprinkler system.

414.3 Ventilation. Rooms, areas or spaces of Group H in which explosive, corrosive, combustible, flammable or highly toxic dusts, mists, fumes, vapors or gases are or may be emitted due to the processing, use, handling or storage of materials shall be mechanically ventilated as required by the New York City Fire Code and the New York City Mechanical Code. Ducts conveying explosives or flammable vapors, fumes or dusts shall extend directly to the exterior of the building without entering other spaces. Exhaust ducts shall not extend into or through ducts and plenums.

Exception: Ducts conveying vapor or fumes having flammable constituents less than 25 percent of their lower flammable limit (LFL) are permitted to pass through other spaces.

Emissions generated at workstations shall be confined to the area in which they are generated as specified in the New York City Fire Code and the New York City Mechanical Code.

The location of supply and exhaust openings shall be in accordance with the New York City Mechanical Code. Exhaust air contaminated by highly toxic material shall be treated in accordance with the New York City Fire Code.

A manual shutoff control for ventilation equipment required by this section shall be provided outside the room adjacent to the principal access door to the room. The switch shall be of the break-glass type and shall be labeled: VENTILATION SYSTEM EMERGENCY SHUTOFF.

414.4Hazardous material systems.Systems involving hazardous materials shall be suitable for the intended application. Controls shall be designed to prevent materials from entering or leaving process or reaction systems at other than the intended time, rate or path. Automatic controls, where provided, shall be designed to be fail safe.

414.5Inside storage, dispensing and use.The inside storage, dispensing and use of hazardous materials in excess of the maximum allowable quantities per control area of Tables 307.7(1) and 307.7(2) shall be in accordance with Sections 414.5.1 through 414.5.5 of this code and the New York City Fire Code.

414.5.1Explosion control.Explosion control shall be provided in accordance with the New York City Fire Code as required by Table 414.5.1 where quantities of hazardous materials specified in that table exceed the maximum allowable quantities in Table 307.7(1) or where a structure, room or space is occupied for purposes involving explosion hazards as required by Section 415 or the New York City Fire Code.

414.5.2Monitor control equipment.Monitor control equipment shall be provided where required by the New York City Fire Code.

414.5.3Automatic fire detection systems.Group H occupancies shall be provided with an automatic fire detection system in accordance with Section 907.2.

414.5.4Emergency power.Where mechanical ventilation, treatment systems, temperature control, alarm, detection or other electrically operated systems are required, such systems shall be provided with an emergency power system in accordance with the New York City Electrical Code.

Exceptions:

1. Storage areas for Class I and II oxidizers.
2. Storage areas for Class III, IV and V organic peroxides.
3. Emergency power for mechanical ventilation, treatment systems and temperature control systems shall not be required where an approved fail-safe engineered system is installed.

414.5.5Spill control, drainage and containment.Rooms, buildings or areas occupied for the storage of solid and liquid hazardous materials shall be provided with a means to control spillage and to contain or drain off spillage and fire protection water discharged in the storage area where required in the New York City Fire Code. The methods of spill control shall be in accordance with the New York City Fire Code.

414.5.6Storage of medical gases.When required by the New York City Fire Code, a one-hour room shall be provided for the storage of medical gases inside of buildings, with the protected openings and ventilation provisions as required by the New York City Fire Code.

414.6Outdoor storage, dispensing and use.The outdoor storage, dispensing and use of hazardous materials shall be in accordance with the New York City Fire Code.

414.6.1Weather protection.Where weather protection is provided for sheltering outdoor hazardous material storage or use areas, such storage or use shall be considered outdoor storage or use, provided that all of the following conditions

are met:

1. Structure supports and walls shall not obstruct more than one side nor more than 25 percent of the perimeter of the storage or use area.

2. The distance from the structure and the structure supports to buildings, lot lines, public ways or means of egress to a public way shall not be less than the distance required for an outside hazardous material storage or use area without weather protection.

3. The overhead structure shall be of approved noncombustible construction with a maximum area of 1,500 square feet (140 m²).

Exception: The increases permitted by Section 506 apply.

414.7Emergency alarms. Emergency alarms for the detection and notification of an emergency condition in Group H occupancies shall be provided as set forth herein.

414.7.1Storage. An approved manual emergency alarm system shall be provided in buildings, rooms or areas used for storage of hazardous materials. Emergency alarm-initiating devices shall be installed outside of each interior exit or exit access door of storage buildings, rooms or areas. Activation of an emergency alarm-initiating device shall sound a local alarm to alert occupants of an emergency situation involving hazardous materials.

414.7.2Dispensing, use and handling. Where hazardous materials having a hazard ranking of 3 or 4 in accordance with NFPA 704 are transported through corridors or exit enclosures, there shall be an emergency telephone system, a local manual alarm station or an approved alarm-initiating device at not more than 150-foot (45 720 mm) intervals and at each exit and exit access doorway throughout the transport route. The signal shall be relayed to an approved central station, or remote supervising station service or constantly attended on-site location and shall also initiate a local audible alarm.

414.7.3Supervision. Emergency alarm systems shall be supervised by an approved central, proprietary or remote station service or shall initiate an audible and visual signal at a constantly attended on-site location.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

Table 414.2.4 Col. head "Maximum . . . area" amended L.L. 8/2008

§ 79, eff. July 1, 2008.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 415: GROUPS H-1, H-2, H-3, H-4 AND H-5

NYC Administrative Code § 28-BC 415

415.1 Scope.

The provisions of this section shall apply to the storage and use of hazardous materials in excess of the maximum allowable quantities per control area listed in Section 307.9. Buildings and structures with an occupancy in Group H shall also comply with the applicable provisions of Section 414 and the New York City Fire Code, including, but not limited to, location and installation provisions.

415.2Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in the code, have the meanings shown herein.

CONTINUOUS GAS-DETECTION SYSTEM. A gas detection system where the analytical instrument is maintained in continuous operation and sampling is performed without interruption. Analysis is allowed to be performed on a cyclical basis at intervals not to exceed 30 minutes.

EMERGENCY CONTROL STATION. An approved location on the premises of a semiconductor fabrication facility staffed by trained personnel that monitor the operation of equipment and systems including alert and alarm signals.

EXHAUSTED ENCLOSURE. A device, typically consisting of a hood equipped with a fan, that serves to capture and exhaust fumes, mist, vapors and gases generated at a workstation or other local environment. An exhausted enclosure does not include a room provided with general ventilation.

FABRICATION AREA. An area within a semiconductor fabrication facility in which processes using hazardous production materials are conducted.

FLAMMABLE VAPORS OR FUMES. The concentration of flammable constituents in air that exceed 25 percent of their lower flammable limit (LFL).

GAS CABINET. A fully enclosed, noncombustible enclosure used to provide an isolated environment for compressed gas containers in storage or use, including any doors and access ports for exchanging containers and accessing pressure-regulating controls.

GAS ROOM. A separately ventilated, fully enclosed room in which only compressed gases and associated equipment and supplies are stored or used.

HAZARDOUS PRODUCTION MATERIAL (HPM). A solid, liquid or gas associated with semiconductor manufacturing that has a degree-of-hazard rating in health, flammability or reactivity of Class 3 or 4 as ranked by NFPA 704 and that is used directly in research, laboratory or production processes that have as their end product materials that are not hazardous.

HPM FLAMMABLE LIQUID. An HPM liquid that is defined as either a Class I flammable liquid or a Class II or Class IIIA combustible liquid.

HPM ROOM. A room used in conjunction with or serving a Group H-5 occupancy, where HPM is stored or used and that is classified as a Group H-2, H-3 or H-4 occupancy.

IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH). The concentration of air-borne contaminants that poses a threat of death, immediate or delayed permanent adverse health effects, or effects that could prevent escape from such an environment as established by the National Institute of Occupational Safety and Health (NIOSH) based on both toxicity and flammability. It generally is expressed in parts per million by volume (ppm v/v) or milligrams per cubic meter (mg/m³). If adequate data do not exist for precise establishment of IDLH concentrations, an independent certified industrial hygienist, industrial toxicologist, appropriate regulatory agency or other source approved by the Fire Commissioner shall make such determination.

LIQUID. A material that has a melting point that is equal to or less than 68(degrees)F (20(degrees)C) and a boiling point that is greater than 68(degrees)F (20(degrees)C) at 14.7 pounds per square inch absolute (psia) (101 kPa). When not otherwise identified, the term "liquid" includes both flammable and combustible liquids.

LIQUID STORAGE ROOM. A room classified as a Group H-3 occupancy used for the storage of flammable or combustible liquids in an unopened condition.

LIQUID USE, DISPENSING AND MIXING ROOMS. Rooms in which Class I, II and IIIA flammable or combustible liquids are used, dispensed or mixed in open containers.

LOWER FLAMMABLE LIMIT (LFL). The minimum concentration of vapor in air at which propagation of flame will occur in the presence of an ignition source. The LFL is sometimes referred to as "LEL" or "lower explosive limit."

NORMAL TEMPERATURE AND PRESSURE (NTP). A temperature of 70(degrees)F (21(degrees)C) and a pressure of 1 atmosphere [14.7 psia (101 kPa)].

SERVICE CORRIDOR. A fully enclosed passage used for transporting HPM and other purposes, but not as a required means of egress.

SOLID. A material that has a melting point, decomposes or sublimates at a temperature greater than 68(degrees)F (20(degrees)C).

WORKSTATION. A defined space within a fabrication area in which a specific function, laboratory procedure or research activity relating to semiconductor manufacture is conducted. A workstation may include equipment using HPM, hazardous materials storage cabinets, flammable liquid storage cabinets or gas cabinets, ventilation equipment, fire protection devices, detection devices, and electrical devices.

415.3 Location on property. Group H shall be located on property in accordance with the other provisions of this chapter. In Group H-2 or H-3, not less than 25 percent of the perimeter wall of the occupancy shall be an exterior wall.

Exceptions:

1. Liquid use, dispensing and mixing rooms having a floor area of not more than 500 square feet (47 m²) need not be located on the outer perimeter of the building where they are in accordance with the New York City Fire Code and NFPA 30.

2. Liquid storage rooms having a floor area of not more than 1,000 square feet (93 m²) need not be located on the outer perimeter where they are in accordance with the New York City Fire Code and NFPA 30.

3. Spray paint booths that comply with the New York City Fire Code need not be located on the outer perimeter.

415.3.1 Group H minimum distance to lot lines. Regardless of any other provisions, buildings containing Group H occupancies shall be set back a minimum distance from lot lines as set forth in Items 1 through 4 below. Distances shall be measured from the walls enclosing the occupancy to lot lines, including those on a public way. Distances to assumed property lines drawn for the purposes of determination of exterior wall and opening protection are not to be used to establish the minimum distance for separation of buildings on sites where explosives are manufactured or used when separation is provided in accordance with the quantity distance tables specified for explosive materials in the New York City Fire Code.

1. Group H-1. Not less than 75 feet (22 860 mm) and not less than required by the New York City Fire Code.

Exceptions:

1. Fireworks manufacturing buildings separated in accordance with NFPA 1124.

2. Buildings containing the following materials when separated in accordance with Table 415.3.1:

2.1. Organic peroxides, unclassified detonable.

2.2. Unstable reactive materials Class 4.

2.3. Unstable reactive materials, Class 3 detonable.

2.4. Detonable pyrophoric materials.

2. Group H-2. Not less than 30 feet (9144 mm) where the area of the occupancy exceeds 1,000 square feet (93 m²), and it is not required to be located in a detached building.

3. Groups H-2 and H-3. Not less than 50 feet (15 240 mm) where a detached building is required (see Table 415.3.2).

4. Groups H-2 and H-3. Occupancies containing materials with explosive characteristics shall be separated as required by the New York City Fire Code. Where separations are not specified, the distances required shall not be less than the distances required by Table 415.3.1.

415.3.2 Group H-1 and H-2 or H-3 detached buildings. Where a detached building is required by Table 415.3.2, there are no requirements for wall and opening protection based on location on property.

415.4 Special provisions for Group H-1 occupancies. Group H-1 occupancies shall be in buildings used for no other purpose, shall not exceed one story in height and be without basement, crawl spaces or other under-floor spaces. Roofs

shall be of lightweight construction with suitable thermal insulation to prevent sensitive material from reaching its decomposition temperature. Group H-1 occupancies containing materials that are in themselves both physical and health hazards in quantities exceeding the maximum allowable quantities per control area in Table 307.7(2) shall comply with requirements for both Group H-1 and H-4 occupancies.

415.4.1 Floors in storage rooms. Floors in storage areas for organic peroxides, pyrophoric materials and unstable (reactive) materials shall be of liquid-tight, noncombustible construction.

415.5 Special provisions for Group H-2 and H-3 occupancies. Group H-2 and H-3 occupancies containing quantities of hazardous materials in excess of those set forth in Table 415.3.2 shall be in buildings used for no other purpose, shall not exceed one story in height and shall be without basements, crawl spaces or other under-floor spaces. Group H-2 and H-3 occupancies containing water-reactive materials shall be resistant to water penetration. Piping for conveying liquids shall not be over or through areas containing water reactives, unless isolated by approved liquid-tight construction.

Exception: Fire protection piping.

415.5.1 Floors in storage rooms. Floors in storage areas for organic peroxides, oxidizers, pyrophoric materials, unstable (reactive) materials and water-reactive solids and liquids shall be of liquid-tight, noncombustible construction.

415.5.2 Waterproof room. Rooms or areas used for the storage of water-reactive solids and liquids shall be constructed in a manner that resists the penetration of water through the use of waterproof materials. Piping carrying water for other than approved automatic fire sprinkler systems shall not be within such rooms or areas.

415.6 Smoke and heat venting. Smoke and heat vents complying with Section 910 shall be installed in the following locations:

1. In occupancies classified as Group H-2 or H-3, any of which are over 15,000 square feet (1394 m²) in a single floor area.

Exception: Buildings of noncombustible construction containing only noncombustible materials.

2. In areas of buildings in Group H used for storing Class 2, 3 and 4 liquid and solid oxidizers, Class 1 and unclassified detonable organic peroxides, unstable (reactive) materials, or Class 2 or 3 water-reactive materials as required for a high hazard commodity classification as defined in the New York City Fire Code.

415.7 Group H-2. Occupancies in Group H-2 shall be constructed in accordance with Sections 415.7.1 through 415.7.4 and the New York City Fire Code.

415.7.1 Combustible dusts, grain processing and storage. The provisions of Sections 415.7.1.1 through 415.7.1.5 shall apply to buildings in which materials that produce combustible dusts are stored or handled. Buildings that store or handle combustible dusts shall comply with the applicable provisions of NFPA 61, NFPA 69, NFPA 120, NFPA 484, NFPA 651, NFPA 654, NFPA 655, NFPA 664 and NFPA 85, and the New York City Fire Code.

415.7.1.1 Type of construction and height exceptions. Buildings shall be constructed in compliance with the height and area limitations of Table 503 for Group H-2; except that where erected of Type I or II construction, the heights and areas of grain elevators and similar structures shall be unlimited, and where of Type IV construction, the maximum height shall be 65 feet (19 812 mm) and except further that, in isolated areas, the maximum height of Type IV structures shall be increased to 85 feet (25 908 mm).

415.7.1.2 Grinding rooms. Every room or space occupied for grinding or other operations that produce combustible dusts shall be enclosed with fire barriers and horizontal assemblies or both that have not less than a 2-hour fire-resistance rating where the area is not more than 3,000 square feet (279 m²), and not less than a 4-hour

fire-resistance rating where the area is greater than 3,000 square feet (279 m²).

415.7.1.3Conveyors.Conveyors, chutes, piping and similar equipment passing through the enclosures of rooms or spaces shall be constructed dirt tight and vapor tight, and be of approved noncombustible materials complying with Chapter 30.

415.7.1.4Explosion control.Explosion control shall be provided as specified in the New York City Fire Code, or spaces shall be equipped with the equivalent mechanical ventilation complying with the New York City Mechanical Code.

415.7.1.5Grain elevators.Grain elevators, malt houses and buildings for similar occupancies shall not be located within 30 feet (9144 mm) of interior lot lines or structures on the same lot, except where erected along a railroad right-of-way.

415.7.1.6Coal pockets.Coal pockets located less than 30 feet (9144 mm) from interior lot lines or from structures on the same lot shall be constructed of not less than Type IB construction. Where more than 30 feet (9144 mm) from interior lot lines, or where erected along a railroad right-of-way, the minimum type of construction of such structures not more than 65 feet (19 812 mm) in height shall be Type IV.

415.7.2Flammable and combustible liquids.The storage, handling, processing and transporting of flammable and combustible liquids shall be in accordance with this section, the New York City Mechanical Code and the New York City Fire Code.

415.7.2.1Mixed occupancies.Where the storage tank area is located in a building of two or more occupancies, and the quantity of liquid exceeds the maximum allowable quantity for one control area, the use shall be completely separated from adjacent fire areas in accordance with the requirements of Section 508.3.3.

415.7.2.1.1Height exception.Where storage tanks are located within only a single-story building, the height limitation of Section 503 shall not apply for Group H.

415.7.2.2Tank protection.Storage tanks shall be noncombustible and protected from physical damage. A fire barrier wall or horizontal assemblies or both around the storage tank(s) shall be permitted as the method of protection from physical damage.

415.7.2.3Tanks.Storage tanks shall be approved tanks conforming to the requirements of the New York City Fire Code.

415.7.2.4Suppression.Group H shall be equipped throughout with an approved automatic sprinkler system, installed in accordance with Section 903.

415.7.2.5Leakage containment.A liquid-tight containment area compatible with the stored liquid shall be provided. The method of spill control, drainage control and secondary containment shall be in accordance with the New York City Fire Code.

Exception: Rooms where only double-wall storage tanks conforming to Section 415.7.2.3 are used to store Class I, II and IIIA flammable and combustible liquids shall not be required to have a leakage containment area.

415.7.2.6Leakage alarm.An approved automatic alarm shall be provided to indicate a leak in a storage tank and room. The alarm shall sound an audible signal, 15 dBa above the ambient sound level, at every point of entry into the room in which the leaking storage tank is located. An approved sign shall be posted on every entry door to the tank storage room indicating the potential hazard of the interior room environment, or the sign shall state: WARNING, WHEN ALARM SOUNDS, THE ENVIRONMENT WITHIN THE ROOM MAY BE HAZARDOUS. The leakage

alarm shall also be supervised in accordance with Chapter 9 to transmit a trouble signal.

415.7.2.7 Tank vent. Storage tank vents for Class I, II or IIIA liquids shall terminate to the outdoor air in accordance with the New York City Fire Code.

415.7.2.8 Room ventilation. Storage tank areas storing Class I, II or IIIA liquids shall be provided with mechanical ventilation. The mechanical ventilation system shall be in accordance with the New York City Mechanical Code and the New York City Fire Code.

415.7.2.9 Explosion venting. Where Class I liquids are being stored, explosion venting shall be provided in accordance with the New York City Fire Code.

415.7.2.10 Tank openings other than vents. Tank openings other than vents from tanks inside buildings shall be designed to ensure that liquids or vapor concentrations are not released inside the building.

415.7.3 Liquefied petroleum gas-distribution facilities. Propane, butane, propylene, butylene and other liquefied petroleum gas-distribution facilities shall conform to the provisions of the New York City Fire Code.

415.7.4 Dry cleaning plants. The construction and installation of dry cleaning plants shall be in accordance with the requirements of this code, the New York City Mechanical Code, the New York City Plumbing Code and NFPA 32. Dry cleaning solvents and systems shall be classified in accordance with the New York City Fire Code.

415.8 Groups H-3 and H-4. Groups H-3 and H-4 shall be constructed in accordance with the applicable provisions of this code and the New York City Fire Code.

415.8.1 Gas rooms. When gas rooms are provided, such rooms shall be separated from other areas by not less than a 1-hour fire barrier.

415.8.2 Floors in storage rooms. Floors in storage areas for corrosive liquids and highly toxic or toxic materials shall be of liquid-tight, noncombustible construction.

415.8.3 Separation-highly toxic solids and liquids. Highly toxic solids and liquids not stored in approved hazardous materials storage cabinets shall be isolated from other hazardous materials storage by construction having a 1-hour fire-resistance rating.

415.9 Group H-5.

415.9.1 General. In addition to the requirements set forth elsewhere in this code, Group H-5 shall comply with the provisions of Section 415.9 and the New York City Fire Code, including, but not limited to, automatic sprinkler protection for workstations, gas cabinets, exhausted enclosures, pass-throughs in exit access corridors, and exhaust ducts.

415.9.2 Fabrication areas.

415.9.2.1 Hazardous materials in fabrication areas.

415.9.2.1.1 Aggregate quantities. The aggregate quantities of hazardous materials stored and used in a single fabrication area shall not exceed the quantities set forth in Table 415.9.2.1.1.

Exception: The quantity limitations for any hazard category in Table 415.9.2.1.1 shall not apply where the fabrication area contains quantities of hazardous materials not exceeding the maximum allowable quantities per control

area established by Tables 307.7(1) and 307.7(2).

415.9.2.1.2 Hazardous production materials. The maximum quantities of hazardous production materials stored in a single fabrication area shall not exceed the maximum allowable quantities per control area established by Tables 307.7(1) and 307.7(2).

415.9.2.2 Separation. Fabrication areas, whose sizes are limited by the quantity of hazardous materials allowed by Table 415.9.2.1.1, shall be separated from each other, from exit access corridors, and from other parts of the building by not less than 1-hour fire barriers.

Exceptions:

1. Doors within such fire barrier walls, including doors to corridors, shall be only self-closing fire assemblies having a fire-protection rating of not less than 3/4 hour.

2. Windows between fabrication areas and exit access corridors are permitted to be fixed glazing listed and labeled for a fire protection rating of at least 3/4 hour in accordance with Section 715.

415.9.2.3 Location of occupied levels. Occupied levels of fabrication areas shall be located at or above the first story above grade plane.

415.9.2.4 Floors. Except for surfacing, floors within fabrication areas shall be of noncombustible construction. Openings through floors of fabrication areas are permitted to be unprotected where the interconnected levels are used solely for mechanical equipment directly related to such fabrication areas (see also Section 415.9.2.5). Floors forming a part of an occupancy separation shall be liquid tight.

415.9.2.5 Shafts and openings through floors. Elevator shafts, vent shafts and other openings through floors shall be enclosed when required by Section 707. Mechanical, duct and piping penetrations within a fabrication area shall not extend through more than two floors. The annular space around penetrations for cables, cable trays, tubing, piping, conduit or ducts shall be sealed at the floor level to restrict the movement of air. The fabrication area, including the areas through which the ductwork and piping extend, shall be considered a single conditioned environment.

415.9.2.6 Ventilation. Mechanical exhaust ventilation shall be provided throughout the fabrication area at the rate of not less than 1 cubic foot per minute per square foot (0.044 L/S/m²) of floor area. The exhaust air duct system of one fabrication area shall not connect to another duct system outside that fabrication area within the building.

A ventilation system shall be provided to capture and exhaust fumes and vapors at workstations.

Two or more operations at a workstation shall not be connected to the same exhaust system where either one or the combination of the substances removed could constitute a fire, explosion or hazardous chemical reaction within the exhaust duct system.

Exhaust ducts penetrating occupancy separations shall be contained in a shaft of equivalent fire-resistance construction. Exhaust ducts shall not penetrate firewalls.

Fire dampers shall not be installed in exhaust ducts.

415.9.2.7 Transporting hazardous production materials to fabrication areas. Hazardous production materials shall be transported to fabrication areas through enclosed piping or tubing systems that comply with Section 415.9.6.1, through service corridors complying with Section 415.9.4, or in exit access corridors as permitted in the exception to Section 415.9.3. The handling or transporting of hazardous production materials within service corridors shall comply with the New York City Fire Code.

415.9.2.8Electrical.

415.9.2.8.1General.Electrical equipment and devices within the fabrication area shall comply with the New York City Electrical Code. The requirements for hazardous locations need not be applied where the average air change is at least four times that set forth in Section 415.9.2.6 and where the number of air changes at any location is not less than three times that required by Section 415.9.2.6. The use of recirculated air shall be permitted.

415.9.2.8.2Workstations.Workstations shall not be energized without adequate exhaust ventilation. See Section 415.9.2.6 for workstation exhaust ventilation requirements.

415.9.3Exit access corridors.Exit access corridors shall comply with Chapter 10 and shall be separated from fabrication areas as specified in Section 415.9.2.2. Exit access corridors shall not contain HPM and shall not be used for transporting such materials, except through closed piping systems as provided in Section 415.9.6.3.

Exception: Where existing fabrication areas are altered or modified, HPM is allowed to be transported in existing exit access corridors, subject to the following conditions:

1. Corridors. Exit access corridors adjacent to the fabrication area where the alteration work is to be done shall comply with Section 1016 for a length determined as follows:

1.1. The length of the common wall of the corridor and the fabrication area; and

1.2. For the distance along the exit access corridor to the point of entry of HPM into the exit access corridor serving that fabrication area.

2. Emergency alarm system. There shall be an emergency telephone system, a local manual alarm station or other approved alarm-initiating device within exit access corridors at not more than 150-foot (45 720 mm) intervals and at each exit and exit access doorway. The signal shall be relayed to an approved central, proprietary or remote station service or the emergency control station and shall also initiate a local audible alarm.

3. Pass-throughs. Self-closing doors having a fire-protection rating of not less than 1 hour shall separate pass-throughs from existing exit access corridors. Pass-throughs shall be constructed as required for the exit access corridors, and protected by an approved automatic fire-extinguishing system.

415.9.4Service corridors.

415.9.4.1Occupancy.Service corridors shall be classified as Group H-5.

415.9.4.2Use conditions.Service corridors shall be separated from exit access corridors as required by Section 415.9.2.2. Service corridors shall not be used as a required exit access corridor.

415.9.4.3Mechanical ventilation.Service corridors shall be mechanically ventilated as required by Section 415.9.2.6 or at not less than six air changes per hour, whichever is greater.

415.9.4.4Means of egress.The maximum distance of travel from any point in a service corridor to an exit, exit access corridor or door into a fabrication area shall not exceed 75 feet (22 860 mm). Dead ends shall not exceed 4 feet (1219 mm) in length. There shall be not less than two exits, and not more than one-half of the required means of egress shall require travel into a fabrication area. Doors from service corridors shall swing in the direction of egress travel and shall be self-closing.

415.9.4.5Minimum width.The minimum clear width of a service corridor shall be 5 feet (1524 mm), or 33 inches

(838 mm) wider than the widest cart or truck used in the service corridor, whichever is greater.

415.9.4.6Emergency alarm system. Emergency alarm systems shall be provided in accordance with this section and Sections 414.7.1 and 414.7.2. The maximum allowable quantity per control area provisions shall not apply to emergency alarm systems required for HPM.

415.9.4.6.1Service corridors. An emergency alarm system shall be provided in service corridors, with at least one alarm device in each service corridor.

415.9.4.6.2Exit access corridors and exit enclosures. Emergency alarms for exit access corridors and exit enclosures shall comply with Section 414.7.2.

415.9.4.6.3Liquid storage rooms, HPM rooms and gas rooms. Emergency alarms for liquid storage rooms, HPM rooms and gas rooms shall comply with Section 414.7.1.

415.9.4.6.4Alarm-initiating devices. An approved emergency telephone system, local alarm manual pull stations, or other approved alarm-initiating devices are allowed to be used as emergency alarm-initiating devices.

415.9.4.6.5Alarm signals. Activation of the emergency alarm system shall sound a local alarm and transmit a signal to the emergency control station.

415.9.5Storage of hazardous production materials.

415.9.5.1General. Storage of HPM in fabrication areas shall be within approved or listed storage cabinets or gas cabinets, or within a workstation. The storage of hazardous production materials in quantities greater than those listed in Tables 307.7(1) or 307.7(2) shall be in liquid storage rooms, HPM rooms or gas rooms as appropriate for the materials stored. The storage of other hazardous materials shall be in accordance with other applicable provisions of this code and the New York City Fire Code.

415.9.5.2Construction.

415.9.5.2.1HPM rooms and gas rooms. HPM rooms and gas rooms shall be separated from other areas by not less than a 2-hour fire barrier where the area is 300 square feet (27.9 m²) or more and not less than a 1-hour fire barrier where the area is less than 300 square feet (27.9 m²).

415.9.5.2.2Liquid storage rooms. Liquid storage rooms shall be constructed in accordance with the following requirements:

1. Rooms in excess of 500 square feet (46.5 m²) shall have at least one exterior door approved for Fire Department access.

2. Rooms shall be separated from other areas by fire barriers having a fire-resistance rating of not less than 1-hour for rooms up to 150 square feet (13.9 m²) in area and not less than 2 hours where the room is more than 150 square feet (13.9 m²) in area.

3. Shelving, racks and wainscoting in such areas shall be of noncombustible construction or wood of not less than 1-inch (25 mm) nominal thickness.

4. Rooms used for the storage of Class I flammable liquids shall not be located in a basement.

415.9.5.2.3Floors. Except for surfacing, floors of HPM rooms and liquid storage rooms shall be of noncombustible

liquid-tight construction. Raised grating over floors shall be of noncombustible materials.

415.9.5.3Location. Where HPM rooms, liquid storage rooms and gas rooms are provided, they shall have at least one exterior wall and such wall shall be not less than 30 feet (9144 mm) from property lines, including property lines adjacent to public ways.

415.9.5.4Explosion control. Explosion control shall be provided where required by Section 414.5.1.

415.9.5.5Exits. Where two exits are required from HPM rooms, liquid storage rooms and gas rooms, one shall be directly to the outside of the building.

415.9.5.6Doors. Doors in a fire barrier wall, including doors to corridors, shall be self-closing fire assemblies having a fire-protection rating of not less than 3/4 hour.

415.9.5.7Ventilation. Mechanical exhaust ventilation shall be provided in liquid storage rooms, HPM rooms and gas rooms at the rate of not less than 1 cubic foot per minute per square foot (0.044 L/S/m²) of floor area or six air changes per hour, whichever is greater, for categories of material.

Exhaust ventilation for gas rooms shall be designed to operate at a negative pressure in relation to the surrounding areas and direct the exhaust ventilation to an exhaust system.

415.9.5.8Emergency alarm system. An approved emergency alarm system shall be provided for HPM rooms, liquid storage rooms and gas rooms.

Emergency alarm-initiating devices shall be installed outside of each interior exit door of such rooms.

Activation of an emergency alarm-initiating device shall sound a local alarm and transmit a signal to the emergency control station.

An approved emergency telephone system, local alarm manual pull stations or other approved alarm-initiating devices are allowed to be used as emergency alarm-initiating devices.

415.9.6Piping and tubing.

415.9.6.1General. Hazardous production materials piping and tubing shall comply with this section and ANSI B31.3.

415.9.6.2Supply piping and tubing.

415.9.6.2.1HPM having a health-hazard ranking of 3 or 4. Systems supplying HPM liquids or gases having a health-hazard ranking of 3 or 4 shall be welded throughout, except for connections, to the systems that are within a ventilated enclosure if the material is a gas, or an approved method of drainage or containment is provided for the connections if the material is a liquid.

415.9.6.2.2Location in service corridors. Hazardous production materials supply piping or tubing in service corridors shall be exposed to view.

415.9.6.2.3Excess flow control. Where HPM gases or liquids are carried in pressurized piping above 15 pounds per square inch gauge (psig) (103.4 kPa), excess flow control shall be provided. Where the piping originates from within a liquid storage room, HPM room or gas room, the excess flow control shall be located within the liquid storage room, HPM room or gas room. Where the piping originates from a bulk source, the excess flow control shall be located as

close to the bulk source as practical.

415.9.6.3 Installations in exit access corridors and above other occupancies. The installation of hazardous production material piping and tubing within the space defined by the walls of exit access corridors and the floor or roof above or in concealed spaces above other occupancies shall be in accordance with Section 415.9.6.2 and the following conditions:

1. Automatic sprinklers shall be installed within the space unless the space is less than 6 inches (152 mm) in the least dimension.

2. Ventilation not less than six air changes per hour shall be provided. The space shall not be used to convey air from any other area.

3. Where the piping or tubing is used to transport HPM liquids, a receptor shall be installed below such piping or tubing. The receptor shall be designed to collect any discharge or leakage and drain it to an approved location. The 1-hour enclosure shall not be used as part of the receptor.

4. HPM supply piping and tubing and HPM nonmetallic waste lines shall be separated from the exit access corridor and from occupancies other than Group H-5 by construction as required for walls or partitions that have a fire protection rating of not less than 1 hour. Where gypsum wallboard is used, joints on the piping side of the enclosure are not required to be taped, provided the joints occur over framing members. Access openings into the enclosure shall be protected by approved fire-resistance- rated assemblies.

5. Readily accessible manual or automatic remotely activated fail-safe emergency shutoff valves shall be installed on piping and tubing other than waste lines at the following locations:

- 5.1. At branch connections into the fabrication area.

- 5.2. At entries into exit access corridors.

Exception: Transverse crossings of the corridors by supply piping that is enclosed within a ferrous pipe or tube for the width of corridor need not comply with Items 1 through 5.

415.9.6.4 Identification. Piping, tubing and HPM waste lines shall be identified in accordance with ANSI A13.1 to indicate the material being transported.

415.9.7 Continuous gas-detection systems. A continuous gas-detection system shall be provided for HPM gases when the physiological warning properties of the gas are at a higher level than the accepted permissible exposure limit (PEL) for the gas and for flammable gases in accordance with this section.

- 415.9.7.1 Where required. A continuous gas-detection system shall be provided in the areas identified in Sections 415.9.7.1.1 through 415.9.7.1.4.

- 415.9.7.1.1 Fabrication areas. A continuous gas-detection system shall be provided in fabrication areas when gas is used in the fabrication area.

- 415.9.7.1.2 HPM rooms. A continuous gas-detection system shall be provided in HPM rooms when gas is used in the room.

- 415.9.7.1.3 Gas cabinets, exhausted enclosures and gas rooms. A continuous gas-detection system shall be provided in gas cabinets and exhausted enclosures. A continuous gas-detection system shall be provided in gas rooms when gases are not located in gas cabinets or exhausted enclosures.

415.9.7.1.4 Exit access corridors. When gases are transported in piping placed within the space defined by the walls of an exit access corridor, and the floor or roof above the exit access corridor, a continuous gas-detection system shall be provided where piping is located and in the exit access corridor.

Exception: A continuous gas-detection system is not required for occasional transverse crossings of the corridors by supply piping that is enclosed in a ferrous pipe or tube for the width of the corridor.

415.9.7.2 Gas-detection system operation. The continuous gas-detection system shall be capable of monitoring the room, area or equipment in which the gas is located at or below the PEL or ceiling limit of the gas for which detection is provided. For flammable gases, the monitoring detection threshold level shall be vapor concentrations in excess of 20 percent of the lower explosive limit (LFL). Monitoring for highly toxic and toxic gases shall also comply with the requirements for such material in the New York City Fire Code.

415.9.7.2.1 Alarms. The gas detection system shall initiate a local alarm and transmit a signal to the emergency control station when a short-term hazard condition is detected. The alarm shall be both visual and audible and shall provide warning both inside and outside the area where the gas is detected.

415.9.7.2.2 Shutoff of gas supply. The gas detection system shall automatically close the shutoff valve at the source on gas supply piping and tubing related to the system being monitored for which gas is detected when a short-term hazard condition is detected. Automatic closure of shutoff valves shall comply with the following:

1. Where the gas-detection sampling point initiating the gas detection system alarm is within a gas cabinet or exhausted enclosure, the shutoff valve in the gas cabinet or exhausted enclosure for the specific gas detected shall automatically close.
2. Where the gas-detection sampling point initiating the gas detection system alarm is within a room and compressed gas containers are not in gas cabinets or an exhausted enclosure, the shutoff valves on all gas lines for the specific gas detected shall automatically close.
3. Where the gas-detection sampling point initiating the gas detection system alarm is within a piping distribution manifold enclosure, the shutoff valve supplying the manifold for the compressed gas container of the specific gas detected shall automatically close.

Exception: Where the gas-detection sampling point initiating the gas detection system alarm is at the use location or within a gas valve enclosure of a branch line downstream of a piping distribution manifold, the shutoff valve for the branch line located in the piping distribution manifold enclosure shall automatically close.

415.9.8 Manual fire alarm system. An approved manual fire alarm system shall be provided throughout buildings containing Group H-5. Activation of the alarm system shall initiate a local alarm and transmit a signal to the emergency control station. The fire alarm system shall be designed and installed in accordance with Section 907.

415.9.9 Emergency control station. An emergency control station shall be provided on the premises at an approved location, outside of the fabrication area and shall be continuously staffed by trained personnel. The emergency control station shall receive signals from emergency equipment and alarm and detection systems. Such emergency equipment and alarm and detection systems shall include, but not necessarily be limited to, the following where such equipment or systems are required to be provided either in Section 415.9 or elsewhere in this code:

1. Automatic fire sprinkler system alarm and monitoring systems.
2. Manual fire alarm systems.
3. Emergency alarm systems.

4. Continuous gas-detection systems.

5. Smoke detection systems.

6. Emergency power system.

415.9.10Emergency power system. An emergency power system shall be provided in Group H-5 occupancies where required in Section 415.9.10.1. The emergency power system shall be designed to supply power automatically to required electrical systems when the normal electrical supply system is interrupted.

415.9.10.1Where required. Emergency power shall be provided for electrically operated equipment and connected control circuits for the following systems:

1. HPM exhaust ventilation systems.

2. HPM gas cabinet ventilation systems.

3. HPM exhausted enclosure ventilation systems.

4. HPM gas room ventilation systems.

5. HPM gas detection systems.

6. Emergency alarm systems.

7. Manual fire alarm systems.

8. Automatic sprinkler system monitoring and alarm systems.

9. Electrically operated systems required elsewhere in this code applicable to the use, storage or handling of HPM.

415.9.10.2Exhaust ventilation systems. Exhaust ventilation systems are allowed to be designed to operate at not less than one-half the normal fan speed on the emergency power system where it is demonstrated that the level of exhaust will maintain a safe atmosphere.

415.9.11Fire sprinkler system protection in exhaust ducts for HPM.

415.9.11.1General. Automatic fire sprinkler system protection shall be provided in exhaust ducts conveying vapors, fumes, mists or dusts generated from HPM in accordance with this section and the New York City Mechanical Code.

415.9.11.2Metallic and noncombustible, nonmetallic exhaust ducts. Automatic fire sprinkler system protection shall be provided in metallic and noncombustible, nonmetallic exhaust ducts where all of the following conditions apply:

1. Where the largest cross-sectional diameter is equal to or greater than 10 inches (254 mm).

2. The ducts are within the building.

3. The ducts are conveying flammable vapors or fumes.

415.9.11.3Combustible nonmetallic exhaust ducts. Automatic fire sprinkler system protection shall be provided in combustible nonmetallic exhaust ducts where the largest cross-sectional diameter of the duct is equal to or greater than 10 inches (254 mm).

Exceptions:

1. Ducts listed or approved for applications without automatic fire sprinkler system protection.
2. Ducts not more than 12 feet (3658 mm) in length installed below ceiling level.

415.9.11.4 Automatic sprinkler locations. Sprinkler systems shall be installed at 12-foot (3658 mm) intervals in horizontal ducts and at changes in direction. In vertical ducts, sprinklers shall be installed at the top and at alternate floor levels.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

415.7.2.1 amended L.L. 8/2008 § 80, eff. July 1, 2008.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 416: APPLICATION OF FLAMMABLE FINISHES

NYC Administrative Code § 28-BC 416

416.1 General.

The provisions of this section shall apply to the construction, installation and use of buildings and structures, or parts thereof, for the spraying of flammable paints, varnishes and lacquers or other flammable materials or mixtures or compounds used for painting, varnishing, staining or similar purposes. Such construction and equipment shall comply with the New York City Fire Code.

416.2 Spray rooms. Spray rooms shall be enclosed with fire barrier walls and horizontal assemblies or both with not less than a 2-hour fire-resistance rating. Floors shall be waterproofed and drained in an approved manner.

416.2.1 Surfaces. The interior surfaces of spray rooms shall be smooth and shall be so constructed to permit the free passage of exhaust air from all parts of the interior and to facilitate washing and cleaning, and shall be so designed to confine residues within the room. Aluminum shall not be used.

416.3 Spraying spaces. Spraying spaces shall be ventilated with an exhaust system capable of at least 6 air changes per hour to prevent the accumulation of flammable mist or vapors in accordance with the New York City Mechanical Code. Where such spaces are not separately enclosed, noncombustible spray curtains shall be provided to restrict the spread of flammable vapors.

416.3.1 Surfaces. The interior surfaces of spraying spaces shall be smooth and continuous without edges, and shall be so constructed to permit the free passage of exhaust air from all parts of the interior and to facilitate washing and cleaning, and shall be so designed to confine residues within the spraying space. Aluminum shall not be used.

416.4 Fire protection. An automatic fire-extinguishing system shall be provided in all spray, dip and immersing spaces and storage rooms, and shall be installed in accordance with Chapter 9.



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SECTION BC 417: DRYING ROOMS

NYC Administrative Code § 28-BC 417

417.1 General.

A drying room or dry kiln installed within a building shall be constructed entirely of approved noncombustible materials or assemblies of such materials regulated by the approved rules or as required in the general and specific sections of Chapter 4 for special occupancies, where applicable to the general requirements of Chapter 28, and in accordance with the New York City Fire Code.

417.2 Piping clearance. Overhead heating pipes shall have a clearance of not less than 2 inches (51 mm) from combustible contents in the dryer.

417.3 Insulation. Where the operating temperature of the dryer is 175(degrees)F (79(degrees)C) or more, metal enclosures shall be insulated from adjacent combustible materials by not less than 12 inches (305 mm) of airspace, or the metal walls shall be lined with 1/4-inch (6.4 mm) insulating mill board or other approved equivalent insulation.

417.4 Fire Protection. Drying rooms designed for high-hazard materials and processes, including special occupancies as provided for in Chapter 4, shall be protected by an approved automatic sprinkler or fire-extinguishing system conforming to the provisions of Chapter 9.



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SECTION BC 418: ORGANIC COATINGS

NYC Administrative Code § 28-BC 418

418.1 Building features.

Manufacturing of organic coatings shall be done only in buildings that do not have pits or basements and shall comply with the New York City Fire Code. Such buildings shall be protected by an approved automatic sprinkler system in accordance with Chapter 9.

418.2 Location. Organic coating manufacturing operations and operations incidental to or connected therewith shall not be located in buildings having other occupancies.

418.3 Process mills. Mills operating with close clearances and that process flammable and heat-sensitive materials, such as nitrocellulose, shall be classified as Group H1 occupancy.

418.4 Tank storage. Storage areas for flammable and combustible liquid tanks inside of structures shall be located at or above grade and shall be separated from the processing area by not less than 2-hour fire-resistance-rated fire barriers.

418.5 Nitrocellulose storage. Nitrocellulose storage shall be located on a detached pad or in a separate structure or a room enclosed with no less than 2-hour fire-resistance-rated fire barriers.

418.6 Finished products. Storage rooms for finished products that are flammable or combustible liquids shall be separated from the processing area by fire barriers having a fire-resistance rating of at least 2 hours, and openings in the walls shall be protected with approved opening protectives.



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SECTION BC 419: NON-PRODUCTION CHEMICAL LABORATORIES

NYC Administrative Code § 28-BC 419

419.1 General.

The provisions of this section shall govern the design, construction and chemical quantity limitations of buildings and portions thereof occupied or designed to be occupied as a non-production laboratory. Non-production laboratories shall be classified into occupancy groups in accordance with Section 419.5. The provisions of this section shall not apply to production laboratories classified in occupancy groups F or H.

419.2Standards.Except as otherwise provided in this section, non-production laboratories shall meet the design, construction and chemical quantity limitation requirements for laboratory unit fire hazard class D, as set forth in NFPA 45, and the New York City Mechanical Code. The storage arrangement, handling and use of chemicals within non-production laboratories and accessory storage rooms, and the operation and maintenance of non-production laboratories shall comply with the requirements of the New York City Fire Code, and the rules of the Fire Commissioner.

419.3Prohibitions.It shall be unlawful in any non-production laboratory to:

1. Store or use any explosive.
2. Store or use any unclassified detonable organic peroxide, detonable pyrophoric material, detonable unstable (reactive) material or detonable water-reactive material.
3. Store or use any Class 4 unstable (reactive) material.
4. Store or use any Class 4 oxidizing material.
5. Store or use any flammable gas below-grade.

419.4Definitions.The following words and terms shall, for the purposes of this section, and as used elsewhere in

this code, have the meanings shown herein.

LABORATORY BUILDING. A structure consisting wholly or principally of one or more laboratory units.

LABORATORY CHEMICAL. A material with a health, flammability, or instability hazard rating of 2, 3, or 4 as defined in NFPA 704.

LABORATORY, NON-PRODUCTION. A building or portion thereof wherein chemicals or gases are used or synthesized on a non-production basis for testing, research, experimental, instructional or educational purposes.

LABORATORY UNIT. An enclosed space of a minimum 1-hour fire-rated construction, designed or used as a non-production laboratory. Laboratory units may include one or more separate laboratory work areas, and accessory storage rooms or spaces within or contiguous with the laboratory unit, such as offices and lavatories.

STORAGE CABINET. A cabinet designed and constructed in accordance with UL 1275, Flammable Liquid Storage Cabinets, and used for the storage of not more than 60 gallons (227 L) of flammable and combustible liquids.

STORAGE ROOM. A room where laboratory chemicals or gases are stored and not otherwise used or synthesized.

419.5Classification. Buildings or portions thereof occupied as a non-production laboratory may be classified as Group B occupancy provided they comply with the provisions of Section 419. Non-production laboratories not in compliance with the provisions of Section 419.7 for laboratory chemical quantity limitations shall be classified as Group H occupancy.

419.5.1Accessory use non-production laboratories. Accessory non-production laboratories occupying an area not more than 10 percent of the area of the story in which such laboratories are located and not exceeding the tabular values in Table 503 for the allowable height or area for such use shall be classified according to the main occupancy. Such accessory non-production laboratories shall comply with the provisions of Section 419.

419.6Fire protection.

419.6.1Sprinkler system. Laboratory units shall be provided throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. The entire building shall be provided throughout with an automatic sprinkler system when the aggregate floor area of all laboratory units within any building exceeds 20,000 square feet (1858 m²).

419.6.2Standpipe and hose system. In all non-production laboratory buildings that are two or more stories above or below the gradelevel (level of exit discharge), standpipes shall be installed in accordance with Section 905.2.

419.6.3Fire alarm system. A manual fire alarm system shall be installed in accordance with Section 907.2.2, Section 907.2.3, or Section 907.2.6, as applicable.

419.7Quantity limitations.

419.7.1Flammable and combustible liquids. The density and total quantity of flammable and combustible liquids allowed within a laboratory unit, outside of storage rooms, shall comply with Table 10.1.1 of NFPA 45 for laboratory unit fire hazard class D.

Exceptions: The following exceptions apply to other than educational or instructional laboratories:

1. The density of flammable and combustible liquids allowed within a laboratory unit may be increased to those set forth in Table 10.1.1 of NFPA 45 for laboratory unit fire hazard class B provided the total quantity of flammable and

combustible liquid, including any in storage cabinets or safety cans, does not exceed 25 gallons (95 L).

2. The density of flammable and combustible liquids allowed within a laboratory unit may be increased to those set forth in Table 10.1.1 of NFPA 45 for laboratory unit fire hazard class B provided the total quantity of flammable and combustible liquid, including any in storage cabinets or safety cans, does not exceed 30 gallons (114 L) and the walls, floors and ceilings of the laboratory unit are separated from all adjoining areas by 2-hour fire rated construction.

3. Based on a density of 1 gallon per 100 square feet (3.785 L per 9.3 m²) of area, the quantity of flammable and combustible liquid allowed within a laboratory unit, excluding quantities in storage cabinets or safety cans, may be increased to 100 gallons (379 L), and the total quantities of flammable and combustible liquids, including quantities in storage cabinets or safety cans, may be increased to 200 gallons (775 L) provided the walls, floors and ceilings of the laboratory unit are separated from all adjoining areas by 2-hour fire rated construction.

419.7.2 Flammable solids. The total quantity of flammable solids allowed within a laboratory unit, excluding any quantities in a storage room, shall not exceed 10 pounds (4.5 kg).

Exception: The total quantity of flammable solids allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire rated construction shall not exceed 15 pounds (6.8 kg).

419.7.3 Oxidizers and organic peroxides. The total quantity of solid and liquid oxidizers and organic peroxides combined allowed within a laboratory unit, excluding any quantities in a storage room, shall not exceed 40 pounds (18 kg), provided not more than 2 pounds (0.908 kg) of which are Class 3 oxidizers and 1 pound (0.454 kg) of which are Class I organic peroxides.

Exception: The total quantity of solid and liquid oxidizers and organic peroxides combined allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire rated construction shall not exceed 50 pounds (23 kg), provided not more than 2 pounds (0.908 kg) of which are Class 3 oxidizers and 1 pound (0.454 kg) of which are Class I organic peroxides.

419.7.4 Unstable (reactive). The total quantity of unstable (reactive) material allowed within a laboratory unit, excluding any quantities in a storage room, shall not exceed 6 pounds (2.7 kg), provided not more than 1 pound (0.454 kg) of which are Class 3 unstable (reactive).

Exception: The total quantity of unstable (reactive) material allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire rated construction shall not exceed 12 pounds (5.4 kg), provided not more than 1 pound (0.454 kg) of which are Class 3 unstable (reactive).

419.7.5 Water reactive material. The total quantity of water reactive material allowed within a laboratory unit, excluding any quantities in a storage room, shall not exceed 2.5 pounds (1.1 kg).

Exception: The total quantity of water reactive material allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire rated construction shall not exceed 5 pounds (2.3 kg).

419.7.6 Pyrophoric material. The total quantity of solid or liquid pyrophoric material allowed within a laboratory unit, excluding any quantities in a storage room, shall not exceed 0.5 pounds (0.227 kg).

Exception: The total quantity of pyrophoric material allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire rated construction shall not exceed 1 pound (0.454 kg).

419.7.7 Highly toxic material. The total quantity of solid or liquid highly toxic material allowed within a laboratory unit, excluding any quantities in a storage room, shall not exceed 5 pounds (0.227 kg).

419.7.8 Toxic material. The total quantity of solid or liquid toxic material allowed within a laboratory unit, excluding any quantities in a storage room, shall not exceed 250 pounds (946 L).

419.7.9 Corrosive material. The total quantity of solid or liquid corrosive material allowed within a laboratory unit, excluding any quantity in a storage room, shall not exceed 250 gallons (946 L).

419.7.10 Highly toxic and toxic gases. In educational and instructional laboratories, the total quantity of highly toxic and toxic gases combined allowed within a laboratory unit, excluding any quantities in a storage room, shall not exceed 20 standard cubic feet (0.56 standard cubic m).

419.8 Storage room classification. Storage rooms for laboratory chemicals accessory to a laboratory unit shall be classified as occupancy group S-1 provided they comply with the provisions of Section 419.9. Storage rooms not in compliance with the provisions of Section 419.9 for laboratory chemical quantity limitations shall be classified as Group H occupancy.

419.9 Storage rooms. In addition to the quantities allowed within a laboratory unit by Section 419.7, laboratory chemicals that are accessory to a laboratory unit may be stored, whether outside of or entirely within a laboratory unit, in dedicated storage rooms complying with all of the following:

1. Storage room capacity shall be limited to a maximum of 300 gallons (1136 L) of laboratory chemicals, not to exceed 5 gallons per square foot (0.125 L/m²) of floor area.
2. Flammable gas storage rooms shall be limited to 2,500 standard cubic feet (71 standard cubic m) of flammable gas.
3. Storage rooms shall be enclosed by a minimum of 2-hour rated fire barriers.
4. Storage rooms shall be equipped with a continuously operated ventilation system that provides at least 6 changes of air per hour and vents to the outdoors.
5. Each entrance to the storage room shall be provided with a minimum 1-hour rated self-closing fire door.
6. Each entrance to the storage room shall be provided with a sill at the doorway, except that no sill shall be required in storage rooms containing only flammable gases.
7. Storage rooms shall be equipped with an automatic sprinkler system providing at least one sprinkler for each 90 square feet (8.4 m²) or portion thereof.
8. Laboratory chemicals that are incompatible with each other shall not be stored in the same storage room unless in compliance with the New York City Fire Code for separation of incompatible materials.
9. Storage rooms shall not open directly to an exit or any enclosed exit access component.
10. The floor of any storage room storing flammable gases shall be located at or above grade.

419.10 Ventilation. Non-production laboratories shall be ventilated in accordance with Section 407 of the New York City Mechanical Code.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.
419.5.1 amended L.L. 8/2008 § 81, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 4: SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY
SECTION BC 420: USES AND OCCUPANCIES INVOLVING RADIOACTIVE MATERIALS AND
RADIATION-PRODUCING EQUIPMENT

NYC Administrative Code § 28-BC 420

420.1 Scope.

This section shall apply to the construction, alteration, and use of buildings or spaces for radioactive materials and radiation-producing equipment.

420.2City, state and federal regulations.In addition to the requirements of this section, occupancies involving radioactive materials and radiation-producing equipment shall also comply with applicable requirements of the city health code, and applicable state and federal regulations.

420.3Laboratories.All laboratories utilizing radioactive materials or radiation producing equipment required to register under the requirements of the New York City Health Code shall comply with the requirements of Section 420.3.1 to 420.3.7.

420.3.1Construction.All buildings in which such laboratories occur shall be of group I or II construction.

420.3.2Floors.All floors shall comply with the fire resistance requirements for the class of construction, and provide the degree of radioactive resistance required by applicable city, state, and federal regulations. A finished material shall be applied to provide a continuous nonporous surface, which may be readily removed.

420.3.3Interior finish.All insulation of acoustical treatments and interior partitions shall be of noncombustible material. Walls and ceilings shall have nonporous finishes of class A rating.

420.3.4Sprinkler protection.Automatic sprinkler protection complying with the construction provisions of Chapter 9 of the New York City Building Code shall be provided, and such protection shall be designed for the type of combustible materials wherever such material is used, and for the radioactive material that may be expected to melt, vaporize, or oxidize under fire conditions. Laboratory equipment susceptible to damage from water or other materials

used in the sprinkler system may be shielded by hoods except when the equipment provides a source of combustion. Where sprinkler protection uses water, or small water-spray installations are used to fight small isolated fires, floors shall be provided with drainage so that water may be carried to retention tanks for later disposal as required by the New York City Health Code when contamination of the water is to be anticipated.

420.3.5Electrical controls.Electrical controls and equipment shall be installed in accordance with the requirements of the New York City Electrical Code.

420.3.6Ventilation.Exhaust air from areas in which radioactive materials are used or stored shall be exhausted to the outdoors in such manner as not to create a health hazard, and shall not be re-circulated to other areas of the building. Air pressure in rooms in which radioactive materials are used or stored shall be maintained below the air pressure of adjoining rooms, so that there is no flow of radioactive gases or dusts into adjoining rooms.

420.3.6.1Ducts.Ducts shall be of sheet steel of not less than No. 16 manufacturers' standard gauge or of other equivalent noncombustible material having a melting point above 1800(degrees)F (982(degrees)C). Exhaust ducts within the building, on the discharge side of the fan, shall be welded airtight. Exhaust ducts within the building, on the suction side of the fan shall have laps in the direction of air flow with smoke-tight joints, and shall be subjected to a smoke test in accordance with the requirements for chimneys in the New York City Mechanical Code. Access hatches with tight-closing covers shall be provided for cleaning and for fire-fighting in the exhaust system ducts.

420.3.6.2Fume hoods.Fume hoods shall be exhausted to the outdoors. Controls for hood fans shall be interlocked so that contaminated air cannot be drawn into any space from a hood where the exhaust fan is not in operation.

420.3.6.3Fans.Fan equipment other than the impeller and impeller housing shall be located outside the exhaust stream.

420.3.6.4Exhaust.When the degree of contamination of the exhaust stream exceeds the concentration limits permitted by the health code, the duct system shall be equipped with devices to decontaminate the air to a safe level before discharging to the outdoor air.

420.3.7Plumbing.Drainage lines from sinks used for radioactive wastes shall be without traps, and shall lead to retention tanks when required by the provisions of the New York City Health Code.

420.4Radiation machines.Radiation machines or particle accelerators, linear accelerators, cyclotrons, synchrotrons, betatrons, or bevatrons shall be located only in buildings of group I or II construction; however, this requirement shall not apply to conventional medical, dental, research, or industrial x-ray machines of less than one million volt capacity.

420.5Storage.Radioactive materials shall be stored in sealed containers. When required by the commissioner to avoid too concentrated an exposure within any one space, radioactive materials shall be stored in vaults designed in accordance with the radiation shielding or other requirements for the materials to be stored, and with the requirements of Sections 420.5.1 to 420.5.3.

420.5.1Fire protection.When any materials are subject to melting, vaporization, or oxidation under fire conditions, the storage vaults shall be constructed of walls having a fire-resistance rating of at least four hours, and the vaults shall be equipped with automatic sprinklers complying with the construction requirements of Chapter 9 of the New York City Building Code and shall be vented through devices to decontaminate the air to a safe level.

420.5.2Doors.Doors opening into storage vaults shall meet shielding requirements and have a fire-protection rating of not less than three hours.

420.5.3Bins, shelving, partitions, and pallets.All bins, shelving, partitions, and pallets in storage vaults shall be of noncombustible materials. Other methods of storage permitted by the health department or applicable state and federal

regulations, such as storage under water, may be used.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 5: GENERAL BUILDING HEIGHTS AND AREAS; SEPARATION OF OCCUPANCIES*
SECTION BC 501: GENERAL

NYC Administrative Code § 28-BC 501

501.1 Scope.

The provisions of this chapter control the height and area of structures hereafter erected and additions to existing structures, including separation of occupancies.

501.2 Premises identification. Approved numbers or addresses shall be provided for new buildings and shall be placed in such a position as to be clearly visible and legible from the street or roadway fronting the property. Address numbers shall be Arabic numerals or alphabet letters and shall be a minimum 4 inches (102 mm) in height and stroke of minimum 0.5 inch (12.7 mm) of a contrasting color to the background itself.

501.3 Fire Department access.

501.3.1 Frontage. Every building, exclusive of accessory buildings, shall have at least 8 percent of the total perimeter of the building adjoining a street or frontage space. For the purposes of this section, building perimeter shall be measured at that story having the maximum enclosed floor area; and buildings provided with a front yard or front setback no deeper than 30 feet (9144 mm) in compliance with the Zoning Resolution shall be considered as adjoining the street or frontage space.

501.3.2 Building access. Provisions shall be made for access by the Fire Department to every building in accordance with this section.

Exception: The provisions of Section 501.3.2 shall not apply to any story that is completely protected by an automatic sprinkler system complying with Section 903.3.1. Such exception shall not apply to access to cellars or basements as required by Section 54 of the New York State Multiple Dwelling Law.

501.3.2.1 Above grade. Access shall be provided directly from the outdoors to each story below a height of 100 feet (30 480 mm) except to the first story or ground floor, by at least one window or readily identifiable access panel within

each 50 feet (15 240 mm) or fraction thereof of horizontal length of every wall that fronts on a street or frontage space. All windows shall be openable from the inside or breakable from both the inside and the outside, and shall have a size when open of at least 24 inches by 36 inches (610 mm by 914 mm). Panels shall be openable from both the inside and outside and shall have a height when open of 48 inches (1219 mm) and a width of at least 32 inches (813 mm). The sill of the window or panel shall not be higher than 36 inches (914 mm) above the inside floor.

Exception: Where not all of the windows are openable or breakable, the windows intended to satisfy the requirements of Section 501.3.2.1 shall be readily identifiable.

501.3.2.2Below grade.Access shall be provided directly from the outdoors to the first basement or cellar story below grade, except as provided below, within each 100 feet (30 480 mm) or fraction thereof of horizontal length of every wall that fronts on a street or frontage space. Such access shall be by stairs, doors, windows or other means that provide an opening 48 inches (1219 mm) high and 32 inches (813 mm) wide, the sill of which shall not be higher than 36 inches (914 mm) above the inside floor. If an areaway is used to provide below grade access, the minimum horizontal dimension shall be at least one-third the depth of the areaway or 6 feet (1829 mm) whichever is less.

1. One- and two-family dwellings need not provide direct access.

2. Any building classified in occupancy group R-2 not more than three stories in height and with not more than two dwelling units on any story need not provide direct access when such first basement or cellar story is used for dwelling units or for uses accessory to the residential use in the building.

3. Except as provided in item 2 above, for Group R-1 or R-2 occupancies, only one direct access from the outdoors to the first basement or cellar story consisting of a stair or door shall be required when such story is used for dwelling units or for uses accessory to the residential use in the building.

501.3.2.3Signs obstructing openings.Where wall signs are erected to cover doors or windows of existing buildings, access panels shall be provided as necessary to comply with the requirements of Sections 501.3.2.1 and 501.3.2.2.

501.3.2.4Location.Wherever practicable, one access opening in each story shall provide access to a stairway, or where there is no stairway at the exterior wall, one access opening in each story shall be located as close as practicable to a stairway.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

501.1 amended L.L. 8/2008 § 83, eff. July 1, 2008.

501.3.2.2 item 2 amended L.L. 8/2008 § 84, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 5: GENERAL BUILDING HEIGHTS AND AREAS; SEPARATION OF OCCUPANCIES*
SECTION BC 502: DEFINITIONS

NYC Administrative Code § 28-BC 502

502.1 Definitions.

The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

AREA, BUILDING. The area included within surrounding exterior walls (or exterior walls and firewalls) exclusive of vent shafts and courts. Areas of the building not provided with surrounding walls shall be included in the building area if such areas are included within the horizontal projection of the roof or floor above.

BASEMENT. A story partly below the grade plane and having less than one-half its clear height (measured from finished floor to finished ceiling) below the grade plane (see "Story", "Story above grade plane" in Section 502.1).

CELLAR. That portion of a building that is partly or wholly underground, and having one-half or more of its clear height (measured from finished floor to finished ceiling) below the grade plane. Cellars shall not be counted as stories in measuring the height of the buildings.

FRONTAGE SPACE. A street; or an open space adjoining a building not less than 30 feet (9144 mm) in any dimension. Such open space shall be accessible from a street by a driveway, lane, private road or alley at least 20 feet (6096 mm) in width. Frontage space including accessways shall be permanently maintained free of all obstructions that might interfere with its use by the Fire Department.

GRADE PLANE. A reference plane representing the level of the curb as established by the city engineer in the Borough President's office, measured at the center of the front of a building. Where a building faces on more than one street, the grade plane shall be the average of the levels of the curbs at the center of each front.

Exception: The grade plane shall not be referenced to the level of the curb, but shall be considered the average elevation of the final grade adjoining all exterior walls of a building, calculated from final grade elevations taken at

intervals of 10 feet (3048 mm) around the perimeter of the building where:

1. No curb elevation has been legally established on the city map; or
2. Every part of the building is set back more than 25 feet (7620 mm) from a street line.

HEIGHT, BUILDING. The vertical distance from the grade plane to the average height of the highest roof surfaces.

HEIGHT, STORY. The vertical distance from top to top of two successive finished floor surfaces; and, for the topmost story, from the top of the floor finish to the top of the ceiling joists or, where there is not a ceiling, to the top of the roof rafters.

INDUSTRIAL EQUIPMENT PLATFORM. An unoccupied, elevated platform in an industrial occupancy used exclusively for mechanical systems or industrial process equipment, including the associated elevated walkways, stairs and ladders necessary to access the platform (see Section 505.5).

MEZZANINE. An intermediate level or levels between the floor and ceiling of any story with an aggregate floor area of not more than one-third of the area of the room or space in which the level or levels are located (see Section 505).

STORY ABOVE GRADE PLANE. Any story having its finished floor surface entirely above grade plane, except that a basement shall also be considered a story above grade plane (also see "Basement" and "Story").

STORY. That portion of a building included between the upper surface of a floor and the upper surface of the floor or roof next above (also see "Basement" and "Mezzanine").



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Chapter 5: GENERAL BUILDING HEIGHTS AND AREAS; SEPARATION OF OCCUPANCIES*
SECTION BC 503: GENERAL HEIGHT AND AREA LIMITATIONS

NYC Administrative Code § 28-BC 503

503.1 General.

The height and area for buildings of different construction types shall be governed by the intended use and occupancy of the building and shall not exceed the limits in Table 503 except as modified hereafter. Each part of a building included within the exterior walls or the exterior walls and fire walls where provided shall be permitted to be a separate building.

503.1.1 Basements. Basements need not be included in the total allowable area provided:

1. They do not exceed the area permitted for a one-story building; and
2. The finished surface of the floor above the basement does not exceed 6 feet (1829 mm) above grade plane.

503.1.2 Special industrial occupancies. Buildings and structures of Type I and II construction designed to house low-hazard industrial processes that require large areas and unusual heights to accommodate craneways or special machinery and equipment including, among others, rolling mills; structural metal fabrication shops and foundries; or the production and distribution of electric, gas or steam power, shall be exempt from the height and area limitations of Table 503.

503.1.3 Buildings on same tax lot. Two or more buildings on the same tax lot and under the same ownership and control shall be regulated as separate buildings, or shall be considered as portions of one building if the height of each building and the aggregate area of buildings are within the limitations of Table 503 as modified by Sections 504 and 506. The provisions of this code applicable to the aggregate building shall be applicable to each building.

503.1.4 Type I construction. Buildings of Type I construction permitted to be of unlimited tabular heights and areas in accordance with Table 503 are not required to comply with the special requirements that allow unlimited area buildings in Section 507 or unlimited height in Sections 503.1.2 and 504.3 or increased height and areas for other types of construction.

503.2Reserved.



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SECTION BC 504: HEIGHT MODIFICATIONS

NYC Administrative Code § 28-BC 504

504.1 General.

The heights permitted by Table 503 shall only be increased in accordance with this section.

Exception: The height of one-story aircraft hangars, aircraft paint hangars and buildings used for the manufacturing of aircraft shall not be limited if the building is provided with an automatic fire-extinguishing system in accordance with Chapter 9 and is entirely surrounded by public ways or yards not less in width than one and one-half times the height of the building.

504.2 Automatic sprinkler system increase. Where a building is equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, the value specified in Table 503 for maximum height is increased by 20 feet (6096 mm) and the maximum number of stories is increased by one story. These increases are permitted in addition to the area increase in accordance with Sections 506.2 and 506.3. For Group R buildings equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.2, the value specified in Table 503 for maximum height is increased by 20 feet (6096 mm) and the maximum number of stories is increased by one story, but shall not exceed six stories or 60 feet (18 288 mm), respectively.

Exceptions:

1. Group I-2 of Type IIB, III, IV or V construction.
2. Group H-1, H-2, H-3 or H-5.
3. Fire-resistance rating substitution in accordance with Table 601, Note d.

504.3 Rooftop structures. Rooftop structures including but not limited to roof tanks and their supports, ventilating, air conditioning and similar building service equipment, bulkheads, penthouses, chimneys, and parapet walls 4 feet (1219 mm) or less in height shall not be included in the height of the building or considered an additional story unless

the aggregate area of all such structures exceeds 33 and one-third percent of the area of the roof of the building upon which they are erected. Rooftop structures shall be constructed in accordance with Section 1509.



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SECTION BC 505: MEZZANINES

NYC Administrative Code § 28-BC 505

505.1 General.

A mezzanine or mezzanines in compliance with this section shall be considered a portion of the floor below. Such mezzanines shall not contribute to either the building area or number of stories as regulated by Section 503.1. The area of the mezzanine shall be included in determining the fire area defined in Section 702. The clear height above and below the mezzanine floor construction shall not be less than 7 feet (2134 mm).

Exception: The clear height of habitable spaces above or below mezzanines within dwelling units shall not be less than 8 feet (2438 mm).

505.2Area limitation.The aggregate area of a mezzanine or mezzanines within a room or space shall not exceed one-third of the area of that room or space in which they are located. The enclosed portions of a room or space shall not be included in determining the permissible floor area of the mezzanine. The area of the mezzanine shall not contribute to the determination of the floor area of the room or space below.

Exception:

1. The aggregate area of mezzanines in buildings and structures of Type I or II construction for special industrial occupancies in accordance with Section 503.1.2 shall not exceed two-thirds of the area of the room.

2. The aggregate area of a mezzanine or mezzanines within a dwelling unit shall not exceed one-third of the net floor area of such dwelling unit, whether or not portions of such dwelling unit are enclosed. The area of the mezzanine shall not contribute to the determination of the floor area of the dwelling unit below.

505.3Egress.Each occupant of a mezzanine shall have access to at least two independent means of egress where the common path of egress travel exceeds the limitations of Section 1013.3. Where a stairway provides a means of exit access from a mezzanine, the maximum travel distance includes the distance traveled on the stairway measured in the

plane of the tread nosing.

Exceptions:

1. A single means of egress shall be permitted in accordance with Section 1014.1.
2. Accessible means of egress shall be provided in accordance with Section 1007.

505.4Openness. A mezzanine shall be open and unobstructed to the room in which such mezzanine is located except for walls or railings not more than 42 inches (1067 mm) high, columns and posts.

Exceptions:

1. Mezzanines or portions thereof are not required to be open to the room in which the mezzanines are located, provided that the occupant load of the aggregate area of the enclosed space does not exceed 10.
2. A mezzanine having two or more means of egress is not required to be open to the room in which the mezzanine is located, if at least one of the means of egress provides direct access to an exit from the mezzanine level.
3. Mezzanines or portions thereof are not required to be open to the room in which the mezzanines are located, provided that the aggregate floor area of the enclosed space does not exceed 10 percent of the mezzanine area.
4. In industrial facilities, mezzanines used for control equipment are permitted to be glazed on all sides.
5. In Group F occupancies of unlimited area, meeting the requirements of Section 507.2 or 507.3, mezzanines or portions thereof are not required to be open to the room in which the mezzanines are located, provided that an approved fire alarm system is installed throughout the entire building or structure and notification appliances are installed throughout the mezzanines in accordance with the provisions of NFPA 72. In addition, the fire alarm system shall be initiated by automatic sprinkler water flow.

505.5Industrial equipment platforms. Industrial equipment platforms in buildings shall not be considered as a portion of the floor below. Such equipment platforms shall not contribute to either the building area or the number of stories as regulated by Section 503.1. The area of the industrial equipment platform shall not be included in determining the fire area. Industrial equipment platforms shall not be a part of any mezzanine, and such platforms and the walkways, stairs and ladders providing access to an equipment platform shall not serve as a part of the means of egress from the building.

505.5.1Area limitations. The aggregate area of all industrial equipment platforms within a room shall not exceed two-thirds of the area of the room in which they occur. Where an equipment platform is located in the same room as a mezzanine, the area of the mezzanine shall be determined by Section 505.2, and the combined aggregate area of the equipment platforms and mezzanines shall not exceed two-thirds of the room in which they occur.

505.5.2Fire suppression. Where located in a building that is required to be protected by an automatic sprinkler system, industrial equipment platforms shall be fully protected by sprinklers above and below the platform, where required by the standards referenced in Section 903.3.

505.5.3Guards. Equipment platforms shall have guards where required by Section 1012.1.



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SECTION BC 506: AREA MODIFICATIONS

NYC Administrative Code § 28-BC 506

506.1 General.

The areas limited by Table 503 shall be permitted to be increased due to frontage (If) and automatic sprinkler system protection (Is) in accordance with the following:

$$Aa = ;fbAt ;pl (At \times If) ;pl (At \times Is);rb(Equation 5-1)$$

where: Aa=Allowable area per story (square feet). At=Tabular area per story in accordance with Table 503 (square feet). If=Area increase factor due to frontage as calculated in accordance with Section 506.2. Is=Area increase factor due to sprinkler protection as calculated in accordance with Section 506.3.

506.2 Frontage increase. Where a building has more than 25 percent of its perimeter adjoining a public way or open space having a minimum width of 20 feet (6096 mm), the frontage increase shall be determined in accordance with the following:

$$If = (F/P ;ms 0.25)W/30(Equation 5-2)$$

where: If=Area increase factor due to frontage. F=Building perimeter that fronts on a public way or open space having 20 feet (6096 mm) open minimum width (feet). P=Perimeter of entire building (feet). W=Width of public way or open space (feet) in accordance with Section 506.2.1.

506.2.1 Width limits. "W" must be at least 20 feet (6096 mm). Where the value of W varies along the perimeter of the building, the calculation performed in accordance with Equation 5-2 shall be based on the weighted average of each portion of exterior wall and open space where the value of W is greater than or equal to 20 feet (6096 mm). Where W exceeds 30 feet (9144 mm), a value of 30 feet (9144 mm) shall be used in calculating the weighted average, regardless of the actual width of the open space.

Exception: The quantity W divided by 30 shall be permitted to be a maximum of 2 when the building meets all

requirements of Section 507 except for compliance with the 60-foot (18 288 mm) public way or yard requirement, as applicable.

506.2.2 Open space limits. Such open space shall be either on the same zoning lot or dedicated for public use and shall be accessed from a street or approved fire lane.

506.3 Automatic sprinkler system increase. Where a building is equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, the area limitation in Table 503 is permitted to be increased by an additional 200 percent (Is = 2) for buildings with more than one story above grade plane and an additional 300 percent (Is = 3) for buildings with no more than one story above grade plane. These increases are permitted in addition to the height and story increases in accordance with Section 504.2.

Exceptions:

1. Buildings with an occupancy in Group H-1, H-2 or H-3.
2. Fire-resistance rating substitution in accordance with Table 601, Note d.

506.4 Area determination. The maximum area of a building with more than one story above grade plane shall be determined by multiplying the allowable area per story (Aa), as determined in Section 506.1, by the number of stories above grade plane as listed below.

1. For buildings with two stories above grade plane, multiply by 2;
2. For buildings with three or more stories above grade plane, multiply by 3; and
3. No story shall exceed the allowable area per story (Aa), as determined in Section 506.1 for the occupancies on that story.

Exceptions:

1. Unlimited area buildings in accordance with Section 507.
2. In group R occupancies 6 stories or less in height, the maximum area of a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.2 shall be determined by multiplying the allowable area per story (Aa), as determined in Section 506.1, by the number of stories above grade plane.

506.4.1 Mixed Occupancies. In buildings with mixed occupancies, the allowable area per story (Aa) shall be based on the most restrictive provisions for each occupancy when the mixed occupancies are treated according to Section 508.3.2 as nonseparated occupancies. When the occupancies are treated according to Section 508.3.3 as separated occupancies, the maximum total building area shall be such that the sum of the ratios for each such area on all floors as calculated according to Section 508.3.3.2 shall not exceed 2 for buildings with two stories above grade plane and 3 for buildings with three or more stories above grade plane.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.
 506.1 amended L.L. 8/2008 § 86, eff. July 1, 2008.
 506.2 amended L.L. 8/2008 § 86, eff. July 1, 2008.
 506.2.1 amended L.L. 8/2008 § 86, eff. July 1, 2008.
 506.3 amended L.L. 8/2008 § 86, eff. July 1, 2008.

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506.4 amended L.L. 8/2008 § 87, eff. July 1, 2008.

506.4.1 added L.L. 8/2008 § 87, eff. July 1, 2008.



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SECTION BC 507: UNLIMITED AREA BUILDINGS

NYC Administrative Code § 28-BC 507

507.1 Nonsprinklered, one story.

The area of a one-story, Group F-2 or S-2 building of other than Type V construction shall not be limited when the building is surrounded and adjoined on all sides by public ways or yards not less than 60 feet (18 288 mm) in width.

507.2Sprinklered, one story.The area of a one-story, Group B, F, M or S building or a one-story Group A-4 building of other than Type V construction shall not be limited when the building is provided with an automatic sprinkler system throughout in accordance with Section 903.3.1.1, and is surrounded and adjoined on all sides by public ways or yards not less than 60 feet (18 288 mm) in width. However, in Group F-2 and S-2 occupancies, one-story rack storage facilities of Type II construction that are not accessible to the public shall not be limited in height provided that such buildings conform to the requirements of this section and NFPA 13.

Exception: The automatic sprinkler system shall not be required in areas occupied for indoor participant sports, such as tennis, skating, swimming and equestrian activities, in occupancies in Group A-4, provided that:

1. Exit doors directly to the outside are provided for occupants of the participant sports areas; and
2. The building is equipped with a fire alarm system with manual fire alarm boxes installed in accordance with Section 907.

507.3Sprinklered, two story.The area of a two-story, Group B, F, M or S building shall not be limited when the building is provided with an automatic sprinkler system in accordance with Section 903.3.1.1 throughout, and is surrounded and adjoined on all sides by public ways or yards not less than 60 feet (18 288 mm) in width.

507.4Reduced open space.The permanent open space of 60 feet (18 288 mm) required in Sections 507.1, 507.2 and 507.3 shall be permitted to be reduced to not less than 40 feet (12 192 mm) provided the following requirements are met:

1. The reduced open space shall not be allowed for more than 75 percent of the perimeter of the building.

2. The exterior wall facing the reduced open space shall have a minimum fire-resistance rating of 3 hours.3. Openings in the exterior wall, facing the reduced open space, shall have opening protectives with a fire-resistance rating of 3 hours.

507.5Group A buildings.The area of a Group A-1, A-2, A-3, or A-4 building of Type IIA, IIIA, or IV construction shall not be limited where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. The area of a one-story, Group A-3 building used as a house of worship, community hall, dance hall, exhibition hall, gymnasium, lecture hall, indoor swimming pool or tennis court of Type IIB construction shall not be limited when all of the following criteria are met:

1. The building shall not have a stage other than a platform.

2. The building shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

3. The assembly floor shall be located at or within 21 inches (533 mm) of street or grade level and all exits are provided with ramps complying with Section 1010.1 to the street or grade level.

4. The building shall be surrounded and adjoined on all sides by public ways or yards not less than 60 feet (18 288 mm) in width.

507.6High-hazard occupancy groups.Group H-2, H-3 and H-4 fire areas shall be permitted in unlimited area buildings having occupancies in Groups F and S, in accordance with the limitations of this section. Fire areas located at the perimeter of the unlimited area building shall not exceed 10 percent of the area of the building, nor the area limitations specified in Table 503 as modified by Section 506.2, based upon the percentage of the perimeter of the fire area that fronts on a street or other unoccupied space. Other fire areas shall not exceed 25 percent of the area limitations specified in Table 503. Fire-resistance-rating requirements of fire barrier assemblies shall be in accordance with Table 508.3.3.

507.7Reserved.

507.8Group E buildings.The area of a Group E building of Type IIA, IIIA or IV construction shall not be limited where the building is protected throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1. The area of a one-story Group E building of Type IIB construction shall not be limited when the following criteria are met:

1. Each classroom shall have not less than two means of egress, with one of the means of egress being a direct exit to the outside of the building complying with Section 1017.

2. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

3. The building is surrounded and adjoined on all sides by public ways or yards not less than 60 feet (18 288 mm) in width.

507.9Motion picture theaters.In buildings of Type II, IIIA and IV construction, the area of one-story motion picture theaters shall not be limited when the building is provided with an automatic sprinkler system throughout in accordance with Section 903.3.1.1 and is surrounded and adjoined on all sides by public ways or yards not less than 60 feet (18 288 mm) in width.

507.10Group B buildings.Notwithstanding the provisions of Sections 507.2 and 507.3, the area of a Group B

building of Type IIA, IIIA or IV construction shall not be limited where the building is protected throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

507.11 Group F-2 buildings. Notwithstanding the provisions of Sections 507.2 and 507.3, the area of a Group F-2 building of Type IIA, IIIA or IV construction shall not be limited where the building is protected throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

507.12 Group M buildings. Notwithstanding the provisions of Sections 507.2 and 507.3, the area of a Group M building of Type IIA, IIIA or IV construction shall not be limited where the building is protected throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

507.13 Group R buildings. The area of a Group R-1 and R-2 building of Type IIA, IIIA or IV construction shall not be limited where the building is protected throughout with an approved automatic sprinkler system in accordance with Sections 903.3.1.1 or 903.3.1.2, as applicable.

507.14 Group S-2 buildings. Notwithstanding the provisions of Sections 507.2 and 507.3, the area of a Group S-2 building of Type IB, IIA, IIIA or IV construction shall not be limited where the building is protected throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

507.2 separately amended L.L. 8/2008 § 88, eff. July 1, 2008 and L.L. 26/2008

§ 7, eff. July 1, 2008.

507.6 amended L.L. 8/2008 § 88, eff. July 1, 2008.

507.8 amended L.L. 8/2008 § 88, eff. July 1, 2008.

507.10 amended L.L. 8/2008 § 88, eff. July 1, 2008.

507.11 amended L.L. 8/2008 § 88, eff. July 1, 2008.

507.12 amended L.L. 8/2008 § 88, eff. July 1, 2008.

507.13 amended L.L. 8/2008 § 88, eff. July 1, 2008.

507.14 amended L.L. 8/2008 § 88, eff. July 1, 2008.



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SECTION BC 508: INCIDENTAL USE AREAS AND MIXED OCCUPANCIES

NYC Administrative Code § 28-BC 508

508.1 General.

Where a building or portion thereof contains two or more occupancies or uses, the building or portion thereof shall comply with the applicable provisions of this section. For additional requirements for mixed occupancies, see Section 506.4.1.

508.2Incidental use areas.Incidental use areas shall comply with the provisions of this section.

Exception: Incidental use areas within and serving a dwelling unit are not required to comply with this section.

508.2.1Occupancy classification.A space that is listed in Table 508.2 and is incidental to a main occupancy shall be considered an incidental use area. An incidental use area shall be classified in accordance with the main occupancy to which the use is incidental; or such area shall be classified in accordance with its actual occupancy and shall comply with Section 508.3 for mixed occupancies.

508.2.1.1Fire protection requirements.Any additional fire protection requirements in Chapter 9 for an incidental use area shall be based upon the occupancy classification of the area's main occupancy.

508.2.1.2Allowable area and height.The actual floor area of an incidental use area shall be treated as being in the same occupancy group as its main occupancy for the purposes of calculating allowable height and area in accordance with Section 503.1.

508.2.2Separation.Incidental use areas shall be separated or protected, or both, from all other occupancies in accordance with Table 508.2.

508.2.2.1Construction.Where Table 508.2 requires a fire-resistance-rated separation, the incidental use area shall be separated from the remainder of the building by a fire barrier constructed in accordance with Section 706 or a horizontal assembly constructed in accordance with Section 711, or both. Where Table 508.2 permits an automatic

fire-extinguishing system without a fire barrier, the incidental use area shall be separated from the remainder of the building by construction capable of resisting the passage of smoke. The partitions shall extend from the floor to the underside of the fire-resistance-rated floor/ceiling assembly or fire-resistance-rated roof/ceiling assembly above or to the underside of the floor or roof sheathing, or sub deck above. Doors shall be self- or automatic closing upon detection of smoke in accordance with Section 715.4.7.3. Doors shall not have air transfer openings and shall not be undercut in excess of the clearance permitted in accordance with NFPA 80.

508.2.3 Protection. Where an automatic fire-extinguishing system or an automatic sprinkler system is provided in accordance with Table 508.2, only the incidental use areas need be equipped with such a system. 3] Table 508.2 Incidental Use Areas Room or Area Separation a 1] Room or Area Separation a 2] Furnace room where any piece of equipment is over 400,000 Btu per hour input 2 hour; or 1 hour and provide automatic fire-extinguishing system Furnace room where any piece of equipment is 400,000 Btu per hour input or less, except in R-3 occupancy 1 hour or provide automatic sprinkler system b Rooms with any boiler over 15 psi and 10 horsepower 2 hour; or 1 hour and provide automatic fire-extinguishing system Rooms with any boiler 15 psi or less and 10 horsepower or less, except in R-3 occupancy 1 hour or provide automatic sprinkler system Mechanical and/or electrical equipment room, except in R-3 occupancy 1 hour or provide automatic sprinkler system Refrigerant machinery rooms 1 hour or provide automatic sprinkler system Parking garage (Section 406.2) 2 hours; or 1 hour and provide automatic fire-extinguishing system Hydrogen cut-off rooms 2-hour fire barriers and floor/ceiling assemblies in all occupancy groups. Incinerator rooms 2 hours and automatic sprinkler system Paint shops, not classified as Group H, located in occupancies other than Group F 2 hours; or 1 hour and provide automatic fire-extinguishing system Laboratories and vocational shops, not classified as Group H, located in Group E or I-2 occupancies 2 hour; or 1 hour and provide automatic fire-extinguishing system Laundry rooms over 100 square feet, except within dwelling units 1 hour or provide automatic fire-extinguishing system Storage rooms over 100 square feet, except in R-3 occupancy 1 hour or provide automatic fire-extinguishing system Group I-3 cells equipped with padded surfaces 1 hour Group I-2 waste and linen collection rooms 1 hour Waste and linen collection rooms over 100 square feet 1 hour or provide automatic fire-extinguishing system Stationary lead-acid battery systems having a liquid capacity of more than 100 gallons used for facility emergency power or uninterrupted power supplies 2-hour fire barriers and floor/ceiling assemblies in all occupancy groups Rooms utilizing the electrical installation standards for "information technology rooms" as per Section 645.1 of the New York City Electrical Code As may be required by the New York City Electrical Code 4] For SI: 1 square foot = 0.0929 m², 1 pound per square inch = 6.9 kPa. 1 British thermal unit = 0.293 watts, 1 horsepower = 746 watts. 1 gallon = 3.785 L. a. Where an automatic fire-extinguishing system is provided, it need only be provided in the incidental use room or area. b. Multiple dwellings shall also comply with Section 65 of the New York State Multiple Dwelling Law.

508.3 Mixed occupancies. Each portion of a building shall be individually classified in accordance with Section 302.1. Where a building contains more than one occupancy group, the building or portion thereof shall comply with Sections 508.3.1, 508.3.2, 508.3.3 or a combination of these sections.

Exceptions:

1. Occupancies separated in accordance with Section 509.
2. Where required by Table 415.3.2, areas of Group H-1, H-2 or H-3 occupancies shall be located in a separate and detached building or structure.
3. Incidental use areas in accordance with Section 508.2.

508.3.1 Accessory occupancies. Accessory occupancies are those occupancies subsidiary to the main occupancy of the building or portion thereof. In addition, the aggregate of all accessory occupancies located on a single story shall not occupy more than 10 percent of the floor area of the story in which they are located and shall not exceed the tabular values in Table 503 for each such accessory occupancy, without height and area increases in accordance with Sections 504 and 506 for such accessory occupancies.

Exceptions:

1. The following accessory occupancies are permitted to occupy more than 10 percent of the floor area of the story in which they are located:

1.1. Accessory assembly areas having a floor area less than 750 square feet (69.7 m²).

1.2. Assembly areas that are accessory to Group E occupancies.

1.3. Accessory religious educational rooms and religious auditoriums with occupant loads of less than 100.

2. Rooms or spaces within Group H-2, H-3, H-4 or H-5 occupancy shall not be considered accessory occupancies and shall be treated as separated occupancies in accordance with Section 508.3.3.

508.3.1.1 Occupancy classification. Each accessory occupancy shall be individually classified in accordance with Section 302.1. All code requirements shall apply to each accessory occupancy based upon its individual occupancy classification, except that the most restrictive applicable provisions of Section 403 and Chapter 9 shall apply to the entire building or portion thereof.

Exception. Code requirements for allowable height and area and for separation shall be governed by Sections 508.3.1.2 and 508.3.1.3.

508.3.1.2 Allowable height and area. The allowable height and area of the building shall be based on the allowable height and area for the main occupancy in accordance with Section 503.1. The height and area of any accessory occupancy shall not exceed the tabular values in Table 503, without height and area increases in accordance with Sections 504 and 506 for such accessory occupancies.

508.3.1.3 Separation. No separation is required between an accessory occupancy and its main occupancy.

508.3.2 Nonseparated occupancies. Buildings or portions of buildings that comply with the provisions of this section shall qualify as nonseparated occupancies.

Exception: Rooms or spaces within Group H-2, H-3, H-4 or H-5 occupancy shall be considered a separated occupancy and shall comply with Section 508.3.3.

508.3.2.1 Occupancy classification. Nonseparated occupancies shall be individually classified in accordance with Section 302.1. All code requirements shall apply to each portion of the building based on the occupancy classification of that space, except that the most restrictive applicable provisions of Section 403 and Chapter 9 shall apply to the entire building or portion thereof.

Exception. Code requirements for allowable height and area and for separation shall be governed by Sections 508.3.2.2 and 508.3.2.3.

508.3.2.2 Allowable height and area. The allowable height and area of the building or portion thereof shall be based on the most restrictive allowances for the occupancy groups under consideration for the type of construction of the building in accordance with Section 503.1.

508.3.2.3 Separation. No separation is required between occupancies.

508.3.3 Separated occupancies. Buildings or portions of buildings that comply with the provisions of this section shall qualify as separated occupancies.

508.3.3.1 Occupancy classification. Separated occupancies shall be individually classified in accordance with

Section 302.1. Each fire area shall comply with this code based on the occupancy classification of that portion of the building.

508.3.3.2 Allowable area. In each story, the building area shall be such that the sum of the ratios of the actual floor area of each occupancy divided by the allowable area of each occupancy shall not exceed one.

508.3.3.3 Allowable height. Each occupancy shall comply with the height limitations based on the type of construction of the building in accordance with Section 503.1. The height, in both feet and stories, of each fire area shall be measured from grade plane. This measurement shall include the height, in both feet and stories, of intervening fire areas.

Exception: Special provisions permitted by Section 509.

508.3.3.4 Separation. Individual occupancies shall be separated from adjacent occupancies in accordance with Table 508.3.3. Where the building is equipped throughout with an automatic sprinkler system, installed in accordance with Section 903.3.1.1, the fire-resistance ratings in Table 508.3.3 are permitted to be reduced by 1 hour, but in no case shall be less than that required for floor construction according to the type of construction, or less than 1 hour, whichever is higher.

Exception: Fire separations of Group H and I-2 occupancies shall not be permitted any reductions in fire-resistance ratings.

508.3.3.4.1 Construction. Required separations shall be fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both, so as to completely separate adjacent occupancies.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 90, eff. July 1, 2008.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 5: GENERAL BUILDING HEIGHTS AND AREAS; SEPARATION OF OCCUPANCIES*
SECTION BC 509: SPECIAL PROVISIONS

NYC Administrative Code § 28-BC 509

509.1 General.

The provisions in this section shall permit the use of special conditions that are exempt from, or modify, the specific requirements of this chapter regarding the allowable heights and areas of buildings based on the occupancy classification and type of construction, provided the special condition complies with the provisions specified in this section for such condition and other applicable requirements of this code.

509.2 Group S-2 enclosed parking garage with Group A, B, M or R above. A basement and/or the first story above grade plane of a building shall be considered as a separate and distinct building for the purpose of determining area limitations, continuity of fire walls, limitation of number of stories and type of construction, when all of the following conditions are met:

1. The basement and/or the first story above grade plane is of Type IA construction and is separated from the building above with a horizontal floor assembly having a minimum 3-hour fire-resistance rating.
2. Shaft, stairway, ramp or escalator enclosures through the horizontal floor assembly shall have a minimum of 2-hour fire-resistance rating with opening protectives in accordance with Table 715.3.

Exception: Where the enclosure walls below the horizontal floor assembly have a minimum of 3-hour fire-resistance rating with opening protectives in accordance with Table 715.3, the enclosure walls extending above the horizontal floor assembly shall be permitted to have a 1-hour fire-resistance rating provided:

1. The building above the horizontal floor assembly is not required to be of Type I construction;
2. The enclosure connects less than four stories, and
3. The enclosure opening protectives above the horizontal floor assembly have a minimum 1-hour fire protection rating.

3. The building above the horizontal floor assembly contains only Group A having an assembly room with an occupant load of less than 300, or Group B, M or R; and

4. The building below the horizontal floor assembly is a Group S-2 enclosed parking garage, used for the parking and storage of private motor vehicles.

Exceptions:

1. Entry lobbies, mechanical rooms, accessory storage and similar uses incidental to the operation of the building shall be permitted.

2. Group A having an assembly room with an occupant load of less than 300, or Group B or M shall be permitted in addition to those uses incidental to the operation of the building, provided that the entire structure below the horizontal floor assembly is protected throughout by an approved automatic sprinkler system.

5. The maximum building height in feet/meters as measured from the grade plane shall not exceed the limits set forth in Table 503 for the least restrictive type of construction involved.

509.3 Group S-2 enclosed parking garage with Group S-2 open parking garage above. A Group S-2 enclosed parking garage located in the basement or first story below a Group S-2 open parking garage shall be classified as a separate and distinct building for the purpose of determining the type of construction when the following conditions are met:

1. The allowable area of the structure shall be such that the sum of the ratios of the actual area divided by the allowable area for each separate occupancy shall not exceed 1.0.

2. The Group S-2 enclosed parking garage is of Type I or II construction and is at least equal to the fire-resistance requirements of the Group S-2 open parking garage.

3. The height and the number of the floors above the basement shall be limited as specified in Table 406.3.5.

4. The floor assembly separating the Group S-2 enclosed parking garage and Group S-2 open parking garage shall be protected as required for the floor assembly of the Group S-2 enclosed parking garage. Openings between the Group S-2 enclosed parking garage and Group S-2 open parking garage, except exit openings, shall not be required to be protected.

5. The Group S-2 enclosed parking garage is used exclusively for the parking or storage of private motor vehicles, but shall be permitted to contain an accessory office, waiting room and toilet room having a total area of not more than 1,000 square feet (93 m²), and mechanical equipment rooms incidental to the operation of the building.

509.4 Parking beneath Group R. Where a maximum one-story above grade plane Group S-2 parking garage, enclosed or open, or combination thereof, of Type I construction or open of Type IV construction, with grade entrance, is provided under a building of Group R, the number of stories to be used in determining the minimum type of construction shall be measured from the floor above such a parking area. The horizontal floor assembly between the parking garage and the Group R above shall comply with the type of construction required for the parking garage and shall also provide a fire-resistance rating not less than the mixed occupancy separation required in Section 508.3.3.

509.5 Reserved.

509.6 Group R-2 buildings of Type IIA construction. The height limitation for buildings of Type IIA construction in Group R-2 shall be increased to nine stories and 100 feet (30 480 mm) where the building is separated by not less than 50 feet (15 240 mm) from any other building on the lot and from property lines, the exits are segregated in an area enclosed by a 2-hour fire-resistance-rated fire wall and the first-floor construction has a fire-resistance rating of not less than 1 1/2 hours.

509.7 Open parking garage beneath Groups A, I, B, M and R. Open parking garages constructed under Groups A, I, B, M and R shall not exceed the height and area limitations permitted under Section 406.3. The height and area of the portion of the building above the open parking garage shall not exceed the limitations in Section 503 for the upper occupancy. The height, in both feet and stories, of the portion of the building above the open parking garage shall be measured from grade plane and shall include both the open parking garage and the portion of the building above the parking garage.

509.7.1 Fire separation. Fire separation assemblies between the parking occupancy and the upper occupancy shall correspond to the required fire-resistance rating prescribed in Table 508.3.3 for the occupancies involved. The type of construction shall apply to each occupancy individually, except that structural members, including main bracing within the open parking structure, which is necessary to support the upper occupancy, shall be protected with the more restrictive fire-resistance-rated assemblies of the groups involved as shown in Table 601. Means of egress for the upper occupancy shall conform to Chapter 10 and shall be separated from the parking occupancy by fire barriers having at least a 2-hour fire-resistance rating as required by Section 706, with self-closing doors complying with Section 715. Means of egress from the open parking garage shall comply with Section 406.3.

509.8 Industrial uses in buildings containing Group R. No space classified as Factory Industrial Group F shall be located above the second story of any building of Type III, IV, or V construction containing a space classified as Residential Group R-1 or R-2.

509.9 Separation of different tenancies. Spaces or dwelling units occupied by different tenants shall be separated by fire barriers having at least 1-hour fire resistance ratings.

Exceptions:

1. Non-residential spaces occupied by different tenants located in buildings that are sprinklered throughout.
2. Tenant spaces in covered mall buildings complying with section 402.

HISTORICAL NOTES:

Section renumbered and amended (former § BC508) L.L. 8/2008 § 89, eff. July

1, 2008.

Section added L.L. 33/2007 § 16, eff. July 1, 2008.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**

CHAPTER 7: THE NEW YORK CITY BUILDING CODE

Chapter 6: TYPES OF CONSTRUCTION

SECTION BC 601: GENERAL

NYC Administrative Code § 28-BC 601

601.1 Scope.

The provisions of this chapter shall control the classification of buildings as to type of construction with respect to occupancy and exterior fire separation distance.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 6: TYPES OF CONSTRUCTION
SECTION BC 602: CONSTRUCTION CLASSIFICATION

NYC Administrative Code § 28-BC 602

602.1 General.

Buildings and structures erected or to be erected, altered or extended in height or area shall be classified in one of the five construction types defined in Sections 602.2 through 602.5. The building elements shall have a fire-resistance rating not less than that specified in Table 601 and exterior walls shall have a fire-resistance rating not less than that specified in Table 602. Buildings constructed or altered inside the fire district shall further comply with Appendix D.

602.1.1 Minimum requirements. A building or portion thereof shall not be required to conform to the details of a type of construction higher than that type, which meets the minimum requirements based on occupancy even though certain features of such a building actually conform to a higher type of construction. Classification shall be that of the minimum requirement unless all of the requirements for the higher type of construction are met.

602.2 Types I and II. Type I and II construction are those types of construction in which the building elements listed in Table 601 are of noncombustible materials.

602.3 Type III. Type III construction is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of any material permitted by this code. Fire-retardant-treated wood framing complying with Section 2303.2 shall be permitted within exterior wall assemblies of a 2-hour rating or less.

Exceptions:

1. In Group I-1, R-1, and R-2 occupancies, all exterior walls, fire walls, exit passageways, and shaft enclosures shall be non-combustible.

2. In Group F occupancies subject to Section 270(1) of the New York State Labor Law, all exterior wall assemblies and all structural elements shall meet the requirements for a "fireproof building" as such term is defined in Section 264 of such law.

3. Inside the fire district, exterior load-bearing walls shall be constructed of noncombustible material.

4. Inside the fire district, exterior nonload-bearing walls may be constructed with fire-retardant-treated wood complying with Section 2303.2 where the building is equipped throughout with an automatic sprinkler system in accordance with Sections 903.3.1.1 through 903.3.1.3, unless otherwise prohibited by Exception 1 or 2 above.

602.4Type IV. Type IV construction (Heavy Timber, HT) is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of solid or laminated wood without concealed spaces. The details of Type IV construction shall comply with the provisions of this section. Fire-retardant-treated-wood framing complying with Section 2303.2 shall be permitted within exterior wall assemblies with a 2-hour rating or less.

Exceptions:

1. In Group I-1, R-1, and R-2 occupancies, all exterior walls, fire walls, exit passageways, and shaft enclosures shall be non-combustible.

2. In Group F occupancies subject to Section 270(1) of the New York State Labor Law, all exterior wall assemblies and all structural elements shall meet the requirements for a "fireproof building" as defined in Section 264 of such law.

3. Inside the fire district, exterior load-bearing walls shall be constructed of noncombustible material.

4. Inside the fire district, exterior non-bearing walls may be constructed with fire-retardant-treated wood complying with Section 2303.2 where the building is equipped throughout with an automatic sprinkler system in accordance with Sections 903.3.1.1 through 903.3.1.3, unless otherwise prohibited by Exception 1 or 2 above.

602.4.1Columns. Wood columns shall be sawn or glued laminated and shall not be less than 8 inches (203 mm) nominal in any dimension where supporting floor loads and not less than 6 inches (152 mm) nominal in width and not less than 8 inches (203 mm) nominal in depth where supporting roof and ceiling loads only. Columns shall be continuous or superimposed and connected in an approved manner.

602.4.2Floor framing. Wood beams and girders shall be of sawn or glued-laminated timber and shall be not less than 6 inches (152 mm) nominal in width and not less than 10 inches (254 mm) nominal in depth. Framed sawn or glued-laminated timber arches, which spring from the floor line and support floor loads, shall be not less than 8 inches (203 mm) nominal in any dimension. Framed timber trusses supporting floor loads shall have members of not less than 8 inches (203 mm) nominal in any dimension.

602.4.3Roof framing. Wood-frame or glued-laminated arches for roof construction, which spring from the floor line or from grade and do not support floor loads, shall have members not less than 6 inches (152 mm) nominal in width and have less than 8 inches (203 mm) nominal in depth for the lower half of the height and not less than 6 inches (152 mm) nominal in depth for the upper half. Framed or glued laminated arches for roof construction that spring from the top of walls or wall abutments, framed timber trusses and other roof framing, which do not support floor loads, shall have members not less than 4 inches (102 mm) nominal in width and not less than 6 inches (152 mm) nominal in depth. Spaced members shall be permitted to be composed of two or more pieces not less than 3 inches (76 mm) nominal in thickness where blocked solidly throughout their intervening spaces or where spaces are tightly closed by a continuous wood cover plate of not less than 2 inches (51 mm) nominal in thickness secured to the underside of the members. Splice plates shall be not less than 3 inches (76 mm) nominal in thickness. Where protected by approved automatic sprinklers under the roof deck, framing members shall be not less than 3 inches (76 mm) nominal in width.

602.4.4Floors. Floors shall be without concealed spaces. Wood floors shall be of sawn or glued-laminated planks, splined or tongue-and-groove, of not less than 3 inches (76 mm) nominal in thickness covered with 1-inch (25 mm) nominal dimension tongue-and-groove flooring, laid crosswise or diagonally, or 0.5-inch (12.7 mm) particleboard or planks not less than 4 inches (102 mm) nominal in width set on edge close together and well spiked and covered with

1-inch (25mm) nominal dimension flooring or 15/32-inch (12 mm) wood structural panel or 0.5-inch (12.7 mm) particleboard. The lumber shall be laid so that no continuous line of joints will occur except at points of support. Floors shall not extend closer than 0.5 inch (12.7 mm) to walls. Such 0.5-inch (12.7 mm) space shall be covered by a molding fastened to the wall and so arranged that it will not obstruct the swelling or shrinkage movements of the floor. Corbeling of masonry walls under the floor shall be permitted to be used in place of molding.

602.4.5Roofs.Roofs shall be without concealed spaces and wood roof decks shall be sawn or glued laminated, splined or tongue-and-groove plank, not less than 2 inches (51 mm) thick, 1 1/8-inch-thick (32 mm) wood structural panel (exterior glue), or of planks not less than 3 inches (76 mm) nominal in width, set on edge close together and laid as required for floors. Other types of decking shall be permitted to be used if providing equivalent fire resistance and structural properties.

602.4.6Partitions.Partitions shall be of solid wood construction formed by not less than two layers of 1-inch (25 mm) matched boards or laminated construction 4 inches (102 mm) thick, or of 1-hour fire-resistance-rated construction.

602.4.7Exterior structural members.Where a horizontal separation of 20 feet (6096 mm) or more is provided, wood columns and arches conforming to heavy timber sizes shall be permitted to be used externally, except as prohibited by Section 602.4 for Occupancy Groups F, I-1, R-1 and R-2.

602.5Type V.Type V construction is that type of construction in which the structural elements, exterior walls and interior walls are of any materials permitted by this code. Type V construction shall not be permitted inside the fire district.

Exception: In Group F occupancies subject to Section 270(1) of the New York State Labor Law, all exterior wall assemblies and all structural elements shall meet the requirements for a "fireproofbuilding" as defined in Section 264 of such law.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 6: TYPES OF CONSTRUCTION
SECTION BC 603: COMBUSTIBLE MATERIAL IN TYPE I AND II CONSTRUCTION

NYC Administrative Code § 28-BC 603

603.1 Allowable materials.

Combustible materials shall be permitted in buildings of Type I or II construction in the following applications and in accordance with Sections 603.1.1 through 603.1.3.

1. Fire-retardant-treated wood, complying with Section 2303.2, shall be permitted in:

1.1. Nonbearing interior partitions where the required fire-resistance rating is 1 hour or less.

Exception: Public corridors and exits shall be constructed of noncombustible materials.

1.2. Roof construction as permitted in Table 601, Note c, Item 3.

2. Thermal and acoustical insulation, other than foam plastics, having a flame spread index of not more than 25.

Exceptions:

1. Insulation placed between two layers of combustible materials without an intervening airspace shall be allowed to have a flame spread index of not more than 100.

2. Insulation installed between a finished floor and solid decking without intervening airspace shall be allowed to have a flame spread index of not more than 200.

3. Foam plastics in accordance with Chapter 26.

4. Roof coverings that have an A or B classification as defined in Section 1505.

5. Interior floor finish and interior finish, trim and millwork such as doors, door frames, window sashes and frames,

as permitted by Chapter 8.

6. Where not installed over 15 feet (4572 mm) above grade, show windows, nailing or furring strips, wooden bulkheads below show windows, their frames, aprons and show cases, as permitted by Section 1405.

7. Finished flooring applied directly to the floor slab or to wood sleepers that are firestopped in accordance with Section 717.2.7, where combustible finish flooring is permitted by Chapter 8.

8. Partitions dividing portions of stores, offices or similar places occupied by one tenant only and which do not establish a corridor serving an occupant load of 30 or more shall be permitted to be constructed of fire-retardant-treated wood, 1-hour fire-resistance-rated construction or of wood panels or similar light construction up to 6 feet (1829 mm) in height.

9. Platforms as permitted in Section 410.

10. Combustible exterior wall coverings in accordance with Chapter 14.

11. Blocking such as for handrails, millwork, cabinets and window and door frames.

12. Light-transmitting plastics as permitted by Chapter 26.

13. Mastics and caulking materials applied to provide flexible seals between components of exterior wall construction.

14. Exterior plastic veneer installed in accordance with Section 2605.2.

15. Nailing or furring strips as permitted by Section 803.4.

16. Heavy timber as permitted by Note c, Item 2, Table 601 and Section 602.4.7.

17. Aggregates, component materials and admixtures as permitted by Section 703.2.2.

18. Sprayed cementitious and mineral fiber fire-resistance-rated materials installed to comply with Section 1704.11.

19. Materials used to protect penetrations in fire-resistance-rated assemblies in accordance with Section 712.

20. Materials used to protect joints in fire-resistance-rated assemblies in accordance with Section 713.

21. Materials allowed in the concealed spaces of buildings of Type I and II construction in accordance with Section 717.5.

22. Materials exposed within plenums complying with Section 602 of the New York City Mechanical Code.

603.1.1Ducts. The use of nonmetallic ducts shall be permitted when installed in accordance with the limitations of the New York City Mechanical Code.

603.1.2Piping. The use of combustible piping materials shall be permitted when installed in accordance with the limitations of the New York City Plumbing Code.

603.1.3Electrical. The use of electrical wiring methods with combustible insulation, tubing, raceways and related components shall be permitted when installed in accordance with the limitations of the New York City Electrical Code.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 701: GENERAL

NYC Administrative Code § 28-BC 701

701.1 Scope.

The provisions of this chapter shall govern the materials and assemblies used for structural fire resistance and fire-resistance-rated construction separation of adjacent spaces to safeguard against the spread of fire and smoke within a building and the spread of fire to or from buildings.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 702: DEFINITIONS

NYC Administrative Code § 28-BC 702

702.1 Definitions.

The following words and terms shall, for the purposes of this chapter, and as used elsewhere in this code, have the meanings shown herein.

ANNULAR SPACE. The opening around the penetrating item.

CEILING RADIATION DAMPER. A listed device installed in a ceiling membrane of a fire-resistance-rated floor/ceiling or roof/ceiling assembly to limit automatically the radiative heat transfer through an air inlet/outlet opening.

COMBINATION FIRE/SMOKE DAMPER. A listed device installed in ducts and air transfer openings designed to close automatically upon the detection of heat and to also resist the passage of air and smoke. The device is installed to operate automatically, controlled by a smoke detection system, and where required, is capable of being positioned from a remote command station.

CONCEALED SPACES. Enclosed spaces within partitions, walls, floors, roofs, stairs, furring, pipe chases and column enclosures and other similar spaces.

DAMPER. See "Ceiling radiation damper," "Combination fire/smoke damper," "Fire damper" and "Smoke damper."

DRAFT STOP. A material, device or construction installed to restrict the movement of air within open spaces of concealed areas of building components such as crawl spaces, floor/ceiling assemblies, roof/ceiling assemblies and attics.

F RATING. The time period that the through-penetration fire stop system limits the spread of fire through the penetration when tested in accordance with ASTM E 814.

FIRE AREA. The aggregate floor area enclosed and bounded by firewalls, fire barriers, exterior walls or fire-resistance-rated horizontal assemblies of a building.

FIRE BARRIER. A fire-resistance-rated vertical or horizontal assembly of materials complying with Section 706 designed to restrict the spread of fire in which openings are protected.

FIRE DAMPER. A listed device, installed in ducts and air transfer openings of an air distribution system or smoke control system, designed to close automatically upon detection of heat, to interrupt migratory airflow, and to restrict the passage of flame. Fire dampers are classified for use in either static systems that will automatically shut down in the event of a fire, or in a dynamic system that continues to operate during a fire. A dynamic fire damper is tested and rated for closure under airflow.

FIRE DOOR. The door component of a fire door assembly.

FIRE DOOR ASSEMBLY. Any combination of a fire door, frame, hardware, and other accessories that together, as an opening protective, provide a specific degree of fire protection to the opening.

FIRE PARTITION. A vertical assembly of materials complying with Section 708, designed to restrict the spread of fire in which openings are protected.

FIRE PROTECTION RATING. The period of time that an opening protective assembly will maintain the ability to confine a fire as determined by tests prescribed in Section 715. Ratings are stated in hours or minutes.

FIRE RESISTANCE. That property of materials or their assemblies that prevents or retards the passage of excessive heat, hot gases or flames under conditions of use.

FIRE-RESISTANCE RATING. The period of time a building element, component or assembly maintains the ability to withstand fire exposure, continues to perform a given structural function, or both, as determined by the tests, or the methods based on tests, prescribed in Section 703.

FIRE-RESISTANT JOINT SYSTEM. An assemblage of specific materials or products that are designed, tested, and fire-resistance rated in accordance with either ASTM E 1966 or UL 2079 to resist for a prescribed period of time the passage of fire through joints made in or between fire-resistance-rated assemblies.

FIRE SEPARATION DISTANCE. The distance measured from the building face to the closest interior tax lot line, to the centerline of a street or other public space, or to an imaginary line between two buildings on the same tax lot. The distance shall be measured at right angles from the face of the wall.

FIRE WALL. A fire-resistance-rated smoke-tight wall having protected openings, which restricts the spread of fire and extends continuously from the foundation to or through the roof, with sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall.

FIRE WINDOW ASSEMBLY. A window, as an opening protective, constructed and glazed to give protection against the passage of fire, smoke, and hot gases.

FIREBLOCKING. A building material or an assembly of building materials that may or may not have a fire-resistance rating installed to resist the free passage of flame or hot gases to other areas of the building through concealed spaces in accordance with Section 717.

FIRESTOPPING. A through-penetration firestop or a membrane penetration firestop.

FLOOR FIRE DOOR ASSEMBLY. A combination of a fire door, a frame, hardware and other accessories installed, as an opening protective, in a horizontal plane, which together provide a specific degree of fire protection to a

through opening in a fire-resistance-rated floor (see Section 712.4.6).

MEMBRANE PENETRATION. An opening made through one side (wall, floor or ceiling membrane) of an assembly.

MEMBRANE PENETRATION FIRESTOP. A material, device, or assemblage of specific materials or products that is designed, tested and fire-resistance rated to resist for a prescribed time period the passage of flame and heat through openings in a protective membrane in order to accommodate cables, cable trays, conduit, tubing, pipes or similar items.

PENETRATION FIRESTOP. A through-penetration firestop or a membrane penetration firestop.

SELF-CLOSING. As applied to a fire door or other opening, means equipped with an approved device that will ensure closing after having been opened.

SHAFT. An enclosed space extending through one or more stories of a building, connecting vertical openings in successive floors, or floors and roof.

SHAFT ENCLOSURE. The walls or construction forming the boundaries of a shaft.

SMOKE BARRIER. A continuous membrane, either vertical or horizontal, such as a wall, floor, or ceiling assembly, that is designed and constructed in accordance with Section 709 to restrict the movement of smoke.

SMOKE COMPARTMENT. A space within a building enclosed by smoke barriers on all sides, including the top and bottom.

SMOKE DAMPER. A listed device installed in ducts and air transfer openings that is designed to resist the passage of air and smoke. The device is installed to operate automatically, controlled by a smoke detection system, and where required, is capable of being positioned from a remote command station.

SMOKE PARTITION. A continuous vertical assembly that is designed and constructed to restrict the movement of smoke and is not generally required to have a fire-resistance rating in accordance with Section 710.

T RATING. The time period that the penetration firestop system, including the penetrating item, limits the maximum temperature rise to 325(degrees)F (163(degrees)C) above its initial temperature through the penetration on the nonfire side when tested in accordance with ASTM E 814.

THROUGH PENETRATION. An opening that passes through an entire assembly.

THROUGH-PENETRATION FIRESTOP SYSTEM. An assemblage of specific materials or products that are designed, tested and fire-resistance rated to resist for a prescribed period of time the spread of fire through penetrations. The F and T rating criteria for penetration firestop systems shall be in accordance with ASTM E 814. See definitions of "F rating" and "T rating."



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 703: FIRE-RESISTANCE RATINGS AND FIRE TESTS

NYC Administrative Code § 28-BC 703

703.1 Scope.

Materials prescribed herein for fire resistance shall conform to the requirements of this chapter.

703.2 Fire-resistance ratings. The fire-resistance rating of building elements shall be determined in accordance with the test procedures set forth in ASTM E 119 or in accordance with Section 703.3. Where materials, systems or devices that have not been tested as part of a fire-resistance-rated assembly are incorporated into the assembly, sufficient data shall be made available to the commissioner to show that the required fire-resistance rating is not reduced. Materials and methods of construction used to protect joints and penetrations in fire-resistance-rated building elements shall not reduce the required fire-resistance rating.

Exception: In determining the fire-resistance rating of exterior bearing walls, compliance with the ASTM E 119 criteria for unexposed surface temperature rise and ignition of cotton waste due to passage of flame or gases is required only for a period of time corresponding to the required fire-resistance rating of an exterior nonbearing wall with the same fire separation distance, and in a building of the same group. When the fire-resistance rating determined in accordance with this exception exceeds the fire-resistance rating determined in accordance with ASTM E 119, the fire exposure time period, water pressure, and application duration criteria for the hose stream test of ASTM E 119 shall be based upon the fire-resistance rating determined in accordance with this exception.

703.2.1 Nonsymmetrical wall construction. Interior walls and partitions of nonsymmetrical construction shall be tested with both faces exposed to the furnace, and the assigned fire-resistance rating shall be the shortest duration obtained from the two tests conducted in compliance with ASTM E 119. When evidence is furnished to show that the wall was tested with the least fire-resistant side exposed to the furnace, subject to acceptance of the commissioner, the wall need not be subjected to tests from the opposite side (see Section 704.5 for exterior walls).

703.2.2 Combustible components. Combustible aggregates may be integrated with other materials to form a non-combustible material provided that the entire mixture, in the form in which it is to be used in construction, meets

the requirement of this code for noncombustible construction.

703.2.3 Restrained classification. Fire-resistance-rated assemblies tested under ASTM E 119 shall not be considered to be restrained unless evidence satisfactory to the commissioner is furnished by the registered design professional showing that the construction qualifies for a restrained classification in accordance with ASTM E 119. Restrained construction shall be identified on the plans.

703.3 Alternative methods for determining fire resistance. The application of any of the alternative methods listed in this section shall be based on the fire exposure and acceptance criteria specified in ASTM E 119. The required fire resistance of a building element shall be permitted to be established by any of the following methods or procedures:

1. Fire-resistance designs documented in approved sources.
2. Prescriptive designs of fire-resistance-rated building elements as prescribed in Section 720.
3. Calculations in accordance with Section 721.
4. Engineering analysis based on a comparison of building element designs having fire-resistance ratings as determined by the test procedures set forth in ASTM E 119.
5. Alternative protection methods as allowed by Section 104.1.

703.4 Noncombustibility tests. The tests indicated in Sections 703.4.1 and 703.4.2 shall serve as criteria for acceptance of building materials as set forth in Sections 602.2, 602.3 and 602.4 in Type I, II, III and IV construction. The term "noncombustible" does not apply to the flame spread characteristics of interior finish or trim materials. A material shall not be classified as a noncombustible building construction material if it is subject to an increase in combustibility or flame spread beyond the limitations herein established through the effects of age, fabrication or erection techniques, moisture or other atmospheric conditions.

703.4.1 Elementary materials. Materials required to be noncombustible shall be tested in accordance with ASTM E 136.

703.4.2 Composite materials. Materials having a structural base of noncombustible material as determined in accordance with Section 703.4.1 with a surfacing not more than 0.125 inch (3.18 mm) thick that has a flame spread index not greater than 50 when tested in accordance with ASTM E 84 shall be acceptable as noncombustible materials.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 704: EXTERIOR WALLS

NYC Administrative Code § 28-BC 704

704.1 General.

Exterior walls shall be fire-resistance rated and have opening protection as required by this section. Exterior wall construction shall comply with the provisions of Chapter 14 and Appendix D where applicable.

704.2 Projections. Cornices, eave overhangs, exterior balconies and similar architectural appendages, including but not limited to, fascias, belt courses, pilasters, surrounds, gutters, leaders, half-timber work, shutters, trellises, which extend beyond the floor area shall conform to the requirements of this section and Section 1406, provided, if removed or destroyed, will not reduce the structural stability of the building enclosure, and installed so as not to reduce the required fire resistance rating of the enclosure. Exterior egress balconies and exterior exit stairways shall comply with the requirements of this section, Section 1013.5, and Section 1022.1. Projections shall not extend beyond the distance determined by the following two methods, whichever results in the lesser projection:

1. A point one-third the distance to the lot line from an assumed vertical plane located where protected openings are required in accordance with Section 704.8.

2. More than 12 inches (305mm) into areas where openings are prohibited.

704.2.1 Type III, IV or V construction. Projections from walls of Type III, IV or V construction shall be of any approved material.

704.2.2 Combustible projections. Combustible projections located where openings are not permitted or where protection of openings is required shall be of at least 1-hour fire-resistance-rated construction, Type IV construction, or as required by Section 1406.3.

704.3 Buildings on the same lot. For the purposes of determining the required wall and opening protection and roof-covering requirements, buildings on the same tax lot shall be assumed to have an imaginary line between them.

Exception: Two or more buildings on the same tax lot shall either be regulated as separate buildings or shall be considered as portions of one building if the aggregate area of such buildings is within the limits specified in Chapter 5 for a single building. Where the buildings contain different occupancy groups or are of different types of construction, the area shall be that allowed for the most restrictive occupancy or construction.

704.4Materials.Exterior walls shall be of materials permitted by the building type of construction.

704.5Fire-resistance ratings.Exterior walls shall be fire-resistance rated in accordance with Tables 601, 602, and Appendix D where applicable. The fire-resistance rating of exterior walls with a fire-separation distance of greater than 5 feet (1524 mm) shall be rated for exposure to fire from the inside. The fire-resistance rating of exterior walls with a fire-separation distance of 5 feet (1524 mm) or less shall be rated for exposure to fire from both sides.

704.6Structural stability.The wall shall extend to the height required by Section 704.11 and shall have sufficient structural stability such that it will remain in place for the duration of time indicated by the required fire-resistance rating.

704.7Unexposed surface temperature.Where protected openings are not limited by Section 704.8, the limitation on the rise of temperature on the unexposed surface of exterior walls as required by ASTM E 119 shall not apply. Where protected openings are limited by Section 704.8, the limitation on the rise of temperature on the unexposed surface of exterior walls as required by ASTM E 119 shall not apply provided that a correction is made for radiation from the unexposed exterior wall surface in accordance with the following formula:

$$A_e = A \cdot \sqrt[p]{A_f \times F_{eo}} \text{ (Equation 7-1)}$$

where:

A_e = Equivalent area of protected openings.

A = Actual area of protected openings.

A_f = Area of exterior wall surface in the story under consideration exclusive of openings, on which the temperature limitations of ASTM E119 for walls are exceeded.

F_{eo} = An "equivalent opening factor" derived from Figure 704.7 based on the average temperature of the unexposed wall surface and the fire-resistance rating of the wall.
[SEE graphical material in printed version]

704.8Allowable area of openings.The maximum area of unprotected or protected openings permitted in an exterior wall in any story shall not exceed the values set forth in Table 704.8. Where both unprotected and protected openings are located in the exterior wall in any story, the total area of the openings shall comply with the following formula:
[SEE graphical material in printed version]

704.8.1Automatic sprinkler system.In buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the maximum allowable area of unprotected openings in occupancies other than Groups H-1, H-2 and H-3 shall be the same as the tabulated limitations for protected openings.

704.8.2First story.In occupancies other than Group H, unlimited unprotected openings are permitted in the first story of exterior walls facing a street that have a fire separation distance of greater than 15 feet (4572 mm), or facing an unoccupied space. The unoccupied space shall be on the same lot or dedicated for public use, shall not be less than 30 feet (9144 mm) in width, and shall have access from a street by a posted fire lane in accordance with the New York City Fire Code.

704.9Vertical separation of openings.Openings in exterior walls in adjacent stories shall be separated vertically to

protect against fire spread on the exterior of the buildings where the openings are within 5 feet (1524 mm) of each other horizontally in accordance with Section 715.4.8. Such openings shall be separated vertically at least 3 feet (914 mm) by spandrel girders, exterior walls or other similar assemblies that have a fire-resistance rating of at least 1 hour or by flame barriers that extend horizontally at least 30 inches (762 mm) beyond the exterior wall and that are at least as wide as the opening. Flame barriers shall also have a fire-resistance rating of at least 1 hour. The unexposed surface temperature limitations specified in ASTM E 119 shall not apply to the flame barriers or vertical separation unless otherwise required by the provisions of this code. Where a curtain wall assembly is used on the exterior wall, the intersection between the floor assembly and curtain wall assembly shall be protected in accordance with Section 713.4.

Exceptions:

1. This section shall not apply to buildings that are three stories or less in height.
2. This section shall not apply to buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
3. This section shall not apply to open parking garages.
4. This section shall not apply to Occupancy Group A, E, I, or R.

704.10 Vertical exposure. For buildings on the same tax lot, approved protectives shall be provided in every opening that is less than 15 feet (4572 mm) vertically above the roof of an adjoining building or adjacent structure that is within a horizontal fire-separation distance of 15 feet (4572 mm) of the wall in which the opening is located.

Exception: Opening protectives are not required where the roof construction has a fire-resistance rating of not less than 1 hour for a minimum distance of 10 feet (3048 mm) from the adjoining building and the entire length and span of the supporting elements for the fire-resistance-rated roof assembly has a fire-resistance rating of not less than 1 hour.

704.11 Parapets. Parapets shall be provided on exterior walls of buildings.

Exceptions: A parapet need not be provided on an exterior wall where any of the following conditions exist:

1. The wall is not required to be fire-resistance rated in accordance with Table 602 because of fire separation distance.
2. The building has an area of not more than 1,000 square feet (93 m²) on every floor.
3. Walls that terminate at roofs of not less than 2-hour fire-resistance-rated construction.
4. One-hour fire-resistance-rated exterior walls that terminate at the underside of the roof sheathing, deck or slab, provided that the entire building is covered with a Class A roof covering. Such roof shall not have openings located within 10 feet (3048 mm) of the 1-hour fire-resistance-rated exterior wall and not within 5 feet (1524 mm) for Groups R and U.
 - 4.1. Where the roof/ceiling framing elements are parallel to the walls, such framing and elements supporting such framing shall not be of less than 1-hour fire-resistance-rated construction for a width of 4 feet (1219 mm) measured from the interior side of the wall for Groups R and U and 10 feet (3048 mm) for other occupancies; or
 - 4.2. Where roof/ceiling framing elements are not parallel to the wall, the entire span of such framing and elements supporting such framing shall not be of less than 1-hour fire-resistance-rated construction.
5. In occupancies of Groups R-2 and R-3, both provided with a Class A or B roof covering, the exterior wall shall be permitted to terminate at the roof sheathing or deck in Type III, IV and V construction provided:

5.1. The roof sheathing or deck is constructed of approved noncombustible materials or of fire-retardant-treated wood, for a distance of 4 feet (1219 mm) from the perimeter; or

5.2. The roof is protected with 0.625-inch (15.88 mm) Type X gypsum board directly beneath the underside of the roof sheathing or deck, supported by a minimum of nominal 2-inch (51 mm) ledgers attached to the sides of the roof framing members, for a minimum distance of 4 feet (1219 mm).

6. Where the wall is permitted to have at least 25 percent of the exterior wall areas containing unprotected openings based on fire separation distance as determined in accordance with Section 704.8.

704.11.1 Parapet construction. Parapets shall have the same fire-resistance rating as that required for the supporting wall, and on any side adjacent to a roof surface, shall have noncombustible faces for the uppermost 18 inches (457 mm), including counterflashing and coping materials. The height of the parapet shall not be less than 30 inches (762 mm) above the point where the roof surface and the wall intersect. Where the roof slopes toward a parapet at a slope greater than two units vertical in 12 units horizontal (16.7-percent slope), the parapet shall extend to the same height as any portion of the roof within a fire separation distance where protection of wall openings is required, but in no case shall the height be less than 30 inches (762 mm).

704.12 Opening protection. Windows required to be protected in accordance with Section 704.8, 704.9, or 704.10 shall comply with Section 715.4.8. Other openings required to be protected with fire doors or shutters in accordance with Sections 704.8, 704.9 and 704.10 shall comply with Section 715.3.

Exception: Fire protective assemblies are not required where the building is protected throughout by an automatic sprinkler system and the exterior openings are protected by an approved water curtain using automatic sprinklers approved for that use. The sprinklers and the water curtain shall be installed in accordance with NFPA 13, as modified in Appendix Q.

704.12.1 Unprotected openings. Where protected openings are not required by Section 704, windows and doors shall be constructed of any approved materials. Glazing shall conform to the requirements of Chapters 24 and 26.

704.13 Joints. Joints made in or between exterior walls required by this section to have a fire-resistance rating shall comply with Section 713.

Exception: Joints in exterior walls that are permitted to have unprotected openings.

704.13.1 Voids. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 713.4.

704.14 Ducts and air transfer openings. Penetrations by air ducts and air transfer openings in fire-resistance-rated exterior walls required to have protected openings shall comply with Section 716.

Exception: Foundation vents installed in accordance with this code are permitted.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 705: FIRE WALLS

NYC Administrative Code § 28-BC 705

705.1 General.

Each portion of a building separated by one or more fire walls that comply with the provisions of this section shall be considered a separate building. The extent and location of such fire walls shall provide a complete separation. Where a fire wall also separates groups that are required to be separated by a fire barrier wall, the most restrictive requirements of each separation shall apply. Concealed spaces in cornices and eaves shall comply with the provisions of Section 705.5.2.

705.1.1 Party walls. Any wall located on a property line between adjacent buildings, which is used or adapted for joint service between the two buildings, shall be constructed as a fire wall in accordance with Section 705, and shall create separate buildings.

705.1.2 Walls separating attached one- and two-family dwellings. Attached one- and two-family dwellings shall be separated by walls constructed in accordance with Section 705 or Appendix M.

705.2 Structural stability. Fire walls shall have sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall for the duration of time indicated by the required fire-resistance rating.

705.3 Materials. Fire walls shall be constructed of any approved noncombustible materials.

705.4 Fire-resistance rating. Fire walls shall have a fire-resistance rating of not less than that required by Table 705.4. Table 705.4 Fire Wall Fire-Resistance Ratings Group Fire-Resistance Rating (hours) A, B, E, H-4, I, R-1, R-2, U 3a F-1, H-3b, H-5, M, S-1 3 H-1, H-2 4b F-2, S-2, R-3, R-4 2 a. Walls shall be not less than 2-hour fire-resistance rated where separating buildings of Type II or V construction. b. For Group H-1, H-2 or H-3 buildings, also see Sections 415.4 and 415.5.

705.5Horizontal continuity.Fire walls shall be continuous from exterior wall to exterior wall and shall extend at least 18 inches (457 mm) beyond the exterior surface of exterior walls.

Exceptions:

1. Fire walls shall be permitted to terminate at the interior surface of combustible exterior sheathing or siding provided the exterior wall has a fire-resistance rating of at least 1 hour for a horizontal distance of at least 4 feet (1219 mm) on both sides of the fire wall. Openings within such exterior walls shall be protected by fire assemblies having a fire protection rating of not less than 3/4 hour.

2. Fire walls shall be permitted to terminate at the interior surface of noncombustible exterior sheathing, exterior siding or other noncombustible exterior finishes provided the sheathing, siding, or other exterior noncombustible finish extends a horizontal distance of at least 4 feet (1219 mm) on both sides of the fire wall.

3. Fire walls shall be permitted to terminate at the interior surface of noncombustible exterior sheathing where the building on each side of the fire wall is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

705.5.1Exterior walls.Where the fire wall intersects the exterior walls, the fire-resistance rating for the exterior walls on both sides of the fire wall shall have a 1-hour fire-resistance rating with 3/4-hour opening protection where opening protection is required. The fire-resistance rating of the exterior wall shall extend a minimum of 4 feet (1219 mm) on each side of the intersection of the fire wall to exterior wall. Exterior wall intersections at fire walls that form an angle equal to or greater than 180 degrees (3.14 rad) do not need exterior wall protection.

705.5.2Horizontal projecting elements.Fire walls shall extend to the outer edge of horizontal projecting elements such as balconies, roof overhangs, canopies, marquees and architectural projections that are within 4 feet (1219 mm) of the fire wall.

Exceptions:

1. Noncombustible horizontal projecting elements without concealed spaces provided the exterior wall behind and below the projecting element has not less than 1-hour fire-resistance-rated construction for a distance not less than the depth of the projecting element on both sides of the fire wall. Openings within such exterior walls shall be protected by fire assemblies having a fire protection rating of not less than 3/4 hour.

2. Noncombustible horizontal projecting elements with concealed spaces, provided a minimum 1-hour fire-resistance-rated wall extends through the concealed space. The projecting element shall be separated from the building by a minimum of 1-hour fire-resistance-rated construction for a distance on each side of the firewall equal to the depth of the projecting element. The wall is not required to extend under the projecting element where the building exterior wall is a minimum of 1-hour fire-resistance rated for a distance on each side of the firewall equal to the depth of the projecting element. Openings within such exterior walls shall be protected by fire assemblies having a fire protection rating of not less than 3/4 hour.

705.6Vertical continuity.Fire walls shall extend from the foundation through the roof, to form a parapet at least 30 inches (762 mm) in height. Such parapet shall in no event extend to a point less than 4 inches (102 mm) above the highest point of peaked or gabled roof.

Exceptions:

1. Where a two-hour fire wall is permitted in accordance with Table 705.4, such wall shall be permitted to terminate at the underside of the roof sheathing, deck or slab provided:

1.1. The lower roof assembly within 4 feet (1219 mm) of the wall has not less than a 1-hour fire-resistance rating and the entire length and span of supporting elements for the rated roof assembly has a fire-resistance rating of not less than 1 hour; and

1.2. Openings in the roof shall not be located within 4 feet (1219 mm) of the fire wall; and

1.3. Each building shall be provided with not less than a Class A roof covering.

2. In buildings of Type I or II constructions, fire walls shall be permitted to terminate at the underside of noncombustible roof sheathing, deck, or slabs where both buildings are provided with not less than a Class A roof covering. Openings in the roof shall not be located within 4 feet (1219 mm) of the fire wall.

3. In buildings of Type III, IV and V construction, fire walls shall be permitted to terminate at the underside of noncombustible roof sheathing or decks provided:

3.1. There are no openings in the roof within 4 feet (1219 mm) of the fire wall; and

3.2. The roof is covered with a minimum Class A roof covering.

4. Buildings located above a parking garage designed in accordance with Section 509.2 shall be permitted to have the fire walls for the buildings located above the parking garage extend from the horizontal separation between the parking garage and the buildings.

705.7 Combustible framing in fire walls. Adjacent combustible members entering into a concrete or masonry firewall from opposite sides shall not have less than a 4-inch (102 mm) distance between embedded ends. Where combustible members frame into hollow walls or walls of hollow units, hollow spaces shall be solidly filled for the full thickness of the wall and for a distance not less than 4 inches (102 mm) above, below and between the structural members, with noncombustible materials approved for fire blocking.

705.8 Openings. Each opening through a fire wall, a party wall, or a through wall between two buildings shall be protected in accordance with Section 715.3 and shall not exceed 120 square feet (11 m²), with no dimension greater than 12 feet (3658 mm). The aggregate width of openings at any floor level shall not exceed 25 percent of the length of the wall.

Exception: Openings shall not be limited to 120 square feet (11 m²) where both buildings are equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1. However, the aggregate width of all openings at any one floor level shall not exceed 25 percent of the length of the wall.

705.9 Penetrations. Penetrations through fire walls shall comply with Section 712.

705.10 Joints. Joints made in or between fire walls shall comply with Section 713.

705.11 Ducts and air transfer openings. Ducts and air transfer openings shall not penetrate fire walls.

Exception: Penetrations by ducts and air transfer openings of fire walls that are not on a tax lot line shall be allowed provided the penetrations comply with Sections 712 and 716. The size and aggregate width of all openings shall not exceed the limitations of Section 705.8.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

705.6 item 4 amended L.L. 8/2008 § 92, eff. July 1, 2008.



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Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 706: FIRE BARRIERS

NYC Administrative Code § 28-BC 706

706.1 General.

Fire barriers used for separation of shafts, exits, exit passageways, horizontal exits or incidental use areas, to separate different occupancies, to separate a single occupancy into different fire areas, or to separate other areas where a fire barrier is required elsewhere in this code or the New York City Fire Code, shall comply with this section.

706.2 Materials. The walls and floor assemblies shall be of materials permitted by the building type of construction.

706.3 Fire-resistance rating. The fire-resistance rating of the walls and floor assemblies shall comply with this section.

706.3.1 Shaft enclosures. The fire-resistance rating of the fire barrier separating building areas from a shaft shall comply with Section 707.4.

706.3.2 Exit enclosures. The fire-resistance rating of the fire barrier separating building areas from an exit shall comply with Section 1019.1.

706.3.3 Exit passageway. The fire-resistance rating of the separation between building areas and an exit passageway shall comply with Section 1020.1.

706.3.4 Horizontal exit. The fire-resistance rating of the separation between building areas connected by a horizontal exit shall comply with Section 1021.1.

706.3.5 Incidental use areas. The fire barrier separating incidental use areas shall have a fire-resistance rating of not less than that indicated in Table 508.2.

706.3.6 Separation of mixed occupancies. Where the provisions of Section 508.3.3 are applicable, the fire barrier separating mixed occupancies shall have a fire-resistance rating of not less than that indicated in Section 508.3.3 based

on the occupancies being separated.

706.3.7Single-occupancy fire areas.The fire barrier separating a single occupancy into different fire areas shall have a fire-resistance rating of not less than that indicated in Table 706.3.7.Table 706.3.7 Fire-Resistance Rating Requirements for Fire Barrier Assemblies Between Fire Areas Occupancy Group Fire-Resistance Rating (hours) H-1, H-2 4 F-1, H-3, S-1 3 A, B, E, F-2, H-4, H-5, I, M, R, S-2 2 U 1

706.3.8Atriums.The fire-resistance rating of the fire barrier separating atriums shall comply with Section 404.5.

706.4Continuity of fire barrier walls.Fire barrier walls shall extend from the top of the floor/ceiling assembly below to the underside of the floor or roof slab or deck above and shall be securely attached thereto. These walls shall be continuous through concealed spaces such as the space above a suspended ceiling. The supporting construction for fire barrier walls shall be protected to afford the required fire-resistance rating of the fire barrier supported except for 1-hour fire-resistance-rated incidental use area separations as required by Table 508.2 in buildings of Type IIB, IIIB and VB construction. Hollow vertical spaces within the fire barrier wall shall be fire-stopped at every floor level.

Exceptions:

1. The maximum required fire-resistance rating for assemblies supporting fire barriers separating tank storage as provided for in Section 415.7.2.1 shall be 2 hours, but not less than required by Table 601 for the building construction type.

2. Shaft enclosure shall be permitted to terminate at a top enclosure complying with Section 707.12.

706.5Horizontal fire barriers.Horizontal fire barriers shall be constructed in accordance with Section 711.

706.6Exterior walls.Where exterior walls serve as a part of a required fire-resistance-rated enclosure, such walls shall comply with the requirements of Section 704 for exterior walls, and the fire-resistance-rated enclosure requirements of Section 706 shall not apply.

Exception: Exterior walls required to be fire-resistance rated in accordance with Section 1022.6.

706.7Openings.Openings in a fire barrier wall shall be protected in accordance with Section 715. Openings shall be limited to a maximum aggregate width of 25 percent of the length of the wall, and the maximum area of any single opening shall not exceed 120 square feet (11 m²). Openings in vertical exit enclosures and exit passageways shall also comply with Sections 1019.1.1 and 1020.4, respectively.

Exceptions:

1. Openings shall not be limited to 120 square feet (11 m²) where adjoining fire areas are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

2. Openings for fire doors serving an exit enclosure shall not be limited to an aggregate width of 25 percent of the length of the wall.

3. Openings shall not be limited to 120 square feet (11 m²) or an aggregate width of 25 percent of the length of the wall where the opening protective assembly has been tested in accordance with ASTM E 119 and has a minimum fire-resistance rating not less than the fire-resistance rating of the wall.

4. Openings permitted in atrium enclosures shall comply with the provisions of Section 404.5.

706.8Penetrations.Penetrations through fire barriers shall comply with Section 712.

NYC Administrative Code § 28-BC 706

706.8.1 Prohibited penetrations. Penetrations into an exit enclosure shall only be allowed when permitted by Sections 1019.1.2 and 1020.5.

706.9 Joints. Joints made in or between fire barriers shall comply with Section 713.

706.10 Ducts and air transfer openings. Penetrations by ducts and air transfer openings shall comply with Sections 712 and 716.

706.10.1 Prohibited ducts and air transfer openings. Penetrations by ducts and air transfer openings into an exit enclosure shall only be allowed when permitted by Sections 1019.1.2 and 1020.5.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

706.3.5 amended L.L. 8/2008 § 93, eff. July 1, 2008.

706.3.6 amended L.L. 8/2008 § 93, eff. July 1, 2008.

706.4 open par amended L.L. 8/2008 § 93, eff. July 1, 2008.

706.8.1 amended L.L. 8/2008 § 93, eff. July 1, 2008.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 707: SHAFT ENCLOSURES

NYC Administrative Code § 28-BC 707

707.1 General.

The provisions of this section shall apply to vertical shafts where such shafts are required to protect openings and penetrations through floor/ceiling and roof/ceiling assemblies.

707.2 Shaft enclosure required. Openings through a floor/ceiling assembly shall be protected by a shaft enclosure complying with this section.

Exceptions:

1. A shaft enclosure is not required for openings totally within an individual residential dwelling unit and connecting four stories or less where such dwelling unit is fully sprinklered in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3.

2. A shaft enclosure is not required in a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 for an escalator opening or stairway which is not a portion of the means of egress protected according to Item 2.1 or 2.2:

2.1. Where the area of the floor opening between stories does not exceed twice the horizontal projected area of the escalator or stairway and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13, as modified in Appendix Q. In other than Groups B and M, this application is limited to openings that do not connect more than four stories.

2.2. Where the opening is protected by approved power-operated automatic shutters at every floor penetrated. The shutters shall be of noncombustible construction and have a fire-resistance rating of not less than 1.5 hours. The shutter shall be so constructed as to close immediately upon the actuation of a smoke detector installed in accordance with Section 907.10 and shall completely shut off the well opening. Escalators shall cease operation when the shutter begins

to close. The shutter shall operate at a speed of not more than 30 feet per minute (152.4 mm/s) and shall be equipped with a sensitive leading edge to arrest its progress where in contact with any obstacle, and to continue its progress on release therefrom.

3. A shaft enclosure is not required for penetrations by pipe, tube, conduit, wire, cable, and vents protected in accordance with Section 712.4.

4. A shaft enclosure is not required for penetrations by ducts protected in accordance with Section 712.4. Grease ducts shall be protected in accordance with the New York City Mechanical Code.

5. In other than Group H Occupancies, a shaft enclosure is not required for floor openings complying with the provisions for atriums in Section 404.

6. A shaft enclosure is not required for approved masonry chimneys, where annular space protection is provided at each floor level in accordance with Section 717.2.5.

7. In other than Groups I-2 and I-3, a shaft enclosure is not required for a floor opening that complies with all of the following:

7.1. Does not connect more than two stories.

7.2. Is not part of the required means of egress system except as permitted in Section 1019.1.

7.3. Is not concealed within the building construction.

7.4. Is not open to a corridor in Group I and R occupancies where such corridor is required to be fire-resistance rated in accordance with Table 1016.1.

7.5. Is not open to a corridor on nonsprinklered floors in any occupancy where such corridor is required to be fire-resistance rated in accordance with Table 1016.1.

7.6. Is separated from floor openings serving other floors by construction conforming to required shaft enclosures.

8. A shaft enclosure is not required for automobile ramps in open parking garages and enclosed parking garages constructed in accordance with Sections 406.3 and 406.4, respectively.

9. A shaft enclosure is not required for floor openings between a mezzanine and the floor below.

10. A shaft enclosure is not required for joints protected by a fire-resistant joint system in accordance with Section 713.

11. Where permitted by other sections of this code.

707.3Materials. The shaft enclosure shall be of materials permitted by the building type of construction.

Exception: Noncombustible materials shall be used for shaft enclosures in Groups I-1, R-1 and R-2 buildings irrespective of the building type of construction.

707.4Fire-resistance rating. Shaft enclosures shall have a fire-resistance rating of not less than 2 hours where penetrating three stories or more and not less than 1 hour where penetrating fewer than three stories. The number of stories connected by the shaft enclosure shall include any basements or cellars, but not any mezzanines. Shaft enclosures shall be constructed as fire barriers in accordance with Section 706. Shaft enclosures shall have a fire-resistance rating not less than the floor assembly penetrated, but need not exceed 2 hours.

707.5Continuity.Where the roof construction is of combustible materials, shaft enclosure walls shall extend through the roof construction at least 30 inches (762 mm) above the roof. Where the roof construction is of noncombustible materials, shaft enclosure walls shall extend from the top of the floor/ceiling assembly below to the underside of the floor or roof slab or deck above and shall be securely attached thereto. These walls shall be continuous through concealed spaces such as the space above a suspended ceiling. The supporting construction shall be protected to afford the required fire-resistance rating of the element supported. Hollow vertical spaces within the shaft enclosure construction wall shall be firestopped at every floor level.

Exception: A shaft enclosure of a refuse or laundry chute shall extend through combustible or noncombustible roof construction at least 6 feet (1829 mm) above the roof.

707.6Exterior walls.Where exterior walls serve as a part of a required shaft enclosure, such walls shall comply with the requirements of Section 704 for exterior walls and the fire-resistance-rated enclosure requirements of Section 707.4 shall not apply.

Exception: Exterior walls required to be fire-resistance rated in accordance with Section 1022.6.

707.7Openings.Openings in a shaft enclosure shall be protected in accordance with Section 715 as required for fire barriers. Such openings shall be self-closing or automatic-closing by smoke detection. Automatic-closing by smoke detection is not permitted for required vertical exit doors.

707.7.1Prohibited openings.Openings other than those necessary for the purpose of the shaft shall not be permitted in shaft enclosures.

707.8Penetrations.Penetrations in a shaft enclosure shall be protected in accordance with Section 712 as required for fire barriers.

707.8.1Prohibited penetrations.Penetrations other than those necessary for the purpose of the shaft shall not be permitted in shaft enclosures.

Exception: Duct penetrations in accordance with Section 707.10, as permitted in Sections 1019.1.2, 1019.1.3, and 1020.5.

707.9Joints.Joints in a shaft enclosure shall comply with Section 713.

707.10Ducts and air transfer openings.Penetrations of a shaft enclosure by ducts and air transfer openings shall comply with Sections 712 and 716.

707.11Enclosure at the bottom.Shafts that do not extend to the bottom of the building or structure shall:

1. Be enclosed at the lowest level with construction of the same fire-resistance rating as the lowest floor through which the shaft passes, but not less than the rating required for the shaft enclosure; or
2. Terminate in a room having a use related to the purpose of the shaft. The room shall be separated from the remainder of the building by construction having a fire-resistance rating and opening protectives at least equal to the protection required for the shaft enclosure.

Exceptions:

1. The fire-resistance-rated room separation is not required provided there are no openings in or penetrations of the shaft enclosure to the interior of the building except at the bottom. The bottom of the shaft shall be closed off around the penetrating items with materials permitted by Section 717.3.1 for draft stopping, or the room shall be provided with an approved automatic fire suppression system.

2. A shaft enclosure containing a refuse chute or laundry chute shall not be used for any other purpose and shall terminate in a room protected in accordance with Section 707.13.4.

3. The fire-resistance-rated room separation and the protection at the bottom of the shaft are not required provided there are no combustibles in the shaft and there are no openings or other penetrations through the shaft enclosure to the interior of the building.

707.12Enclosure at the top.A shaft enclosure that does not extend to the underside of the roof deck of the building shall be enclosed at the top with construction of the same fire-resistance rating as the topmost floor penetrated by the shaft, but not less than the fire-resistance rating required for the shaft enclosure.

707.13Refuse and laundry chutes.Refuse and laundry chutes, access and termination rooms and incinerator rooms shall meet the requirements of Sections 707.13.1 through 707.13.6.

Exception: Chutes serving and contained within a single dwelling unit.

707.13.1Refuse and laundry chute enclosures.A shaft enclosure containing a refuse or laundry chute shall not be used for any other purpose and shall have a fire-resistance rating of 2 hours. Openings into the shaft, including those from access rooms and termination rooms, shall be protected in accordance with this section and Section 715. Openings into chutes shall not be located in exit access corridors. Opening protectives shall be self-closing.

707.13.2Materials.A shaft enclosure containing a refuse or laundry chute shall be constructed of noncombustible materials.

707.13.3Refuse and laundry chute access rooms.Access openings for refuse and laundry chutes shall be located in dedicated rooms or compartments completely enclosed by construction that has a fire-resistance rating of not less than 2 hours. Openings into the access rooms shall be protected by opening protectives having a fire protection rating of not less than 1 1/2 hour and shall be self-closing. Openings may be automatic-closing upon the detection of smoke provided that the storage of refuse, including recyclables, or laundry is not permitted in such access rooms.

Exception: Access openings for refuse or laundry chutes located within a dwelling unit need not be located within a separate room or compartment.

707.13.4Termination room.Refuse and laundry chutes shall discharge into an enclosed room completely separated from the remainder of the building by construction that has a fire-resistance rating of not less than 3 hours. Openings into the termination room shall be protected by opening protectives having a fire protection rating of not less than 1 1/2 hours and shall be self-closing.

707.13.5Incinerator room.Incinerator rooms shall comply with Table 508.2.

707.13.6Automatic fire sprinkler system.An approved automatic fire sprinkler system shall be installed in accordance with Section 903.2.10.2.

707.14Elevator and dumbwaiter shafts.Elevator hoist way and dumbwaiter enclosures shall be constructed in accordance with Section 707.4 and Chapter 30.

707.14.1Elevator lobby.Elevator lobbies shall be provided in accordance with Section 403.9.1.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

707.2 item 2.2 amended L.L. 8/2008 § 94, eff. July 1, 2008.

707.13.4 amended L.L. 8/2008 § 95, eff. July 1, 2008.

707.13.5 amended L.L. 8/2008 § 95, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 708: FIRE PARTITIONS

NYC Administrative Code § 28-BC 708

708.1 General.

The following wall assemblies shall comply with this section.

1. Walls separating tenant spaces in covered mall buildings as required by Section 402.7.2.
2. Walls as required by Section 1016.1.

708.2 Materials. The walls shall be of materials permitted by the building type of construction.

708.3 Fire-resistance rating. The fire-resistance rating of the walls shall be 1 hour.

Exception: Interior corridor walls as permitted by Table 1016.1.

708.4 Continuity. Fire partitions shall extend from the top of the floor assembly below to the underside of the floor or roof slab or deck above or to the fire-resistance-rated floor/ceiling or roof/ceiling assembly above, and shall be securely attached thereto. If the partitions are not continuous to the deck, the space between the ceiling and the deck above shall be fire blocked or draft stopped in accordance with Sections 717.2.1 and 717.3.1 at the partition line. The supporting construction shall be protected to afford the required fire-resistance rating of the wall supported.

Exceptions:

1. The fire partition separating tenant spaces in a mall, complying with Section 402.7.2, is not required to extend beyond the underside of a ceiling that is not part of a fire-resistance-rated assembly. A wall is not required in attic or ceiling spaces above tenant separation walls.
2. Fire blocking or draft stopping is not required at the partition line in Group R-2 buildings that do not exceed four stories in height provided the attic space is subdivided by draft stopping into areas not exceeding 3,000 square feet (279

m2) or above every two dwelling units, whichever is smaller.

3. Fire blocking or draft stopping is not required at the partition line in buildings equipped with an automatic sprinkler system installed throughout in accordance with Section 903.3.1.1 or 903.3.1.2 provided that automatic sprinklers are installed in combustible floor/ceiling and roof/ceiling spaces.

708.5Exterior walls.Where exterior walls serve as a part of a required fire-resistance-rated enclosure, such walls shall comply with the requirements of Section 704 for exterior walls and the fire-resistance-rated enclosure requirements of Section 708.3 shall not apply.

708.6Openings.Openings in a fire partition shall be protected in accordance with Section 715.

708.7Penetrations.Penetrations through fire partitions shall comply with Section 712.

708.8Joints.Joints made in or between fire partitions shall comply with Section 713.

708.9Ducts and air transfer openings.Penetrations by ducts and air transfer openings shall comply with Sections 712 and 716.



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SECTION BC 709: SMOKE BARRIERS

NYC Administrative Code § 28-BC 709

709.1 General.

Smoke barriers shall comply with this section.

709.2 Materials. Smoke barriers shall be of materials permitted by the building type of construction.

709.3 Fire-resistance rating. A 1-hour fire-resistance rating is required for smoke barriers.

Exception: Smoke barriers constructed of minimum 0.10-inch-thick (2.5 mm) steel in Group I-3 buildings.

709.4 Continuity. Smoke barriers shall form an effective membrane continuous from outside wall to outside wall and from floor slab to floor or roof deck above, including continuity through concealed spaces, such as those found above suspended ceilings, and interstitial structural and mechanical spaces. The supporting construction shall be protected to afford the required fire-resistance rating of the wall or floor supported in buildings of other than Type IIB, IIIB or VB construction.

Exception: Smoke barrier walls are not required in interstitial spaces where such spaces are designed and constructed with ceilings that provide resistance to the passage of fire and smoke equivalent to that provided by the smoke barrier walls.

709.5 Openings. Openings in a smoke barrier shall be protected in accordance with Section 715.

Exception: In Group I-2, where such doors are installed across corridors, a pair of opposite-swinging doors without a center mullion shall be installed having vision panels with approved fire-resistance-rated glazing materials in approved fire-resistance-rated frames, the area of which shall not exceed that tested. The doors shall be close fitting within operational tolerances, and shall not have undercuts, louvers or grilles. The doors shall have head and jamb stops, astragals or rabbets at meeting edges and automatic-closing devices. Positive-latching devices are not required.

709.6 Penetrations. Penetrations through smoke barriers shall comply with Section 712.

709.7 Joints. Joints made in or between smoke barriers shall comply with Section 713.

709.8 Duct and air transfer openings. Penetrations by duct and air transfer openings shall comply with Sections 712 and 716.



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SECTION BC 710: SMOKE PARTITIONS

NYC Administrative Code § 28-BC 710

710.1 General.

Smoke partitions installed as required elsewhere in the code shall comply with this section.

710.2Materials. Smoke partitions shall be constructed of noncombustible materials. Glazing may be used provided it is heat-strengthened or tempered glazing complying and shall otherwise comply with Chapter 24, and shall be protected by sprinkler heads installed in a maximum of 6 feet (1829 mm) on center on each side of the smoke partition.

710.3Fire-resistance rating. Unless required elsewhere in the code, smoke partitions are not required to have a fire-resistance rating.

710.4Continuity. Smoke partitions shall extend from the floor to the underside of the floor or roof deck above or to the underside of the ceiling above where the ceiling membrane is constructed to limit the transfer of smoke.

710.5Openings. Windows shall be sealed to resist the free passage of smoke or be automatic-closing upon detection of smoke. Doors in smoke partitions shall comply with this section.

710.5.1Louvers. Doors in smoke partitions shall not include louvers.

710.5.2Smoke and draft-control doors. Where required elsewhere in the code, doors in smoke partitions shall be tested in accordance with UL 1784 with an artificial bottom seal installed across the full width of the bottom of the door assembly. The air leakage rate of the door assembly shall not exceed 3.0 cubic feet per minute per square foot [ft³/(min ft²)] (0.015424 m³/sm²) of door opening at 0.10 inch (24.9 Pa) of water for both the ambient temperature test and the elevated temperature exposure test.

710.5.3Self-closing or automatic-closing doors. Where required elsewhere in the code, doors in smoke partitions shall be self-closing or automatic-closing in accordance with Section 715.3.7.3.

710.6 Penetrations and joints. The space around penetrating items and in joints shall be filled with an approved material to limit the free passage of smoke.

710.7 Ducts and air transfer openings. Air transfer openings in smoke partitions shall be provided with a smoke damper complying with Section 716.3.2.

Exception: Where the installation of a smoke damper will interfere with the operation of a required smoke control system in accordance with Section 909, approved alternative protection shall be utilized.



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SECTION BC 711: HORIZONTAL ASSEMBLIES

NYC Administrative Code § 28-BC 711

711.1 General.

Floor and roof assemblies required to have a fire-resistance rating shall comply with this section.

711.2 Materials. The floor and roof assemblies shall be of materials permitted by the building type of construction.

Exception: Horizontal floor or roof assemblies shall be of noncombustible materials when such assemblies serve as a horizontal offset to a fire wall or fire barrier that is required to be noncombustible.

711.3 Fire-resistance rating. The fire-resistance rating of floor and roof assemblies shall not be less than that required by the building type of construction. Where the floor assembly separates mixed occupancies, the assembly shall have a fire-resistance rating of not less than that required by Section 508.3.3 based on the occupancies being separated. Where the floor assembly separates a single occupancy into different fire areas, the assembly shall have a fire-resistance rating of not less than that required by Section 706.3.7. Floor assemblies separating dwelling units in Group I-1 or R Occupancies shall be a minimum of 1-hour fire-resistance-rated construction.

711.3.1 Ceiling panels. Where the weight of lay-in ceiling panels, used as part of fire-resistance-rated floor/ceiling or roof/ceiling assemblies, is not adequate to resist an upward force of 1 lb/ft.² (48 Pa), wire or other approved devices shall be installed above the panels to prevent vertical displacement under such upward force.

711.3.2 Access doors. Access doors shall be permitted in ceilings of fire-resistance-rated floor/ceiling and roof/ceiling assemblies provided such doors are tested in accordance with ASTM E 119 as horizontal assemblies and labeled by an approved agency for such purpose.

711.3.3 Unusable space. In 1-hour fire-resistance-rated floor construction, the ceiling membrane is not required to be installed over unusable crawl spaces not intended for occupancy or storage, less than 24 inches (610 mm) in height. In 1-hour fire-resistance-rated roof construction, the floor membrane is not required to be installed where the unusable attic

space above is not intended for occupancy or storage.

711.4Continuity.Assemblies shall be continuous without openings, penetrations or joints except as permitted by this section and Sections 707.2, 712.4 and 713. Skylights and other penetrations through a fire-resistance-rated roof deck are permitted to be unprotected, provided that the structural integrity of the fire-resistance-rated roof construction is maintained. Unprotected skylights shall not be permitted in roof construction required to be fire-resistance rated in accordance with Section 704.10. The supporting construction shall be protected to afford the required fire-resistance rating of the horizontal assembly supported.

711.5Penetrations.Penetrations through fire-resistance-rated horizontal assemblies shall comply with Section 712.

711.6Joints.Joints made in or between fire-resistance-rated horizontal assemblies shall comply with Section 713. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 713.4.

711.7Ducts and air transfer openings.Penetrations by ducts and air transfer openings shall comply with Sections 712 and 716.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

711.3 amended L.L. 8/2008 § 96, eff. July 1, 2008.



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SECTION BC 712: PENETRATIONS

NYC Administrative Code § 28-BC 712

712.1 Scope.

The provisions of this section shall govern the materials and methods of construction used to protect through penetrations and membrane penetrations.

712.1.1 Special inspection. All through-penetration and membrane-penetration firestop systems shall comply with the special inspection requirements of Chapter 17.

712.2 Installation details. Where sleeves are used, they shall be securely fastened to the assembly penetrated. The space between the item contained in the sleeve and the sleeve itself and any space between the sleeve and the assembly penetrated shall be protected in accordance with this section. Insulation and coverings on or in the penetrating item shall not penetrate the assembly unless the specific material used has been tested as part of the assembly in accordance with this section.

712.3 Fire-resistance-rated walls. Penetrations into or through fire walls, fire barriers, smoke barrier walls, and fire partitions shall comply with this section.

712.3.1 Through penetrations. Through penetrations of fire-resistance-rated walls shall comply with Section 712.3.1.1 or 712.3.1.2.

Exception: Where the penetrating items are steel, ferrous or copper pipes or steel conduits, the annular space between the penetrating item and the fire-resistance-rated wall shall be permitted to be protected as follows:

1. In concrete or masonry walls where the penetrating item is a maximum 6-inch (152 mm) nominal diameter and the opening is a maximum 144 square inches (0.0929 m²), concrete, grout or mortar shall be permitted where installed the full thickness of the wall or the thickness required to maintain the fire-resistance rating; or

2. The material used to fill the annular space shall prevent the passage of flame and hot gases sufficient to ignite

cotton waste where subjected to ASTM E 119 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.

712.3.1.1 Fire-resistance-rated assemblies. Penetrations shall be installed as tested in an approved fire-resistance-rated assembly.

712.3.1.2 Through-penetration firestop system. Through penetrations shall be protected by an approved penetration fire stop system installed as tested in accordance with ASTM E 814 or UL 1479, with a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water and shall have an F rating of not less than the required fire-resistance rating of the wall penetrated.

712.3.2 Membrane penetrations. Membrane penetrations shall be protected by a membrane penetration firestop installed in accordance with Section 712.3.1. Where walls and partitions are required to have a minimum 1-hour fire-resistance rating, recessed fixtures shall be installed such that the required fire resistance will not be reduced.

Exceptions:

1. Steel electrical boxes that do not exceed 16 square inches (0.0103 m²) in area provided the total area of such openings does not exceed 100 square inches (0.0645 m²) for any 100 square feet (9.29 m²) of wall area. Outlet boxes on opposite sides of the wall shall be separated as shown:

1.1. By a horizontal distance of not less than 24 inches (610 mm);

1.2. By a horizontal distance of not less than the depth of the wall cavity where the wall cavity is filled with cellulose loose fill, rock wool or slag mineral wool insulation;

1.3. By solid fire blocking in accordance with Section 717.2.1;

1.4. By protecting both outlet boxes by listed putty pads; or

1.5. By other listed materials and methods.

2. Membrane penetrations for listed electrical outlet boxes of any material are permitted provided such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. Outlet boxes on opposite sides of the wall shall be separated as follows:

2.1. By a horizontal distance of not less than 24 inches (610 mm);

2.2. By solid fire blocking in accordance with Section 717.2.1;

2.3. By protecting both outlet boxes by listed putty pads; or

2.4. By other listed materials and methods.

3. The annular space created by the penetration of a fire sprinkler provided it is covered by a metal escutcheon plate.

712.3.3 Ducts and air transfer openings. Penetrations of fire-resistance-rated walls by ducts and air transfer openings that are not protected with fire dampers shall comply with this section.

712.3.4 Dissimilar materials. Noncombustible penetrating items shall not connect to combustible items beyond the point of fire stopping unless it can be demonstrated to the commissioner that the fire-resistance integrity of the wall is

maintained.

712.4 Horizontal assemblies. Penetrations of a floor, floor/ceiling assembly or the ceiling membrane of a roof/ceiling assembly shall be protected in accordance with Section 707. Penetrations permitted by Exceptions 3 and 4 of Section 707.2 shall comply with Sections 712.4.1 through 712.4.4.

Exception: Penetrations located within the same room or undivided area as floor openings not required to have a shaft enclosure in accordance with Exceptions 1, 2, 5, 7, 8 or 9 in Section 707.2.

712.4.1 Through penetrations. Through penetrations of fire-resistance-rated horizontal assemblies shall comply with Section 712.4.1.1 or 712.4.1.2.

Exceptions:

1. Penetrations by steel, ferrous or copper conduits, pipes, tubes, vents, concrete, or masonry through a single fire-resistance-rated floor assembly where the annular space is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated. Penetrating items with a maximum 6-inch (152 mm) nominal diameter shall not be limited to the penetration of a single fire-resistance-rated floor assembly provided that the area of the penetration does not exceed 144 square inches (92 900 mm²) in any 100 square feet (9.3m²) of floor area.

2. Penetrations in a single concrete floor by steel, ferrous or copper conduits, pipes, tubes and vents with a maximum 6-inch (152 mm) nominal diameter provided concrete, grout or mortar is installed the full thickness of the floor or the thickness required to maintain the fire-resistance rating. The penetrating items with a maximum 6-inch (152 mm) nominal diameter shall not be limited to the penetration of a single concrete floor provided that the area of the penetration does not exceed 144 square inches (0.0929 m²).

3. Electrical outlet boxes of any material are permitted provided that such boxes are tested for use in fire-resistance-rated assemblies and installed in accordance with the tested assembly.

712.4.1.1 Fire-resistance-rated assemblies. Penetrations shall be installed as tested in the approved fire-resistance-rated assembly.

712.4.1.2 Through-penetration firestop system. Through penetrations shall be protected by an approved through-penetration fire stop system installed and tested in accordance with ASTM E 814 or UL 1479, with a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water. The system shall have an F rating and a T rating of not less than 1 hour but not less than the required rating of the floor penetrated.

Exception: Floor penetrations contained and located within the cavity of a wall do not require a T rating.

712.4.2 Membrane penetrations. Penetrations of membranes that are part of a fire-resistance-rated horizontal assembly shall comply with Section 712.4.1.1 or 712.4.1.2. Where floor/ceiling assemblies are required to have a minimum 1-hour fire-resistance rating, recessed fixtures shall be installed such that the required fire resistance will not be reduced.

Exceptions:

1. Membrane penetrations by steel, ferrous or copper conduits, electrical outlet boxes, pipes, tubes, vents, concrete, or masonry-penetrating items where the annular space is protected either in accordance with Section 712.4.1 or to prevent the free passage of flame and the products of combustion. Such penetrations shall not exceed an aggregate area

of 100 square inches (64 500 mm²) in any 100 square feet (9.3 m²) of ceiling area in assemblies tested without penetrations.

2. Membrane penetrations by listed electrical outlet boxes of any material are permitted provided such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.

3. The annular space created by the penetration of a fire sprinkler provided it is covered by a metal escutcheon plate.

712.4.3 Nonfire-resistance-rated assemblies. Penetrations of horizontal assemblies without a required fire-resistance rating shall meet the requirements of Section 707 or shall comply with Sections 712.4.3.1 through 712.4.3.2.

712.4.3.1 Noncombustible penetrating items. Noncombustible penetrating items that connect not more than three stories are permitted provided that the annular space is filled with an approved noncombustible material to resist the free passage of flame and the products of combustion.

712.4.3.2 Penetrating items. Penetrating items that connect not more than two stories are permitted provided that the annular space is filled with an approved material to resist the free passage of flame and the products of combustion.

712.4.4 Ducts and air transfer openings. Penetrations of horizontal assemblies by ducts and air transfer openings that are not required to have dampers shall comply with this section. Ducts and air transfer openings that are protected with dampers shall comply with Section 716.

712.4.5 Dissimilar materials. Noncombustible penetrating items shall not connect to combustible materials beyond the point of fire stopping unless it can be demonstrated that the fire-resistance integrity of the horizontal assembly is maintained.

712.4.6 Floor fire doors. Floor fire door assemblies used to protect openings in fire-resistance-rated floors shall be tested in the horizontal position in accordance with ASTM E 119, and shall achieve a fire-resistance rating not less than the assembly being penetrated. Floor fire doors shall be labeled by an approved agency.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 713: FIRE-RESISTANT JOINT SYSTEMS

NYC Administrative Code § 28-BC 713

713.1 General.

Joints installed in or between fire-resistance-rated walls, floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies shall be protected by an approved fire-resistant joint system designed to resist the passage of fire for a time period not less than the required fire-resistance rating of the wall, floor or roof in or between which it is installed. Fire-resistant joint systems shall be tested in accordance with Section 713.3. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 713.4.

Exception: Fire-resistant joint systems shall not be required for joints in all of the following locations:

1. Floors within a single dwelling unit.
2. Floors where the joint is protected by a shaft enclosure in accordance with Section 707.
3. Floors within atriums where the space adjacent to the atrium is included in the volume of the atrium for smoke control purposes.
4. Floors within malls.
5. Floors within open parking structures.
6. Mezzanine floors.
7. Walls that are permitted to have unprotected openings.
8. Roofs where openings are permitted.
9. Control joints not exceeding a maximum width of 0.625 inch (15.9 mm) and tested in accordance with ASTM E

119.

713.2Installation. Fire-resistant joint systems shall be securely installed in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases.

713.3Fire test criteria. Fire-resistant joint systems shall be tested in accordance with the requirements of either ASTM E 1966 or UL 2079. Nonsymmetrical wall joint systems shall be tested with both faces exposed to the furnace, and the assigned fire-resistance rating shall be the shortest duration obtained from the two tests. When evidence is furnished to show that the wall was tested with the least fire-resistant side exposed to the furnace, subject to acceptance of the commissioner, the wall need not be subjected to tests from the opposite side.

Exception: For exterior walls with a horizontal fire separation distance greater than 5 feet (1524 mm), the joint system shall be required to be tested for interior fire exposure only.

713.4Exterior curtain wall/floor intersection. Where fire resistance-rated floor or floor/ceiling assemblies are required, voids created at the intersection of the exterior curtain wall assemblies and such floor assemblies shall be sealed with an approved material or system to prevent the interior spread of fire. Such material or systems shall be securely installed and capable of preventing the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (0.254 mm) of water column (2.5 Pa) for the time period at least equal to the fire-resistance rating of the floor assembly. Height and fire-resistance requirements for curtain wall spandrels shall comply with Section 704.9.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 714: FIRE-RESISTANCE RATING OF STRUCTURAL MEMBERS

NYC Administrative Code § 28-BC 714

714.1 Requirements.

The fire-resistance rating of structural members and assemblies shall comply with the requirements for the type of construction and shall not be less than the rating required for the fire-resistance-rated assemblies supported.

Exception: Fire barriers and fire partitions as provided in Sections 706.4 and 708.4, respectively.

714.1.1 Inspection of Fire Protection. The installation of all required sprayed-on fire protection shall be subject to the special inspection requirements of Section 1704.11.

714.2 Protection of structural members. Protection of columns, girders, trusses, beams, lintels or other structural members that are required to have a fire-resistance rating shall comply with this section.

714.2.1 Individual protection. Columns, girders, trusses, beams, lintels or other structural members that are required to have a fire-resistance rating and that support more than one floor or a roof, or support a load-bearing wall or a non-load-bearing wall more than one story high, shall be individually protected on all sides for the full length with materials having the required fire-resistance rating. Girders, trusses, beams, lintels or other structural members required to have a fire-resistance rating and that support only one floor or a roof, and/or a non-bearing wall not more than one story high, shall be protected by individual encasement, by a membrane or ceiling protection as specified in Section 711, or by a combination of both, which together provide the required fire-resistance rating. Columns shall also comply with Section 714.2.2.

714.2.2 Column protection. Where columns require a fire-resistance rating, the entire column, including its connections to beams or girders, shall be individually protected. Where the column extends through a ceiling, fire resistance of the column shall be continuous from the top of the floor through the ceiling space to the top of the column.

714.2.3 Truss protection. The required thickness and construction of fire-resistance-rated assemblies enclosing

trusses shall be based on the results of full-scale tests or combinations of tests on truss components or on approved calculations based on such tests that satisfactorily demonstrate that the assembly has the required fire resistance

714.2.4 Attachments to structural members. The edges of lugs, brackets, rivets and bolt heads attached to structural members shall be protected to the highest fire-resistance rating of the members connected.

714.2.5 Reinforcing. Thickness of protection for concrete or masonry reinforcement shall be measured to the outside of the reinforcement, including stirrups, ties and spiral reinforcing ties.

714.3 Embedments and enclosures. Pipes, wires, conduits, ducts or other service facilities shall not be embedded in the required fire protection of a structural member that is required to be individually encased; except that pipes, wires, and conduits may be installed in the space between the required fire protection and the structural member protected, provided that where such facilities pierce the required fire protection, the area of the penetration does not exceed two percent of the area of the fire protection on any one face, the penetrations are closed off with close-fitting metal escutcheons or plates, and the concealed space shall be firestopped at each story.

714.4 Impact protection. Where the fire protective covering of a structural member is subject to impact damage from moving vehicles, the handling of merchandise or other activity, the fire protective covering shall be protected by corner guards or by a substantial jacket of metal or other noncombustible material to a height adequate to provide full protection, but not less than 5 feet (1524 mm) from the finished floor.

714.5 Exterior structural members. Load-bearing structural members located within the exterior walls or exposed to the outdoors shall be provided with the highest fire-resistance rating as determined in accordance with the following:

1. As required by Table 601 for the type of building element based on the type of construction of the building; and
2. As required by Table 601 for exterior bearing walls based on the type of construction; and
3. As required by Table 602 for exterior walls based on the fire separation distance.

714.6 Lintel protection. Lintels over openings wider than 4 feet (1219 mm) in masonry walls, other than in walls of masonry veneer on wood frame structures, shall be fire protected as required by Section 714.2, when the full load over the opening is not relieved by a masonry arch of required strength.

Exceptions:

1. The members of an assembled metal lintel that support only outer face masonry that is securely bonded or anchored to backing need not be fire protected, provided that the inner members of the assembly support the full load imposed.
2. The use of stone lintels in spans exceeding 4 feet (1219 mm) shall not be permitted unless supplemented by fire protected structural members or masonry arches of the required strength to support the superimposed loads.

714.7 Seismic isolation systems. Fire-resistance ratings for the isolation system shall meet the fire-resistance rating required for the columns, walls, or other structural elements in which the isolation system is installed in accordance with Table 601.

Isolation systems required to have a fire-resistance rating shall be protected with approved materials or construction assemblies designed to provide the same degree of fire resistance as the structural element in which it is installed when tested in accordance with ASTM E 119 (see Section 703.2).

Such isolation system protection applied to isolator units shall be capable of retarding the transfer of heat to the isolator unit in such a manner that the required gravity load-carrying capacity of the isolator unit will not be impaired

after exposure to the standard time-temperature curve fire test prescribed in ASTM E 119 for a duration not less than that required for the fire resistance rating of the structure element in which it is installed.

Such isolation system protection applied to isolator units shall be suitably designed and securely installed so as not to dislodge, loosen, sustain damage, or otherwise impair its ability to accommodate the seismic movements for which the isolator unit is designed and to maintain its integrity for the purpose of providing the required fire-resistance protection.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 715: OPENING PROTECTIVES

NYC Administrative Code § 28-BC 715

715.1 General.

Opening protectives required by other sections of this code shall comply with the provisions of this section.

715.2 Fire-resistance-rated glazing. Labeled fire-resistance-rated glazing tested as part of a fire-resistance-rated wall assembly in accordance with ASTM E 119 shall not be required to comply with this section.

715.3 Fire door and shutter assemblies. Approved fire door and fire shutter assemblies shall be constructed of any material or assembly of component materials that conforms to the test requirements of Section 715.3.1, 715.3.2 or 715.3.3 and the fire protection rating indicated in Table 715.3. Fire door assemblies and shutters shall be installed in accordance with the provisions of this section and NFPA 80.

Exceptions:

1. Labeled protective assemblies that conform to the requirements of this section or UL 10A, UL 14B and UL 14C for tin-clad fire door assemblies.

2. Floor fire doors shall comply with Section 712.4.6. Table 715.3 Fire Door and Fire Shutter Fire Protection Ratings

Type of Assembly	Required Assembly Rating (hours)	Minimum Fire Door and Fire Shutter Assembly Rating (hours)
Fire walls and fire barriers having a required fire-resistance rating greater than 1 hour	4 3 2 1 1/2 3 3a 1 1/2 1 1/2	
Fire barriers having a required fire-resistance rating of 1 hour:		

Shaft exit enclosure and exit

passageway walls 1

Other fire barriers 1 3/4 Fire partitions:

Corridor walls^{1 3/4}

Other partitions^{1 3/4} Exterior walls^{3 2 1 11/2 11/2 3/4} a. Two doors, each with a fire protection rating of 1 1/2-hours, installed on opposite sides of the same opening in a fire wall, shall be deemed equivalent in fire protection rating to one 3-hour fire door.

715.3.1 Side-hinged or pivoted swinging doors. Side-hinged and pivoted swinging doors shall be tested in accordance with NFPA 252 or UL 10C. After 5 minutes into the NFPA 252 test, the neutral pressure level in the furnace shall be established at 40 inches (1016 mm) or less above the sill.

715.3.2 Other types of doors. Other types of doors, including swinging elevator doors, shall be tested in accordance with NFPA 252 or UL 10B. The pressure in the furnace shall be maintained as nearly equal to the atmospheric pressure as possible. Once established, the pressure shall be maintained during the entire test period.

715.3.3 Door assemblies in corridors and smoke barriers. Fire door assemblies located in corridor walls or smoke barrier walls having a fire-resistance rating in accordance with Table 715.3 shall be tested in accordance with NFPA 252 or UL 10C. Glazing material in any part of the door assembly, including transom lites and sidelites, shall be tested in accordance with NFPA 257 in accordance with Section 715.4. Fire door assemblies shall also meet the requirements for a smoke- and draft-control door assembly tested in accordance with UL 1784 with an artificial bottom seal installed across the full width of the bottom of the door assembly. The air leakage rate of the door assembly shall not exceed 3.0 cfm per square foot (0.01524 m³/s/m²) of door opening at 0.10 inch (24.9 Pa) of water for both the ambient temperature and elevated temperature tests. Louvers shall be prohibited.

Exceptions:

1. Viewports that require a hole not larger than 1 inch (25 mm) in diameter through the door, have at least an 0.25-inch-thick (6.4 mm) glass disc and the holder is of metal that will not melt out where subject to temperatures of 1,700(degrees)F (927(degrees)C).

2. Corridor door assemblies in occupancies of Group I-2 shall be in accordance with Section 407.3.1.

715.3.4 Doors in vertical exit enclosures and exit passageways. Fire door assemblies in vertical exit enclosures and exit passageways shall have a maximum transmitted temperature end point of not more than 450(degrees)F (232(degrees)C) above ambient at the end of 30 minutes of standard fire test exposure.

Exception: The maximum transmitted temperature end point is not required in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

715.3.4.1 Glazing in doors. Fire-protection-rated glazing in excess of 100 square inches (0.065 m²) shall be permitted in fire door assemblies when tested in accordance with NFPA 252 as components of the door assemblies and not as glass lights, and shall have a maximum transmitted temperature end point of 450(degrees)F (232(degrees)C) in accordance with Section 715.3.4.

Exception: The maximum transmitted temperature end point is not required in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

715.3.5 Labeled protective assemblies. Fire door assemblies shall be labeled by an approved agency. The labels shall comply with NFPA 80, and shall be permanently affixed to the door or frame.

715.3.5.1 Fire door labeling requirements. Fire doors shall be labeled showing the name of the manufacturer, the name of the third-party inspection agency, the fire protection rating and, where required for fire doors in exit enclosures by Section 715.3.4, the maximum transmitted temperature end point. Smoke and draft control doors complying with UL

1784 shall be labeled as such. Labels shall be approved and permanently affixed. The label shall be applied at the factory or location where fabrication and assembly are performed.

715.3.5.2Oversized doors.Oversized fire doors shall bear an oversized fire door label by an approved agency or shall be provided with a certificate of inspection furnished by an approved testing agency. When a certificate of inspection is furnished by an approved testing agency, the certificate shall state that the door conforms to the requirements of design, materials and construction, but has not been subjected to the fire test.

715.3.5.3Smoke and draft control door labeling requirements.Smoke and draft control doors complying with UL 1784 shall be labeled in accordance with Section 715.3.5.1 and shall show the letter "S" on the fire rating label of the door. This marking shall indicate that the door and frame assembly are in compliance when listed or labeled gasketing is also installed.

715.3.5.4Fire door frame labeling requirements.Fire door frames shall be labeled showing the names of the manufacturer and the third-party inspection agency.

715.3.6Glazing material.Fire-protection-rated glazing conforming to the opening protection requirements in Section 715.3 shall be permitted in fire door assemblies.

715.3.6.1Size limitations.Wired glass used in fire doors shall comply with Table 715.4.3. Other fire-protection-rated glazing shall comply with the size limitations of NFPA 80.

Exceptions:

1. Fire-protection-rated glazing in fire doors located in fire walls shall be prohibited except that where serving as a horizontal exit, a self-closing swinging door shall be permitted to have a vision panel of not more than 100 square inches (0.065 m²) without a dimension exceeding 10 inches (254 mm).

2. Fire-protection-rated glazing shall not be installed in fire doors having a 1 1/2-hour fire protection rating intended for installation in fire barriers, unless the glazing is not more than 100 square inches (0.065 m²) in area.

715.3.6.2Exit and elevator protectives.Approved fire-protection-rated glazing used in fire doors in elevator and stairway shaft enclosures shall be so located as to furnish clear vision of the passageway or approach to the elevator or stairway.

715.3.6.3Labeling.Fire-protection-rated glazing shall bear a label or other identification showing the name of the manufacturer, the test standard and the fire protection rating. Such label or other identification shall be issued by an approved agency and shall be permanently affixed.

715.3.6.4Safety glazing.Fire-protection-rated glazing installed in fire doors or fire window assemblies in areas subject to human impact in hazardous locations shall comply with Chapter 24.

715.3.7Door closing.Fire doors shall be self-closing or automatic-closing in accordance with this section.

Exception: Fire doors located in common walls separating sleeping units in Group R-1 shall be permitted without automatic-closing or self-closing devices.

715.3.7.1Latch required.Unless otherwise specifically permitted, single fire doors and both leaves of pairs of side-hinged swinging fire doors shall be provided with an active latch bolt that will secure the door when it is closed.

715.3.7.2Automatic-closing fire door assembliesAutomatic-closing fire door assemblies shall be self-closing in accordance with NFPA 80.

715.3.7.3 Smoke-activated doors. Automatic-closing fire doors installed in the following locations shall be automatic-closing by the actuation of smoke detectors installed in accordance with Section 907.10 or by loss of power to the smoke detector or hold-open device. Fire doors that are automatic-closing by smoke detection shall not have more than a 10-second delay before the door starts to close after the smoke detector is actuated.

1. Doors installed across a corridor.
2. Doors that protect openings in horizontal exits, exits or exit access corridors required to be of fire-resistance-rated construction.
3. Doors that protect openings in walls required to be fire-resistance rated by Table 508.2.
4. Doors installed in smoke barriers in accordance with Section 709.5.
5. Doors installed in fire partitions in accordance with Section 708.6.
6. Doors installed in a fire wall in accordance with Section 705.8.

715.3.7.4 Doors in pedestrian ways. Vertical sliding or vertical rolling steel fire doors in openings through which pedestrian's travel shall be heat activated or activated by smoke detectors with alarm verification.

715.3.8 Swinging fire shutters. Where fire shutters of the swinging type are installed in exterior openings, not less than one row in every three vertical rows shall be arranged to be readily opened from the outside, and shall be identified by distinguishing marks or letters not less than 6 inches (152 mm) high.

715.3.9 Rolling fire shutters. Where fire shutters of the rolling type are installed, such shutters shall include approved automatic-closing devices.

715.4 Fire-protection rated glazing. Glazing in fire window assemblies shall be fire protection rated in accordance with this section and Table 715.4. Glazing in fire doors shall comply with Section 715.3.6. Fire-protection-rated glazing installed as an opening protective in fire partitions, smoke barriers and fire barriers shall be tested in accordance with and shall meet the acceptance criteria of NFPA 257 for a fire protection rating of 45 minutes. Fire-protection-rated glazing shall also comply with NFPA 80. Fire-protection-rated glazing required in accordance with Section 704.12 for exterior wall opening protection shall be tested in accordance with and shall meet the acceptance criteria of NFPA 257 for a fire protection rating as required in Section 715.4.8.

Exception: Wired glass in accordance with Section 715.4.3. Table 715.4 Fire Window Assembly Fire Protection Ratings Type of Assembly Required Assembly Rating (hours) Minimum Fire Window Assembly Rating (hours)

Interior walls:

Fire walls All NPa

Fire barriers and fire partitions; mt 1 NPa 1 3/4

Smoke barriers 1 3/4 Exterior walls; mt 1 1 1/2 3/4 Party walls All Npa a. Not permitted except as specified in Section 715.2.

715.4.1 Testing under positive pressure. NFPA 257 shall evaluate fire-protection-rated glazing under positive pressure. Within the first 10 minutes of a test, the pressure in the furnace shall be adjusted so at least two-thirds of the test specimen is above the neutral pressure plane, and the neutral pressure plane shall be maintained at that height for the balance of the test.

715.4.2 Nonsymmetrical glazing systems. Nonsymmetrical fire-protection-rated glazing systems in fire partitions,

fire barriers or in exterior walls with a fire separation of 5 feet (1524 mm) or less pursuant to Section 704 shall be tested with both faces exposed to the furnace, and the assigned fire protection rating shall be the shortest duration obtained from the two tests conducted in compliance with NFPA 257.

715.4.3Wired glass.Steel window frame assemblies of 0.125-inch (3.2 mm) minimum solid section or of not less than nominal 0.048-inch-thick (1.2 mm) formed sheet steel members fabricated by pressing, mitering, riveting, interlocking or welding and having provision for glazing with 1/4-inch (6.4 mm) wired glass where securely installed in the building construction and glazed with 1/4-inch (6.4 mm) labeled wired glass shall be deemed to meet the requirements for a 3/4-hour fire window assembly. Wired glass panels shall conform to the size limitations set forth in Table 715.4.3. Table 715.4.3 Fire Door and Fire Shutter Fire Protection Ratings Opening Fire Protection Rating Maximum Area (square inches) Maximum Height (inches) Maximum Width (inches) 3 hours0 0 0 1 1 1/2-hour doors in exterior walls0 0 0 1 and 1 1/2 hours100 33 10 3/4 hours1,296 54 54 Fire window assemblies1,296 54 54 For SI: 1 inch = 25.4 mm, 1 square inch = 645.2 mm²

715.4.4Nonwired glass.Glazing other than wired glass in fire window assemblies shall be fire-protection-rated glazing installed in accordance with and complying with the size limitations set forth in NFPA 80.

715.4.5Installation.Fire-protection-rated glazing shall be in the fixed position or be automatic-closing and shall be installed in approved frames.

715.4.6Window mullions.Metal mullions that exceed a nominal height of 12 feet (3658 mm) shall be protected with materials to afford the same fire-resistance rating as required for the wall construction in which the protective is located.

715.4.7Interior fire window assemblies.Fire-protection-rated glazing used in fire window assemblies located in fire partitions and fire barriers shall be limited to use in assemblies with a maximum fire-resistance rating of 1 hour in accordance with this section.

715.4.7.1Where permitted.Fire-protection-rated glazing shall be limited to fire partitions designed in accordance with Section 708 and fire barriers utilized in the applications set forth in Sections 706.3.5 and 706.3.6 where the fire-resistance rating does not exceed 1 hour.

715.4.7.2Size limitations.The total area of windows shall not exceed 25 percent of the area of a common wall with any room.

715.4.8Exterior fire window assemblies.Exterior openings, other than doors, required to be protected by Section 704.12, where located in a wall required by Table 602 to have a fire-resistance rating of greater than 1 hour, shall be protected with an assembly having a fire protection rating of not less than 1 1/2 hours. Exterior openings required to be protected by Section 704.8, where located in a wall required by Table 602 to have a fire-resistance rating of 1 hour, shall be protected with an assembly having a fire protection rating of not less than 3/4 hour. Exterior openings required to be protected by Section 704.9 or 704.10 shall be protected with an assembly having a fire protection rating of not less than 3/4 hour. Openings in nonfire-resistance-rated exterior wall assemblies that require protection in accordance with Section 704.8, 704.9 or 704.10 shall have a fire protection rating of not less than 3/4 hour.

715.4.9Labeling requirements.Fire-protection-rated glazing shall bear a label or other identification showing the name of the manufacturer, the test standard, and the fire protection rating. Such label or identification shall be issued by an approved agency and shall be permanently affixed.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

715.3.7.3 item 3 amended L.L. 8/2008 § 97, eff. July 1, 2008.

715.4 amended (table 715.4 not amended) L.L. 8/2008 § 98, eff. July 1, 2008.



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Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 716: DUCTS AND AIR TRANSFER OPENINGS

NYC Administrative Code § 28-BC 716

716.1 General.

The provisions of this section shall govern the protection of ducts and air transfer openings in fire-resistance-rated assemblies.

716.1.1 Ducts and air transfer openings without dampers. Ducts and air transfer openings that penetrate fire-resistance-rated assemblies and are not required by this section to have dampers shall comply with the requirements of Section 712.

716.2 Installation. Fire dampers, smoke dampers, combination fire/smoke dampers and ceiling dampers located within air distribution and smoke control systems shall be installed in accordance with the requirements of this section, the New York City Mechanical Code, the manufacturer's installation instructions and listing.

716.2.1 Smoke control system. Where the installation of a fire damper will interfere with the operation of a required smoke control system in accordance with Section 909, approved alternative protection shall be utilized.

716.2.1.1 Remote control. Provisions for operation by remote control of combination fire/smoke dampers shall be in accordance with Section 607.3.1.1 of the New York City Mechanical Code.

716.2.2 Hazardous exhaust ducts. Fire dampers for hazardous exhaust duct systems shall comply with the New York City Mechanical Code.

716.2.3 Supply air systems. Smoke dampers in supply airhandling systems having a capacity equal to or greater than 15,000 cfm (7.1 m³/s) shall be installed in accordance with Section 607.2.3 of the New York City Mechanical Code.

716.3 Damper testing and ratings. Dampers shall be listed and bear the label of an approved testing agency indicating compliance with the standards in this section. Fire dampers shall comply with the requirements of UL 555. Only fire dampers labeled for use in dynamic systems shall be installed in heating, ventilation and air-conditioning

systems designed to operate with fans on during a fire. Smoke dampers shall comply with the requirements of UL 555S. Combination fire/smoke dampers shall comply with the requirements of both UL 555 and UL 555S. Ceiling radiation dampers shall comply with the requirements of UL 555C.

716.3.1 Fire protection rating. Fire dampers shall have the minimum fire protection rating specified in Table 716.3.1 for the type of penetration. Table 716.3.1 Fire Damper Rating Type of Penetration Minimum Damper Rating (hour) Less than 3-hour fire-resistance-rated assemblies 1.5 3-hour or greater fire-resistance-rated assemblies 3

716.3.1.1 Fire damper actuating device. The fire damper actuating device shall meet one of the following requirements:

1. The operating temperature shall be approximately 50(degrees)F (10(degrees)C) above the normal temperature within the duct system, but not less than 160(degrees)F (71(degrees)C).
2. The operating temperature shall be not more than 286(degrees)F (141(degrees)C) where located in a smoke control system complying with Section 909.
3. Where a combination fire/smoke damper is located in a smoke control system complying with Section 909, the operating temperature rating shall be approximately 50(degrees)F (10(degrees)C) above the maximum smoke control system designed operating temperature, or a maximum temperature of 350(degrees)F (177(degrees)C). The temperature shall not exceed the UL 555S degradation test temperature rating for a combination fire/smoke damper.

716.3.2 Smoke damper ratings. Smoke damper leakage ratings shall not be less than Class II. Elevated temperature ratings shall not be less than 250(degrees)F (121(degrees)C).

716.3.2.1 Smoke damper actuation methods. The smoke damper shall close upon actuation of a listed smoke detector or detectors installed in accordance with Section 907.10 and one of the following methods, as applicable:

1. Where a damper is installed within a duct, a smoke detector shall be installed in the duct within 5 feet (1524 mm) of the damper with no air outlets or inlets between the detector and the damper. The detector shall be listed for the air velocity, temperature and humidity anticipated at the point where it is installed. Other than in mechanical smoke control systems, dampers shall be closed upon fan shutdown where local smoke detectors require a minimum velocity to operate.
2. Where a damper is installed above smoke barrier doors in a smoke barrier, a spot-type detector listed for releasing service shall be installed on either side of the smoke barrier door opening.
3. Where a damper is installed within an unducted opening in a wall, a spot-type detector listed for releasing service shall be installed within 5 feet (1524 mm) horizontally of the damper.
4. Where a damper is installed in a corridor wall, the damper shall be permitted to be controlled by a smoke detection system installed in the corridor.
5. Where a total-coverage smoke detector system is provided within areas served by a heating, ventilation and air-conditioning (HVAC) system, dampers shall be permitted to be controlled by the smoke detection system.
6. Smoke dampers that are part of an engineered smoke control system shall be controlled in accordance with Section 607.3.2.1 of the New York City Mechanical Code.

716.4 Access and identification. Fire and smoke dampers shall be provided with an approved means of access, large enough to permit inspection and maintenance of the damper and its operating parts. The access shall not affect the integrity of fire-resistance-rated assemblies. The access openings shall not reduce the fire-resistance rating of the assembly. Access points shall be permanently identified on the exterior by a label having letters not less than 0.5 inch

(12.7 mm) in height reading: SMOKE DAMPER or FIRE DAMPER followed by an identification marking that is individual and unique to the damper accessed.

716.5 Where required. Fire dampers, smoke dampers, combination fire/smoke dampers and ceiling radiation dampers shall be provided as specified in this section. Where an assembly is required to have both fire dampers and smoke dampers, combination fire/smoke dampers or a fire damper and a smoke damper shall be required.

Exceptions:

1. Smoke dampers shall not be required on air systems other than where necessary for the proper function of that system where the system is designed specifically to:

1.1. Function as an engineered smoke-control system, including the provision of continuous air movement with the air-handling system;

1.2. Provide air to other areas of the building during a fire emergency; or

1.3. Provide pressure differentials during a fire emergency.

2. Smoke dampers shall not be required to be located within a prescribed distance of a fire rated enclosure where isolation smoke dampers are used in air-handling equipment.

3. Smoke dampers shall not be required in ducts where the air continues to move and the air-handling system installed is arranged to prevent recirculation of exhaust or return air under fire emergency conditions

716.5.1 Fire walls. Ducts and air transfer openings permitted in fire walls in accordance with Section 705.11 shall be protected with approved fire dampers and smoke dampers installed in accordance with their listing.

716.5.2 Fire barriers. Duct and air transfer openings of fire barriers shall be protected with approved fire dampers installed in accordance with their listing. In addition, smoke dampers shall be installed in penetrations of public corridor walls in accordance with Section 716.5.4.1.

Exception: Fire dampers are not required at penetrations of fire barriers where any of the following apply:

1. Penetrations are tested in accordance with ASTM E 119 as part of the fire-resistance-rated assembly.

2. Ducts are used as part of an approved smoke control system in accordance with Section 716.2.1 and Section 909.

3. Such walls are penetrated by ducted HVAC systems, have a required fire-resistance rating of 1 hour or less, are in areas of other than Group H and are in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than 26 gage thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals.

716.5.2.1 Public corridors. A listed smoke damper designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a public corridor wall constructed as a fire barrier.

Exceptions:

1. Smoke dampers are not required where the building is equipped throughout with an approved smoke control system in accordance with Section 909, and smoke dampers are not necessary for the operation and control of the system.

2. Smoke dampers are not required in corridor penetrations where the duct is constructed of steel not less than 0.019-inch (0.48 mm) in thickness and there are no openings serving the corridor.

3. Smoke dampers are not required in corridor penetrations in Group R-2 buildings and spaces.

716.5.3 Shaft enclosures. Ducts and air transfer openings shall not penetrate a shaft serving as an exit enclosure except as permitted by Section 1019.1.2.

716.5.3.1 Penetrations of shaft enclosures. Shaft enclosures that are permitted to be penetrated by ducts and air transfer openings shall be protected with approved fire and smoke dampers installed in accordance with their listing.

Exceptions:

1. Fire dampers are not required at penetrations of shafts where:

1.1. Steel exhaust subducts are extended at least 22 inches (559 mm) vertically in exhaust shafts provided there is a continuous airflow upward to the outside, or

1.2. Penetrations are tested in accordance with ASTM E 119 as part of the rated assembly, or

1.3. Ducts are used as part of an approved smoke control system designed and installed in accordance with Section 909, and where the fire damper will interfere with the operation of the smoke control system, or

1.4. The penetrations are in parking garage exhaust or supply shafts that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.

2. In Group B occupancies, equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, smoke dampers are not required at penetrations of shafts where:

2.1. Bathroom and toilet room exhaust openings with steel exhaust subducts, having a wall thickness of at least 0.019 inches (0.48 mm) that extend at least 22 inches (559 mm) vertically and the exhaust fan at the upper terminus, powered continuously in accordance with the provisions of Section 909.11, maintains airflow upward to the outside, or

2.2. Ducts are used as part of an approved smoke control system, designed and installed in accordance with Section 909, and where the smoke damper will interfere with the operation of the smoke control system, or

3. Smoke dampers are not required at penetration of exhaust or supply shafts in parking garages that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.

4. Fire dampers and smoke dampers shall not be required at a shaft where the shaft is acting as an extension of the mechanical equipment room that it serves and the shaft and mechanical equipment room maintain fire and smoke separation required by the greater of the two spaces from the occupied portions of the building and meet the requirements of Section 707.11.

5. Smoke dampers shall not be required to be located within a prescribed distance of a fire rated enclosure where isolation smoke dampers are used in air-handling equipment.

6. Smoke dampers shall not be required in ducts where the air continues to move and the air-handling system installed is arranged to prevent recirculation of exhaust or return air under fire emergency conditions.

7. Smoke dampers shall not be required in exhaust ducts or shafts where the exhaust fan is maintained in operation during occupancy, such as in bathroom and toilet room exhausts.

716.5.3.2 Limitations. Shafts that constitute air ducts shall be limited in accordance with Section 607.5.5.2 of the New York City Mechanical Code.

716.5.4 Fire partitions. Duct penetrations in fire partitions shall be protected with approved fire dampers installed in accordance with their listing.

Exceptions: In occupancies other than Group H, fire dampers are not required where any of the following apply:

1. The partitions are tenant separation and interior corridor walls in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and the duct is protected as a through penetration in accordance with Section 712.

2. The duct system is constructed of approved materials in accordance with the New York City Mechanical Code and the duct penetrating the wall meets all of the following minimum requirements:

- 2.1. The duct shall not exceed 100 square inches (0.06 m²).

- 2.2. The duct shall be constructed of steel a minimum of 0.0217 inch (0.55 mm) in thickness.

- 2.3. The duct shall not have openings that communicate the corridor with adjacent spaces or rooms.

- 2.4. The duct shall be installed above a ceiling.

- 2.5. The duct shall not terminate at a wall register in the fire-resistance-rated wall.

- 2.6. A minimum 12-inch-long (0.30 m) by 0.060-inch-thick (1.52 mm) steel sleeve shall be centered in each duct opening. The sleeve shall be secured to both sides of the wall and all four sides of the sleeve with minimum 1 1/2-inch by 1 1/2-inch by 0.060-inch (0.038 m by 0.038 m by 1.52 mm) steel retaining angles. The retaining angles shall be secured to the sleeve and the wall with No. 10 (M5) screws. The annular space between the steel sleeve and wall opening shall be filled with rock (mineral) wool batting or approved equivalent on all sides.

716.5.5 Smoke barriers. A listed smoke damper designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a smoke barrier. Smoke dampers and smoke damper actuation methods shall comply with Section 716.3.2.1.

Exception: Smoke dampers are not required where the openings in ducts are limited to a single smoke compartment and the ducts are constructed of steel.

716.6 Horizontal assemblies. Penetrations by ducts and air transfer openings of a floor, floor/ceiling assembly or the ceiling membrane of a roof/ceiling assembly shall be protected by a shaft enclosure that complies with Section 707 or shall comply with this section.

716.6.1 Through penetrations. In occupancies other than Groups I-2 and I-3, a duct and air transfer opening system constructed of approved materials in accordance with the New York City Mechanical Code that penetrates a fire-resistance-rated floor/ceiling assembly that connects not more than two stories is permitted without shaft enclosure protection provided a fire damper is installed at the floor line and the penetration is fire blocked in accordance with Section 717.2.5.

Exception: A duct serving a dwelling unit is permitted to penetrate three floors or less without a fire damper at each floor provided it meets all of the following requirements.

1. The duct shall be contained and located within the cavity of a wall and shall be constructed of steel not less than 0.019 inch (0.48 mm) (26 gage) in thickness.

2. The duct shall open into only one dwelling unit and the duct system shall be continuous from the unit to the exterior of the building.

3. The duct shall not exceed 5-inch (127 mm) nominal diameter and the total area of such ducts shall not exceed 100 square inches (0.065 m²) in any 100 square feet (9.3 m²) of floor area.

4. The annular space around the duct is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 time-temperature conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.

5. Grille openings located in a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be protected with a ceiling radiation damper in accordance with Section 716.6.2.

716.6.2 Membrane penetrations. Where duct systems constructed of approved materials in accordance with the New York City Mechanical Code penetrate a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly, shaft enclosure protection is not required provided an approved ceiling radiation damper and firestopping is installed at the ceiling line. Where a duct is not attached to a diffuser that penetrates a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly, shaft enclosure protection is not required provided an approved ceiling radiation damper and firestopping is installed at the ceiling line. Ceiling radiation dampers shall be tested in accordance with UL 555C and constructed in accordance with the details listed in a fire-resistance-rated assembly or shall be labeled to function as a heat barrier for air-handling outlet/inlet penetrations in the ceiling of a fire-resistance-rated assembly. Ceiling radiation dampers shall not be required where ASTM E 119 fire tests have shown that ceiling radiation dampers are not necessary in order to maintain the fire-resistance rating of the assembly. Ceiling radiation dampers shall not be required where exhaust duct penetrations are protected in accordance with Section 712.4.2 and the exhaust ducts are located within the cavity of a wall, and do not pass through another dwelling unit or tenant space.

716.6.3 Non-fire-resistance-rated assemblies. Duct systems constructed of approved materials in accordance with the New York City Mechanical Code that penetrate non-fire-resistance-rated floor assemblies and that connect not more than two stories are permitted without shaft enclosure protection provided that the annular space between the assembly and the penetrating duct is filled with an approved noncombustible material to resist the free passage of flame and the products of combustion. Duct systems constructed of approved materials in accordance with the New York City Mechanical Code that penetrate non-fire-resistance-rated floor assemblies and that connect not more than three stories are permitted without shaft enclosure protection provided that the annular space between the assembly and the penetrating duct is filled with an approved noncombustible material to resist the free passage of flame and the products of combustion, and a fire damper is installed at each floor line.

Exception: Fire dampers are not required in ducts within individual residential dwelling units.

716.7 Flexible ducts and air connectors. Flexible ducts and air connectors shall not pass through any fire-resistance-rated assembly. Flexible air connectors shall not pass through any wall, floor or ceiling.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

716.5.3 amended L.L. 8/2008 § 99, eff. July 1, 2008.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 717: CONCEALED SPACES

NYC Administrative Code § 28-BC 717

717.1 General.

Fire blocking and draft stopping shall be installed in combustible and noncombustible concealed locations in accordance with this section. Fire blocking shall comply with Section 717.2. Draft stopping in floor/ceiling spaces and attic spaces shall comply with Sections 717.3 and 717.4, respectively. The permitted use of combustible materials in concealed spaces of noncombustible buildings shall be limited to the applications indicated in Section 717.5. Installations of fire blocking and draft stopping shall comply with the special inspection requirements of Chapter 17.

Exception: Concealed spaces that are sprinklered in accordance with Chapter 9 or are constructed as a shaft.

717.2 Fire blocking. In combustible and noncombustible construction, fire blocking shall be installed to cut off concealed draft openings (both vertical and horizontal) and shall form an effective barrier between floors, between a top story and a roof or attic space. Fire blocking shall be installed in the locations specified in Sections 717.2.2 through 717.2.7.

717.2.1 Fire blocking materials. Fire blocking shall consist of 2-inch (51 mm) nominal lumber or two thicknesses of 1-inch (25 mm) nominal lumber with broken lap joints or one thickness of 0.719-inch (18.3 mm) wood structural panel with joints backed by 0.719-inch (18.3 mm) wood structural panel or one thickness of 0.75-inch (19 mm) particleboard with joints backed by 0.75-inch (19 mm) particleboard. Gypsum board, cement fiber board, batts or blankets of mineral wool or glass fiber or other approved materials installed in such a manner as to be securely retained in place shall be permitted as an acceptable fire block. Batts or blankets of mineral or glass fiber or other approved nonrigid materials shall be permitted for compliance with the 10-foot (3048 mm) horizontal fire blocking in walls constructed using parallel rows of studs or staggered studs. Loose-fill insulation material shall not be used as a fire block unless specifically tested in the form and manner intended for use to demonstrate its ability to remain in place and to retard the spread of fire and hot gases. The integrity of fire blocks shall be maintained.

717.2.1.1 Double stud walls. Batts or blankets of mineral or glass fiber or other approved nonrigid materials shall be

allowed as fire blocking in walls constructed using parallel rows of studs or staggered studs.

717.2.2 Concealed wall spaces. Fire blocking shall be provided in concealed spaces of stud walls and partitions, including furred spaces, and parallel rows of studs or staggered studs, as follows:

1. Vertically at the ceiling and floor levels.
2. Horizontally at intervals not exceeding 10 feet (3048 mm).

717.2.3 Connections between horizontal and vertical spaces. Fire blocking shall be provided at interconnections between concealed vertical stud wall or partition spaces and concealed horizontal spaces created by an assembly of floor joists or trusses, and between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings, cove ceilings and similar locations.

717.2.4 Stairways. Fire blocking shall be provided in concealed spaces between stair stringers at the top and bottom of the run. Enclosed spaces under stairs shall also comply with Section 1019.1.5.

717.2.5 Ceiling and floor openings. Where annular space protection is provided in accordance with Exception 6 of Section 707.2, Exception 1 of Section 712.4.2, or Section 712.4.3, fire blocking shall be installed at openings around vents, pipes, ducts, chimneys and fireplaces at ceiling and floor levels, with an approved material to resist the free passage of flame and the products of combustion. Factory-built chimneys and fireplaces shall be fire blocked in accordance with UL 103 and UL 127.

717.2.6 Architectural trim. Fire blocking shall be installed within concealed spaces of exterior wall finish and other exterior architectural elements where permitted to be of combustible construction in Section 1406 or where erected with combustible frames, at maximum intervals of 20 feet (6096 mm). If non-continuous, such elements shall have closed ends, with at least 4 inches (102 mm) of separation between sections.

Exceptions:

1. Fire blocking of cornices is not required in single-family dwellings. Fire blocking of cornices of a two-family dwelling is required only at the line of dwelling unit separation.

2. Fire blocking shall not be required where installed on noncombustible framing and the face of the exterior wall finish exposed to the concealed space is covered by one of the following materials:

- 2.1. Aluminum having a minimum thickness of 0.019 inch (0.5 mm).
- 2.2. Corrosion-resistant steel having a base metal thickness not less than 0.016 inch (0.4 mm) at any point.
- 2.3. Other approved noncombustible materials.

717.2.7 Concealed sleeper spaces. Where wood sleepers are used for laying wood flooring on masonry or concrete fire-resistance-rated floors, the space between the floor slab and the underside of the wood flooring shall be filled with an approved material to resist the free passage of flame and products of combustion or fire blocked in such a manner that there will be no open spaces under the flooring that will exceed 20 square feet (1.86 m²) in area and such space shall be filled solidly under permanent partitions so that there is no communication under the flooring between adjoining rooms.

Exceptions:

1. Fire blocking is not required for slab-on-grade floors in gymnasiums.

2. Fire blocking is required only at the juncture of each alternate lane and at the ends of each lane in a bowling facility.

717.3Draft stopping in floors.In combustible and noncombustible construction, draft stopping shall be installed to subdivide floor/ceiling assemblies in the locations prescribed in Sections 717.3.2 through 717.3.3.

717.3.1Draft stopping materials.In noncombustible construction, draft stopping shall be of noncombustible materials. In combustible construction, draft stopping materials shall not be less than 0.5-inch (12.7 mm) gypsum board, 0.375-inch (9.5 mm) wood structural panel, 0.375-inch (9.5 mm) particleboard or other approved materials adequately supported. The integrity of draft stops shall be maintained.

717.3.2Group R.Draft stopping shall be provided in floor/ceiling spaces in Group R buildings. Draft stopping shall be located above and in line with the dwelling unit separations.

Exceptions:

1. Draft stopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

2. Draft stopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.2, provided that automatic sprinklers are also installed in the combustible concealed spaces.

3. Where laminated wood I-joist assemblies are used, the space between the ceiling and the floor or roof above shall be divided into approximately equal areas not greater than 500 square feet (46.5 m²).

4. Draft stopping shall not be required where the structural members within the concealed ceiling space are individually protected on all sides for their full length with materials having the required fire resistance rating.

717.3.3Other groups.In occupancies other than Group R, draft stopping shall be installed so that horizontal floor areas do not exceed 3,000 square feet (279 m²).

Exceptions:

1. Draft stopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

2. Draft stopping shall not be required where the structural members within the concealed ceiling space are individually protected on all sides for their full length with materials having the required fire resistance rating.

717.4Draft stopping in attics.In combustible and noncombustible construction, draft stopping shall be installed to subdivide attic spaces and concealed roof spaces in the locations prescribed in Sections 717.4.2 and 717.4.3. Ventilation of concealed roof spaces shall be maintained in accordance with Section 1203.2.

717.4.1Draft stopping materials.Materials utilized for draft stopping of attic spaces shall comply with Section 717.3.1.

717.4.1.1Openings.Openings in draft stop partitions provided in accordance with Section 1209.2 shall be protected by self-closing doors with automatic latches constructed as required for the partitions.

717.4.2Groups R-1 and R-2.Draft stopping shall be provided in attics, mansards, overhangs or other concealed roof spaces of Group R-2 buildings with three or more dwelling units and in all Group R-1 buildings. Draft stopping shall be installed above, and in line with, dwelling unit separation walls that do not extend to the underside of the roof sheathing above.

Exceptions:

1. Draft stopping shall not be required where the structural members within the concealed attic space are individually protected on all sides for their full length with materials having the required fire resistance rating.

2. Draft stopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

3. In occupancies in Group R-2 that do not exceed four stories in height, the attic space shall be subdivided by draft stops into areas not exceeding 3,000 square feet (279 m²) or above every two dwelling units, whichever is smaller.

4. Draft stopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.2, provided that automatic sprinklers are also installed in the combustible concealed spaces.

5. Where laminated wood I-joint assemblies are used, the space between the ceiling and the floor or roof above shall be divided into approximately equal areas not greater than 500 square feet (46.5 m²).

717.4.3 Other groups. Draft stopping shall be installed in attics and concealed roof spaces, such that any horizontal area does not exceed 3,000 square feet (279 m²).

Exceptions:

1. Draft stopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

2. Draft stopping shall not be required where the structural members within the concealed attic space are individually protected on all sides for their full length with materials having the required fire resistance rating.

3. Where laminated wood I-joint assemblies are used, the space between the ceiling and the floor or roof above shall be divided into approximately equal areas not greater than 500 square feet (46.5 m²).

717.5 Combustibles in concealed spaces in Type I or II construction. Combustibles shall not be permitted in concealed spaces of buildings of Type I or II construction.

Exceptions:

1. Combustible materials in accordance with Section 603.

2. Combustible materials complying with Section 602 of the New York City Mechanical Code.

3. Class A interior finish materials.

4. Combustible piping within partitions or enclosed shafts installed in accordance with the provisions of this code. Combustible piping shall be permitted within concealed ceiling spaces where installed in accordance with the New York City Mechanical Code and the New York City Plumbing Code.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 718: FIRE-RESISTANCE REQUIREMENTS FOR PLASTER

NYC Administrative Code § 28-BC 718

718.1 Thickness of plaster.

The minimum thickness of gypsum plaster or portland cement plaster used in a fire-resistance-rated system shall be determined by the prescribed fire tests. The plaster thickness shall be measured from the face of the lath where applied to gypsum lath or metal lath.

718.2Plaster equivalents.For fire-resistance purposes, 0.5 inch (12.7 mm) of unsanded gypsum plaster shall be deemed equivalent to 0.75 inch (19.1 mm) of one-to-three gypsum sand plaster or 1 inch (25 mm) of portland cement sand plaster.

718.3Noncombustible furring.In buildings of Type I and II construction, plaster shall be applied directly on concrete or masonry or on approved noncombustible plastering base and furring.

718.4Double reinforcement.Plaster protection more than 1 inch (25 mm) in thickness shall be reinforced with an additional layer of approved lath embedded at least 0.75 inch (19.1 mm) from the outer surface and fixed securely in place.

Exception: Solid plaster partitions or where otherwise determined by fire tests.

718.5Plaster alternatives for concrete.In reinforced concrete construction, gypsum plaster or portland cement plaster is permitted to be substituted for 0.5 inch (12.7 mm) of the required poured concrete protection, except that a minimum thickness of 0.375 inch (9.5 mm) of poured concrete shall be provided in reinforced concrete floors and 1 inch (25 mm) in reinforced concrete columns in addition to the plaster finish. The concrete base shall be prepared in accordance with Section 2510.7.



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Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION BC 719: THERMAL- AND SOUND-INSULATING MATERIALS

NYC Administrative Code § 28-BC 719

719.1 General.

Insulating materials, including facings such as vapor retarders and vapor- permeable membranes, similar coverings, and all layers of single and multilayer reflective foil insulations, shall comply with the requirements of this section. Where a flame spread index or a smoke-development index is specified in this section, such index shall be determined in accordance with ASTM E 84. Any material that is subject to an increase in flame spread index or smoke-development index beyond the limits herein established through the effects of age, moisture, or other atmospheric conditions shall not be permitted. Fiberboard insulation shall comply with Chapter 23 and the requirements of this section. Foam plastic insulation shall comply with Chapter 26 and the requirements of this section. Duct and pipe coverings and linings in plenums shall comply with the New York City Mechanical Code.

Exceptions: Exterior Insulation Finish Systems (EIFS) shall comply with Chapter 14 and Chapter 26.

719.1.1 Noncombustible construction. Insulating materials used in noncombustible construction must either:

1. Satisfactorily pass a test for determining non-combustibility of elementary materials, based on the test procedures of ASTM E 136; or
2. Have a flame spread index not greater than 25, a smoke-development index not greater than 50, and be without evidence of continued progressive combustion when tested in accordance with ASTM E 84.

719.1.2 Combustible construction. Insulating materials used in combustible construction shall have a flame spread index not greater than 25, a smoke-development index not greater than 450, and be without evidence of continuous progressive combustion when tested in accordance with ASTM E 84.

719.2 Concealed installation. Insulating materials, where concealed as installed in buildings of any type construction, shall comply with Sections 719.1, 719.1.1 and 719.1.2. Concealed insulation shall be separated from the building

interior by a thermal barrier consisting of at least 1/2-inch (12.7 mm) thick gypsum wallboard or approved equivalent.

Exception: Cellulose loose-fill insulation that is not spray applied, complying with the requirements of Section 719.6, shall only be required to meet the smoke-development index of not more than 450.

719.2.1 Facings. Where such materials are installed in concealed spaces in buildings of Type III, IV or V construction, the flame spread and smoke-development limits do not apply to facings, coverings, and layers of reflective foil insulation that are installed behind and in substantial contact with the unexposed surface of the ceiling, wall or floor finish.

719.3 Exposed installation. Insulation materials, where exposed as installed in buildings of any type construction, shall have a flame spread index of not more than 25 and a smoke-development index of not more than 50.

Exception: Cellulose loose-fill insulation that is not spray applied complying with the requirements of Section 719.6 shall only be required to meet the smoke-development index of not more than 50.

719.3.1 Attic floors. Exposed insulation materials installed on attic floors shall have a critical radiant flux of not less than 0.12 watt per square centimeter when tested in accordance with ASTM E 970.

719.3.2 Toxicity. Upon exposure to fire, insulating materials used in building interiors, including facings such as vapor retarders and vapor permeable membranes, similar coverings, and all layers of single and multi-layer reflective foil insulation, shall not produce products of decomposition or combustion that are more toxic in point of concentration than those given off by wood or paper when decomposing or burning under comparable conditions in accordance with test standards approved by the department.

719.4 Loose-fill insulation. Loose-fill insulation materials that cannot be mounted in the ASTM E 84 apparatus without a screen or artificial supports shall comply with the flame spread and smoke-developed limits of Sections 719.2 and 719.3 when tested in accordance with CAN/ULC S102.2.

Exception: Cellulose loose-fill insulation shall not be required to comply with this test method, provided such insulation complies with the requirements of Section 719.6.

719.5 Roof insulation. The use of combustible roof insulation not complying with Sections 719.2 and 719.3 shall be permitted in any type construction provided it is applied on top of roof decking or slab and is covered with approved roof coverings directly applied thereto.

719.6 Cellulose loose-fill insulation. Cellulose loose-fill insulation shall comply with CPSC 16 CFR, Part 1209 and CPSC 16 CFR, Part 1404. Each package of such insulating material shall be clearly labeled in accordance with CPSC 16 CFR, Part 1209 and CPSC 16 CFR, Part 1404.

719.7 Insulation and covering on pipe and tubing. Insulation and covering on pipe and tubing shall comply with the requirements of the New York City Mechanical Code.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

719.3 and exception amended L.L. 8/2008 § 100, eff. July 1, 2008.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
 Title 28: NEW YORK CITY CONSTRUCTION CODES**
 CHAPTER 7: THE NEW YORK CITY BUILDING CODE
 Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
 SECTION BC 720: DESCRIPTIVE FIRE RESISTANCE

NYC Administrative Code § 28-BC 720

720.1 General.

The provisions of this section contain prescriptive details of fire-resistance-rated building elements. The materials of construction listed in Tables 720.1(1), 720.1(2), and 720.1(3) shall be assumed to have the fire-resistance ratings prescribed therein. Where materials that change the capacity for heat dissipation are incorporated into a fire-resistance-rated assembly, fire test results or other substantiating data shall be made available to the commissioner to show that the required fire-resistance-rating time period is not reduced.

720.1.1 Thickness of protective coverings. The thickness of fire-resistant materials required for protection of structural members shall be not less than set forth in Table 720.1(1), except as modified in this section. The figures shown shall be the net thickness of the protecting materials and shall not include any hollow space in back of the protection.

720.1.2 Unit masonry protection. Where required, metal ties shall be embedded in transverse joints of unit masonry for protection of steel columns. Such ties shall be as set forth in Table 720.1(1) or be equivalent thereto.

720.1.3 Reinforcement for cast-in-place concrete column protection. Cast-in-place concrete protection for steel columns shall be reinforced at the edges of such members with wire ties of not less than 0.18 inch (4.6 mm) in diameter wound spirally around the columns on a pitch of not more than 8 inches (203 mm) or by equivalent reinforcement.

720.1.4 Plaster application. The finish coat is not required for plaster protective coatings where they comply with the design mix and thickness requirements of Tables 720.1(1), 720.1(2) and 720.1(3).

720.1.5 Bonded prestressed concrete tendons. For members having a single tendon or more than one tendon installed with equal concrete cover measured from the nearest surface, the cover shall not be less than that set forth in Table 720.1(1). For members having multiple tendons installed with variable concrete cover, the average tendon cover shall not be less than that set forth in Table 720.1(1), provided:

1. The clearance from each tendon to the nearest exposed surface is used to determine the average cover.

2. In no case can the clear cover for individual tendons be less than one-half of that set forth in Table 720.1(1). A minimum cover of 0.75 inch (19.1 mm) for slabs and 1 inch (25 mm) for beams is required for any aggregate concrete.

3. For the purpose of establishing a fire-resistance rating, tendons having a clear covering less than that set forth in Table 720.1(1) shall not contribute more than 50 percent of the required ultimate moment capacity for members less than 350 square inches (0.226 m²) in cross-sectional area and 65 percent for larger members. For structural design purposes, however, tendons having a reduced cover are assumed to be fully effective.

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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
 Title 28: NEW YORK CITY CONSTRUCTION CODES**
 CHAPTER 7: THE NEW YORK CITY BUILDING CODE
 Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
 SECTION BC 721: CALCULATED FIRE RESISTANCE

NYC Administrative Code § 28-BC 721

721.1 General.

The provisions of this section contain procedures by which the fire resistance of specific materials or combinations of materials is established by calculations. These procedures apply only to the information contained in this section and shall not be otherwise used. The calculated fire resistance of concrete, concrete masonry, and clay masonry assemblies shall be permitted in accordance with ACI 216.1/TMS 0216.1. The calculated fire resistance of steel assemblies shall be permitted in accordance with Chapter 5 of ASCE/SFPE 29.

721.1.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

CERAMIC FIBER BLANKET. A mineral wool insulation material made of alumina-silica fibers and weighing 4 to 10 pounds per cubic foot (pcf) (64 to 160 kg/m³).

CONCRETE, CARBONATE AGGREGATE. Concrete made with aggregates consisting mainly of calcium or magnesium carbonate, such as limestone or dolomite, and containing 40 percent or less quartz, chert, or flint.

CONCRETE, CELLULAR. A lightweight insulating concrete made by mixing a preformed foam with portland cement slurry and having a dry unit weight of approximately 30 pcf (480 kg/m³).

CONCRETE, LIGHTWEIGHT AGGREGATE. Concrete made with aggregates of expanded clay, shale, slag or slate or sintered fly ash or any natural lightweight aggregate meeting ASTM C 330 and possessing equivalent fire-resistance properties and weighing 85 to 115 pcf (1360 to 1840 kg/m³).

CONCRETE, PERLITE. A lightweight insulating concrete having a dry unit weight of approximately 30 pcf (480 kg/m³) made with perlite concrete aggregate. Perlite aggregate is produced from a volcanic rock which, when heated, expands to form a glass-like material of cellular structure.

CONCRETE, SAND-LIGHTWEIGHT. Concrete made with a combination of expanded clay, shale, slag, slate, sintered fly ash, or any natural lightweight aggregate meeting ASTM C 330 and possessing equivalent fire-resistance properties and natural sand. Its unit weight is generally between 105 and 120 pcf (1680 and 1920 kg/m³).

CONCRETE, SILICEOUS AGGREGATE. Concrete made with normal-weight aggregates consisting mainly of silica or compounds other than calcium or magnesium carbonate, which contains more than 40-percent quartz, chert, or flint.

CONCRETE, VERMICULITE. A lightweight insulating concrete made with vermiculite concrete aggregate which is laminated micaceous material produced by expanding the ore at high temperatures. When added to a portland cement slurry the resulting concrete has a dry unit weight of approximately 30 pcf (480 kg/m³).

GLASS FIBERBOARD. Fibrous glass roof insulation consisting of inorganic glass fibers formed into rigid boards using a binder. The board has a top surface faced with asphalt and kraft reinforced with glass fiber.

MINERAL BOARD. A rigid felted thermal insulation board consisting of either felted mineral fiber or cellular beads of expanded aggregate formed into flat rectangular units.

721.2 Concrete assemblies. The provisions of this section contain procedures by which the fire-resistance ratings of concrete assemblies are established by calculations.

721.2.1 Concrete walls. Cast-in-place and precast concrete walls shall comply with Section 721.2.1.1. Multiwythe concrete walls shall comply with Section 721.2.1.2. Joints between precast panels shall comply with Section 721.2.1.3. Concrete walls with gypsum wallboard or plaster finish shall comply with Section 721.2.1.4.

721.2.1.1 Cast-in-place or precast walls. The minimum equivalent thickness of cast-in-place or precast concrete walls for fire-resistance ratings of 1 hour to 4 hours are shown in Table 721.2.1.1. For solid walls with flat vertical surfaces, the equivalent thickness is the same as the actual thickness. The values in Table 721.2.1.1 apply to plain, reinforced or prestressed concrete walls.

Fire-Resistance Rating	1-hour	1 1/2-hour	2-hour	3-hour	4-hour
Siliceous	3.5	4.3	5.0	6.2	7.0
Carbonate	3.2	4.0	4.6	5.7	6.6
Sand-Lightweight	2.7	3.3	3.8	4.6	5.4
Lightweight	2.5	3.1	3.6	4.4	5.1

For SI: 1 inch = 25.4 mm.

721.2.1.1.1 Hollow-core precast wall panels. For hollow-core precast concrete wall panels in which the cores are of constant cross section throughout the length, calculation of the equivalent thickness by dividing the net cross-sectional area (the gross cross section minus the area of the cores) of the panel by its width shall be permitted.

721.2.1.1.2 Core spaces filled. Where all of the core spaces of hollow-core wall panels are filled with loose-fill material, such as expanded shale, clay, or slag, or vermiculite or perlite, the fire-resistance rating of the wall is the same as that of a solid wall of the same concrete type and of the same overall thickness.

721.2.1.1.3 Tapered cross sections. The thickness of panels with tapered cross sections shall be that determined at a distance $2t$ or 6 inches (152 mm), whichever is less, from the point of minimum thickness, where t is the minimum thickness.

721.2.1.1.4 Ribbed or undulating surfaces. The equivalent thickness of panels with ribbed or undulating surfaces shall be determined by one of the following expressions:

For $s \leq 4t$, the thickness to be used shall be t

For $s > 4t$, the thickness to be used shall be t_e

For $4t < s \leq 2t$, the thickness to be used shall be

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721.2.1.2 Multiwythe walls. For walls that consist of two wythes of different types of concrete, the fire-resistance ratings shall be permitted to be determined from Figure 721.2.1.2.

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721.2.1.2.1 Two or more wythes. The fire-resistance rating for wall panels consisting of two or more wythes shall be permitted to be determined by the formula:

$$R = (R_{10.59} ; R_{20.59} ; R_{30.59} ; \dots ; R_{n0.59})^{1.7} \text{ (Equation 7-4)}$$

where:

R = The fire endurance of the assembly, minutes.

R₁, R₂, and R_n = The fire endurances of the individual wythes, minutes. Values of R_{n0.59} for use in Equation 7-4 are given in Table 721.2.1.2(1). Calculated fire-resistance ratings are shown in Table 721.2.1.2(2).

721.2.1.2.2 Foam plastic insulation. The fire-resistance ratings of precast concrete wall panels consisting of a layer of foam plastic insulation sandwiched between two wythes of concrete shall be permitted to be determined by use of Equation 7-4. Foam plastic insulation with a total thickness of less than 1 inch (25 mm) shall be disregarded. The R_n value for thickness of foam plastic insulation of 1 inch (25 mm) or greater, for use in the calculation, is 5 minutes; therefore R_{n0.59} = 2.5.

721.2.1.3 Joints between precast wall panels. Joints between precast concrete wall panels which are not insulated as required by this section shall be considered as openings in walls. Uninsulated joints shall be included in determining the percentage of openings permitted by Table 704.8. Where openings are not permitted or are required by this code to be protected, the provisions of this section shall be used to determine the amount of joint insulation required. Insulated joints shall not be considered openings for purposes of determining compliance with the allowable percentage of openings in Table 704.8.

721.2.1.3.1 Ceramic fiber joint protection. Figure 721.2.1.3.1 shows thicknesses of ceramic fiber blankets to be used to insulate joints between precast concrete wall panels for various panel thicknesses and for joint widths of 3/8 inch (9.5 mm) and 1 inch (25 mm) for fire-resistance ratings of 1 hour to 4 hours. For joint widths between 3/8 inch (9.5 mm) and 1 inch (25 mm), the thickness of ceramic fiber blanket is allowed to be determined by direct interpolation. Other tested and labeled materials are acceptable in place of ceramic fiber blankets.

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721.2.1.4 Walls with gypsum wallboard or plaster finishes. The fire-resistance rating of cast-in-place or precast concrete walls with finishes of gypsum wallboard or plaster applied to one or both sides shall be permitted to be calculated in accordance with the provisions of this section.

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Table 721.2.1.4(2) Time Assigned to Finish Materials on Fire-Exposed Side of Wall Finish Description Time (minute)
Gypsum wallbound

3/8 inch 10

1/2 inch 15

5/8 inch²⁰

2 layers of 3/8 inch²⁵

1 layer 3/8 inch, 1 layer 1/2 inch³⁵

2 layers 1/2 inch⁴⁰ Type X gypsum wallboard

1/2 inch²⁵

5/8 inch⁴⁰ Portland cement-sand plaster applied directly to concrete masonry See Note a Portland cement-sand plaster on metal lath

3/4 inch²⁰

7/8 inch²⁵

1 inch³⁰ Gypsum sand plaster on 3/8-inch gypsum lath

1/2 inch³⁵

5/8 inch⁴⁰

3/4 inch⁵⁰ Gypsum sand plaster on metal lath

3/4 inch⁵⁰

7/8 inch⁶⁰

1 inch⁸⁰ For SI: 1 inch = 25.4 mm.a. The actual thickness of portland cement-sand plaster, provided it is 5/8 inch or less in thickness, shall be permitted to be included in determining the equivalent thickness of the masonry for use in Table 721.3.2.

721.2.1.4.1 Nonfire-exposed side. Where the finish of gypsum wallboard or plaster is applied to the side of the wall not exposed to fire, the contribution of the finish to the total fire-resistance rating shall be determined as follows: The thickness of the finish shall first be corrected by multiplying the actual thickness of the finish by the applicable factor determined from Table 721.2.1.4(1) based on the type of aggregate in the concrete. The corrected thickness of finish shall then be added to the actual or equivalent thickness of concrete and fire-resistance rating of the concrete and finish determined from Table 721.2.1.1, Figure 721.2.1.2 or Table 721.2.1.2(1).

721.2.1.4.2 Fire-exposed side. Where gypsum wallboard or plaster is applied to the fire-exposed side of the wall, the contribution of the finish to the total fire-resistance rating shall be determined as follows: The time assigned to the finish as established by Table 721.2.1.4(2) shall be added to the fire-resistance rating determined from Table 721.2.1.1 or Figure 721.2.1.2, or Table 721.2.1.2(1) for the concrete alone, or to the rating determined in Section 721.2.1.4.1 for the concrete and finish on the nonfire-exposed side.

721.2.1.4.3 Nonsymmetrical assemblies. For a wall having no finish on one side or different types or thicknesses of finish on each side, the calculation procedures of Sections 721.2.1.4.1 and 721.2.1.4.2 shall be performed twice, assuming either side of the wall to be the fire-exposed side. The fire-resistance rating of the wall shall not exceed the lower of the two values.

Exception: For an exterior wall with more than 5 feet (1524 mm) of horizontal separation, the fire shall be assumed to occur on the interior side only.

721.2.1.4.4 Minimum concrete fire-resistance rating. Where finishes applied to one or both sides of a concrete wall contribute to the fire-resistance rating, the concrete alone shall provide not less than one-half of the total required fire-resistance rating. Additionally, the contribution to the fire resistance of the finish on the nonfire-exposed side of a load-bearing wall shall not exceed one-half the contribution of the concrete alone.

721.2.1.4.5 Concrete finishes. Finishes on concrete walls that are assumed to contribute to the total fire-resistance rating of the wall shall comply with the installation requirements of Section 721.3.2.5.

721.2.2 Concrete floor and roof slabs. Reinforced and prestressed floors and roofs shall comply with Section 721.2.2.1. Multicourse floors and roofs shall comply with Sections 721.2.2.2 and 721.2.2.3, respectively.

721.2.2.1 Reinforced and prestressed floors and roofs. The minimum thicknesses of reinforced and prestressed concrete floor or roof slabs for fire-resistance ratings of 1 hour to 4 hours are shown in Table 721.2.2.1. Table 721.2.2.1 Minimum Slab Thickness (inches) Concrete Type Fire-Resistance Rating (hour) 1 1 1/2 2 3 4 Siliceous 3.5 4.3 5.0 6.2 7.0 Carbonate 3.2 4.0 4.6 5.7 6.6 Sand-Lightweight 2.7 3.3 3.8 4.6 5.4 Lightweight 2.5 3.1 3.6 4.4 5.1 For SI: 1 inch = 25.4 mm.

721.2.2.1.1 Hollow-core prestressed slabs. For hollow-core prestressed concrete slabs in which the cores are of constant cross section throughout the length, the equivalent thickness shall be permitted to be obtained by dividing the net cross-sectional area of the slab including grout in the joints, by its width.

721.2.2.1.2 Slabs with sloping soffits. The thickness of slabs with sloping soffits (see Figure 721.2.2.1.2) shall be determined at a distance $2t$ or 6 inches (152 mm), whichever is less, from the point of minimum thickness, where t is the minimum thickness.

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721.2.2.1.3 Slabs with ribbed soffits. The thickness of slabs with ribbed or undulating soffits (see Figure 721.2.2.1.3) shall be determined by one of the following expressions, whichever is applicable:

For $s \leq 4t$, the thickness to be used shall be t

For $s \leq 2t$, the thickness to be used shall be t

For $4t \leq s \leq 2t$, the thickness to be used shall be

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721.2.2.2 Multicourse floors. The fire-resistance ratings of floors that consist of a base slab of concrete with a topping (overlay) of a different type of concrete shall comply with Figure 721.2.2.2.

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721.2.2.3 Multicourse roofs. The fire-resistance ratings of roofs which consist of a base slab of concrete with a topping (overlay) of an insulating concrete or with an insulating board and built-up roofing shall comply with Figures 721.2.2.3(1) and 721.2.2.3(2).

721.2.2.3.1 Heat transfer. For the transfer of heat, three-ply built-up roofing contributes 10 minutes to the fire-resistance rating. The fire-resistance rating for concrete assemblies such as those shown in Figure 721.2.2.3(1) shall be increased by 10 minutes. This increase is not applicable to those shown in Figure 721.2.2.3(2).

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721.2.2.4 Joints in precast slabs. Joints between adjacent precast concrete slabs need not be considered in calculating the slab thickness provided that a concrete topping at least 1 inch (25 mm) thick is used. Where no concrete topping is used, joints must be grouted to a depth of at least one-third the slab thickness at the joint, but not less than 1 inch (25 mm), or the joints must be made fire resistant by other approved methods.

721.2.3 Concrete cover over reinforcement. The minimum thickness of concrete cover over reinforcement in concrete slabs, reinforced beams and prestressed beams shall comply with this section.

721.2.3.1 Slab cover. The minimum thickness of concrete cover to the positive moment reinforcement shall comply with Table 721.2.3(1) for reinforced concrete and Table 721.2.3(2) for prestressed concrete. These tables are applicable for solid or hollow-core one-way or two-way slabs with flat undersurfaces. These tables are applicable to slabs that are either cast in place or precast. For precast prestressed concrete not covered elsewhere, the procedures contained in PCI MNL 124 shall be acceptable.

721.2.3.2 Reinforced beam cover. The minimum thickness of concrete cover to the positive moment reinforcement (bottom steel) for reinforced concrete beams is shown in Table 721.2.3(3) for fire-resistance ratings of 1 hour to 4 hours.

721.2.3.3 Prestressed beam cover. The minimum thickness of concrete cover to the positive moment prestressing tendons (bottom steel) for restrained and unrestrained prestressed concrete beams and stemmed units shall comply with the values shown in Tables 721.2.3(4) and 721.2.3(5) for fire-resistance ratings of 1 hour to 4 hours. Values in Table 721.2.3(4) apply to beams 8 inches (203 mm) or greater in width. Values in Table 721.2.3(5) apply to beams or stems of any width, provided the cross-section area is not less than 40 square inches (25 806 mm²). In case of differences between the values determined from Table 721.2.3(4) or 721.2.3(5), it is permitted to use the smaller value. The concrete cover shall be calculated in accordance with Section 721.2.3.3.1. The minimum concrete cover for nonprestressed reinforcement in prestressed concrete beams shall comply with Section 721.2.3.2.

721.2.3.3.1 Calculating concrete cover. The concrete cover for an individual tendon is the minimum thickness of concrete between the surface of the tendon and the fire-exposed surface of the beam, except that for ungrouped ducts, the assumed cover thickness is the minimum thickness of concrete between the surface of the duct and the fire-exposed surface of the beam. For beams in which two or more tendons are used, the cover is assumed to be the average of the minimum cover of the individual tendons. For corner tendons (tendons equal distance from the bottom and side), the minimum cover used in the calculation shall be one-half the actual value. For stemmed members with two or more prestressing tendons located along the vertical centerline of the stem, the average cover shall be the distance from the bottom of the member to the centroid of the tendons. The actual cover for any individual tendon shall not be less than one-half the smaller value shown in Tables 721.2.3(4) and 721.2.3(5), or 1 inch (25 mm), whichever is greater.

Table 721.2.3(1) Cover Thickness for Reinforced Concrete Floor or Roof Slabs (inches)

Concrete Aggregate Type	Fire-Resistance Rating (hours)	Restrained	1	1 1/2	2	3	4	Unrestrained	1	1 1/2	2	3	4
Siliceous	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Carbonate	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Sand-lightweight	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Orlightweight	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4

For SI: 1 inch = 25.4 mm.

Table 721.2.3(2) Cover Thickness for Prestressed Concrete Floor or Roof Slabs (inches)

Concrete Aggregate Type	Fire-Resistance Rating (hours)	Restrained	1	1 1/2	2	3	4	Unrestrained	1	1 1/2	2	3	4
Siliceous	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Carbonate	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Sand-lightweight	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Orlightweight	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4

For SI: 1 inch = 25.4 mm.

Table 721.2.3(3) Minimum Cover for Main Reinforcing Bars of Reinforced Concrete Beams (Applicable to All Types of Structural Concrete)

Restrained or Unrestrained	a Beam Width b (inches)	Fire-Resistance Rating (hours)	1	1 1/2	2	3	4
Restrained	5	7	me10	3/4	3/4	3/4	3/4
Unrestrained	5	7	me10	3/4	3/4	3/4	3/4

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm. a. Tabulated values for restrained assemblies apply to beams spaced more than 4 feet on center. For restrained beams spaced 4 feet or less on center, minimum cover of 3/4 inch is adequate for ratings of 4 hours or less. b. For beam widths between the tabulated values, the minimum cover thickness can be determined by direct interpolation. c. The cover for an individual reinforcing bar is the minimum thickness of concrete between the surface of the bar and the fire-exposed surface of the beam. For beams in which

721.2.4.4Precast cover units for steel columns.See Section 721.5.1.4.

721.3 Concrete masonry. The provisions of this section contain procedures by which the fire-resistance ratings of concrete masonry are established by calculations.

721.3.1 Equivalent thickness. The equivalent thickness of concrete masonry construction shall be determined in accordance with the provisions of this section.

721.3.1.1 Concrete masonry unit plus finishes. The equivalent thickness of concrete masonry assemblies, T_{ea} , shall be computed as the sum of the equivalent thickness of the concrete masonry unit, T_e , as determined by Section 721.3.1.2, 721.3.1.3, or 721.3.1.4, plus the equivalent thickness of finishes, T_{ef} , determined in accordance with Section 721.3.2:

$$T_{ea} = T_e + T_{ef} \text{ (Equation 7-6)}$$

$$T_e = V_n / L_n H_n = \text{Equivalent thickness of concrete masonry unit (inch) (mm).}$$

where:

$$V_n = \text{Net volume of masonry unit (inch}^3\text{) (mm}^3\text{).}$$

$$L_n = \text{Specified length of masonry unit (inch) (mm).}$$

$$H_n = \text{Specified height of masonry unit (inch) (mm).}$$

721.3.1.2 UngROUTED or partially grouted construction. T_e shall be the value obtained for the concrete masonry unit determined in accordance with ASTM C 140.

721.3.1.3 Solid grouted construction. The equivalent thickness, T_e , of solid grouted concrete masonry units is the actual thickness of the unit.

721.3.1.4 Airspaces and cells filled with loose-fill material. The equivalent thickness of completely filled hollow concrete masonry is the actual thickness of the unit when loose-fill materials are: sand, pea gravel, crushed stone, or slag that meet ASTM C 33 requirements; pumice, scoria, expanded shale, expanded clay, expanded slate, expanded slag, expanded fly ash, or cinders that comply with ASTM C 331; or perlite or vermiculite meeting the requirements of ASTM C 549 and ASTM C 516, respectively.

721.3.2 Concrete masonry walls. The fire-resistance rating of walls and partitions constructed of concrete masonry units shall be determined from Table 721.3.2. The rating shall be based on the equivalent thickness of the masonry and type of aggregate used.

721.3.2.1 Finish on nonfire-exposed side. Where plaster or gypsum wallboard is applied to the side of the wall not exposed to fire, the contribution of the finish to the total fire-resistance rating shall be determined as follows: The thickness of gypsum wallboard or plaster shall be corrected by multiplying the actual thickness of the finish by applicable factor determined from Table 721.2.1.4(1). This corrected thickness of finish shall be added to the equivalent thickness of masonry and the fire-resistance rating of the masonry and finish determined from Table 721.3.2.

721.3.2.2 Finish on fire-exposed side. Where plaster or gypsum wallboard is applied to the fire-exposed side of the wall, the contribution of the finish to the total fire-resistance rating shall be determined as follows: The time assigned to the finish as established by Table 721.2.1.4(2) shall be added to the fire-resistance rating determined in Section 721.3.2 for the masonry alone, or in Section 721.3.2.1 for the masonry and finish on the nonfire-exposed side.

721.3.2.3 Nonsymmetrical assemblies. For a wall having no finish on one side or having different types or thicknesses of finish on each side, the calculation procedures of this section shall be performed twice, assuming either side of the wall to be the fire-exposed side. The fire-resistance rating of the wall shall not exceed the lower of the two

values calculated.

Exception: For exterior walls with more than 5 feet (1524 mm) of horizontal separation, the fire shall be assumed to occur on the interior side only.

721.3.2.4 Minimum concrete masonry fire-resistance rating. Where the finish applied to a concrete masonry wall contributes to its fire-resistance rating, the masonry alone shall provide not less than one-half the total required fire-resistance rating.

721.3.2.5 Attachment of finishes. Installation of finishes shall be as follows:

1. Gypsum wallboard and gypsum lath applied to concrete masonry or concrete walls shall be secured to wood or steel furring members spaced not more than 16 inches (406 mm) on center (o.c.).

2. Gypsum wallboard shall be installed with the long dimension parallel to the furring members and shall have all joints finished.

3. Other aspects of the installation of finishes shall comply with the applicable provisions of Chapters 7 and 25. [SEE graphical material in printed version]

$$RA = (R1 + 0.59 \log_{10} R2 + 0.59 \log_{10} Rn + A1 + A2 + \dots + An) \times 1.7 \quad (\text{Equation 7-7})$$

where:

RA = Fire endurance rating of the assembly (hours).

R1, R2, . . . , Rn = Fire endurance rating of wythes for 1, 2, . . . , n (hours), respectively.

A1, A2, . . . , An = 0.30, factor for each continuous airspace for 1, 2, . . . , n, respectively, having a depth of 1/2 inch (12.7 mm) or more between wythes.

721.3.3 Multiwythe masonry walls. The fire-resistance rating of wall assemblies constructed of multiple wythes of masonry materials shall be permitted to be based on the fire-resistance rating period of each wythe and the continuous airspace between each wythe in accordance with the following formula:

721.3.4 Concrete masonry lintels. Fire-resistance ratings for concrete masonry lintels shall be determined based upon the nominal thickness of the lintel and the minimum thickness of concrete masonry or concrete, or any combination thereof, covering the main reinforcing bars, as determined according to Table 721.3.4, or by approved alternate methods.

Table 721.3.4 Minimum Cover of Longitudinal Reinforcement in Fire-Resistance-Rated Reinforced Concrete Masonry Lintels (inches) Nominal Width of Lintel (inches) Fire-Resistance Rating (hours)

1	2	3	4	6	11/2	2	-	8	11/2
11/2	13/4	3	10	or greater	11/2	11/2	11/2	13/4	For SI: 1 inch = 25.4 mm.

Table 721.3.5 Minimum Dimension of Concrete Masonry Columns (inches) Fire-Resistance Rating (hours)

1	2	3	4	8	10	12	14	For SI: 1 inch = 25.4 mm.

721.3.5 Concrete masonry columns. The fire-resistance rating of concrete masonry columns shall be determined based upon the least plan dimension of the column in accordance with Table 721.3.5 or by approved alternate methods.

721.4 Clay brick and tile masonry. The provisions of this section contain procedures by which the fire-resistance ratings of clay brick and tile masonry are established by calculations.

721.4.1 Masonry walls. The fire-resistance rating of masonry walls shall be based upon the equivalent thickness as calculated in accordance with this section. The calculation shall take into account finishes applied to the wall and airspaces between wythes in multiwythe construction.

721.4.1.1 Equivalent thickness. The fire-resistance ratings of walls or partitions constructed of solid or hollow clay masonry units shall be determined from Table 721.4.1(1) or 721.4.1(2). The equivalent thickness of the clay masonry unit shall be determined by Equation 7-8 when using Table 721.4.1(1). The fire-resistance rating determined from Table 721.4.1(1) shall be permitted to be used in the calculated fire-resistance rating procedure in Section 721.4.2.

721.4.1.1.1 Hollow clay units. The equivalent thickness, T_e , shall be the value obtained for hollow clay units as determined in accordance with ASTM C 67.

$$T_e = V_n / L_n H_n \text{ (Equation 7-8)}$$

where:

T_e = The equivalent thickness of the clay masonry unit (inches).

V_n = The net volume of the clay masonry unit (inch³).

L_n = The specified length of the clay masonry unit (inches).

H_n = The specified height of the clay masonry unit (inches).

721.4.1.1.2 Solid grouted clay units. The equivalent thickness of solid grouted clay masonry units shall be taken as the actual thickness of the units.

721.4.1.1.3 Units with filled cores. The equivalent thickness of the hollow clay masonry units is the actual thickness of the unit when completely filled with loose-fill materials of: sand, pea gravel, crushed stone, or slag that meet ASTM C 33 requirements; pumice, scoria, expanded shale, expanded clay, expanded slate, expanded slag, expanded fly ash, or cinders in compliance with ASTM C 331; or perlite or vermiculite meeting the requirements of ASTM C 549 and ASTM C 516, respectively.

721.4.1.2 Plaster finishes. Where plaster is applied to the wall, the total fire-resistance rating shall be determined by the formula:

$$R = (R_n^{0.59} ; p_l^{1.7}) \text{ (Equation 7-9)}$$

where:

R = The fire endurance of the assembly (hours).

R_n = The fire endurance of the individual wall (hours).

p_l = Coefficient for thickness of plaster.

Values for $R_n^{0.59}$ for use in Equation 7-9 are given in Table 721.4.1(3). Coefficients for thickness of plaster shall be selected from Table 721.4.1(4) based on the actual thickness of plaster applied to the wall or partition and whether one or two sides of the wall are plastered.

721.4.1.3 Multiwythe walls with airspace. Where a continuous airspace separates multiple wythes of the wall or partition, the total fire-resistance rating shall be determined by the formula:

$$R = (R_1^{0.59} ; p_l^{1.7} ; R_2^{0.59} ; p_l^{1.7} ; \dots ; p_l^{1.7} ; R_n^{0.59} ; p_l^{1.7}) \text{ (Equation 7-10)}$$

where:

R = The fire endurance of the assembly (hours).

R_1 , R_2 and R_n =The fire endurance of the individual wythes (hours).

a_s =Coefficient for continuous airspace.

Values for $R_{n0.59}$ for use in Equation 7-10 are given in Table 721.4.1(3). The coefficient for each continuous air-space of 1/2 inch to 3 1/2 inches (12.7 to 89 mm) separating two individual wythes shall be 0.3.

721.4.1.4 Nonsymmetrical assemblies. For a wall having no finish on one side or having different types or thicknesses of finish on each side, the calculation procedures of this section shall be performed twice, assuming either side to be the fire-exposed side of the wall. The fire resistance of the wall shall not exceed the lower of the two values determined.

Exception: For exterior walls with more than 5 feet (1524 mm) of horizontal separation, the fire shall be assumed to occur on the interior side only.

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721.4.2 Multiwythe walls. The fire-resistance rating for walls or partitions consisting of two or more dissimilar wythes shall be permitted to be determined by the formula:

$$R = (R_{10.59} ; p_l R_{20.59} ; p_l \dots ; p_l R_{n0.59})^{1.7} \text{ (Equation 7-11)}$$

where:

R =The fire endurance of the assembly (hours).

R_1 , R_2 and R_n =The fire endurance of the individual wythes (hours).

Values for $R_{n0.59}$ for use in Equation 7-11 are given in Table 721.4.1(3).

721.4.2.1 Multiwythe walls of different material. For walls that consist of two or more wythes of different materials (concrete or concrete masonry units) in combination with clay masonry units, the fire-resistance rating of the different materials shall be permitted to be determined from Table 721.2.1.1 for concrete; Table 721.3.2 for concrete masonry units or Table 721.4.1(1) or 721.4.1(2) for clay and tile masonry units.

721.4.3 Reinforced clay masonry lintels. Fire-resistance ratings for clay masonry lintels shall be determined based on the nominal width of the lintel and the minimum covering for the longitudinal reinforcement in accordance with Table 721.4.1(5).

721.4.4 Reinforced clay masonry columns. The fire-resistance ratings shall be determined based on the last plan dimension of the column in accordance with Table 721.4.1(6). The minimum cover for longitudinal reinforcement shall be 2 inches (51 mm).

721.5 Steel assemblies. The provisions of this section contain procedures by which the fire-resistance ratings of steel assemblies are established by calculations.

721.5.1 Structural steel columns. The fire-resistance ratings of steel columns shall be based on the size of the element and the type of protection provided in accordance with this section.

721.5.1.1 General. These procedures establish a basis for determining the fire resistance of column assemblies as a

function of the thickness of fire-resistant material and, the weight, W , and heated perimeter, D , of steel columns. As used in these sections, W is the average weight of a structural steel column in pounds per linear foot. The heated perimeter, D , is the inside perimeter of the fire-resistant material in inches as illustrated in Figure 721.5.1(1).

721.5.1.1.1 Nonload-bearing protection. The application of these procedures shall be limited to column assemblies in which the fire-resistant material is not designed to carry any of the load acting on the column.

721.5.1.1.2 Embedments. In the absence of substantiating fire-endurance test results, ducts, conduit, piping, and similar mechanical, electrical, and plumbing installations shall not be embedded in any required fire-resistant materials.

721.5.1.1.3 Weight-to-perimeter ratio. Table 721.5.1(1) contains weight-to-heated-perimeter ratios (W/D) for both contour and box fire-resistant profiles, for the wide flange shapes most often used as columns. For different fire-resistant protection profiles or column cross sections, the weight-to-heated-perimeter ratios (W/D) shall be determined in accordance with the definitions given in this section.

721.5.1.2 Gypsum wallboard protection. The fire resistance of structural steel columns with weight to-heated-perimeter ratios (W/D) less than or equal to 3.65 and which are protected with Type X gypsum wallboard shall be permitted to be determined from the following expression:

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INSERT EQUATION 7-12 HERE

721.5.1.2.1 Attachment. The gypsum wallboard shall be supported as illustrated in either Figure 721.5.1(2) for fire-resistance ratings of 4 hours or less, or Figure 721.5.1(3) for fire-resistance ratings of 3 hours or less.

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721.5.1.2.2 Gypsum wallboard equivalent to concrete. The determination of the fire resistance of structural steel columns from Figure 721.5.1(4) is permitted for various thicknesses of gypsum wallboard as a function of the weight-to-heated-perimeter ratio (W/D) of the column. For structural steel columns with weight-to-heated-perimeter ratios (W/D) greater than 3.65, the thickness of gypsum wallboard required for specified fire-resistance ratings shall be the same as the thickness determined for a W14 x 233 wide flange shape.

721.5.1.3 Spray-applied fire-resistant materials. The fire resistance of wide-flange structural steel columns protected with spray-applied fire-resistant materials, as illustrated in Figure 721.5.1(5), shall be permitted to be determined from the following expression:

$$R = [C_1 (W/D) + C_2] h \text{ (Equation 7-13)}$$

where:

R = Fire resistance (minutes).

h = Thickness of spray-applied fire-resistant material (inches).

D=Heated perimeter of the structural steel column (inches).

C1 and C2=Material-dependent constants.

W=Weight of structural steel column (pounds per linear foot).

721.5.1.3.1Material-dependent constants.The material-dependent constants, C1 and C2, shall be determined for specific fire-resistant materials on the basis of standard fire endurance tests in accordance with Section 703.2. Unless evidence is submitted to the commissioner substantiating a broader application, this expression shall be limited to determining the fire resistance of structural steel columns with weight-to-heated-perimeter ratios (W/D) between the largest and smallest columns for which standard fire-endurance test results are available.

721.5.1.3.2Spray-applied identification.Spray-applied fire-resistant materials shall be identified by density and thickness required for a given fire-resistance rating.

721.5.1.4Concrete-protected columns.The fire resistance of structural steel columns protected with concrete, as illustrated in Figure 721.5.1(6) (a) and (b), shall be permitted to be determined from the following expression:

$$R = R_0 (1 + 0.03m)(\text{Equation 7-14})$$

where:

$$R_0 = 10 (W/D)^{0.7} + 17 (h^{1.6}/kc^{0.2}) \times (1 + 0.26 (H/pccch (L + h))^{0.8})$$

As used in these expressions:

R=Fire endurance at equilibrium moisture conditions (minutes).

R0=Fire endurance at zero moisture content (minutes).

m=Equilibrium moisture content of the concrete by volume (percent).

W=Average weight of the steel column (pounds per linear foot).

D=Heated perimeter of the steel column (inches).

h=Thickness of the concrete cover (inches).

kc=Ambient temperature thermal conductivity of the concrete (Btu/hr ft (degrees)F).

H=Ambient temperature thermal capacity of the steel column = 0.11W (Btu/ft (degrees)F).

pc=Concrete density (pounds per cubic foot).

cc=Ambient temperature specific heat of concrete (Btu/lb (degrees)F).

L=Interior dimension of one side of a square concrete box protection (inches).

721.5.1.4.1Reentrant space filled.For wide-flange steel columns completely encased in concrete with all reentrant spaces filled [Figure 721.5.1(6)(c)], the thermal capacity of the concrete within the reentrant spaces shall be permitted to be added to the thermal capacity of the steel column, as follows:

$$H = 0.11W + (pccc/144) (bfd - As)(\text{Equation 7-15})$$

where:

bf=Flange width of the steel column (inches).

d=Depth of the steel column (inches).

As=Cross-sectional area of the steel column (square inches).

721.5.1.4.2Concrete properties unknown.If specific data on the properties of concrete are not available, the values given in Table 721.5.1(2) are permitted.

721.5.1.4.3Minimum concrete cover.For structural steel column encased in concrete with all reentrant spaces filled, Figure 721.5.1(6)(c) and Tables 721.5.1(7) and 721.5.1(8) indicate the thickness of concrete cover required for various fire-resistance ratings for typical wide-flange sections. The thicknesses of concrete indicated in these tables also apply to structural steel columns larger than those listed.

721.5.1.4.4Minimum precast concrete cover.For structural steel columns protected with precast concrete column covers as shown in Figure 721.5.1(6)(a), Tables 721.5.1(9) and 721.5.1(10) indicate the thickness of the column covers required for various fire-resistance ratings for typical wide-flange shapes. The thicknesses of concrete given in these tables also apply to structural steel columns larger than those listed.

721.5.1.4.5Masonry protection.The fire resistance of structural steel columns protected with concrete masonry units or clay masonry units as illustrated in Figure 721.5.1(7), shall be permitted to be determined from the following expression:

$$R = 0.17 (W/D)^{0.7} ; p \leq [0.285 (T_e/1.6/K/0.2)]$$

$$[1.0 ; p \leq 42.7 ; f_b(As/dmT_e)/(0.25p ; p \leq T_e); r \leq 0.8](\text{Equation 7-16})$$

where:

R=Fire-resistance rating of column assembly (hours).

W=Average weight of steel column (pounds per foot).

D=Heated perimeter of the steel column (inches) [see Figure 721.5.1(7)].

T_e=Equivalent thickness of concrete or clay masonry unit (inches) (see Table 721.3.2 Note a or Section 721.4.1).

K=Thermal conductivity of concrete or clay masonry unit (Btu/hr ft (degrees)F) [see Table 721.5.1(3)].

As=Cross-sectional area of steel column (square inches).

dm=Density of the concrete or clay masonry unit (pounds per cubic foot).

p=Inner perimeter of concrete or clay masonry protection (inches) [see Figure 721.5.1(7)].

721.5.1.4.6Equivalent concrete masonry thickness.For structural steel columns protected with concrete masonry, Table 721.5.1(5) gives the equivalent thickness of concrete masonry required for various fire-resistance ratings for typical column shapes. For structural steel columns protected with clay masonry, Table 721.5.1(6) gives the equivalent thickness of concrete masonry required for various fire-resistance ratings for typical column shapes.
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721.5.2 Structural steel beams and girders. The fire-resistance ratings of steel beams and girders shall be based upon the size of the element and the type of protection provided in accordance with this section.

721.5.2.1 Determination of fire resistance. These procedures establish a basis for determining resistance of structural steel beams and girders which differ in size from that specified in approved fire-resistant assemblies as a function of the thickness of fire-resistant material and the weight (W) and heated perimeter (D) of the beam or girder. As used in these sections, W is the average weight of a structural steel member in pounds per linear foot (plf). The heated perimeter, D, is the inside perimeter of the fire-resistant material in inches as illustrated in Figure 721.5.2.

721.5.2.1.1 Weight-to-heated perimeter. The weight-to-heated-perimeter ratios (W/D), for both contour and box fire-resistant protection profiles, for the wide flange shapes most often used as beams or girders are given in Table 721.5.1(4). For different shapes, the weight-to-heated-perimeter ratios (W/D) shall be determined in accordance with the definitions given in this section.

721.5.2.1.2 Beam and girder substitutions. Except as provided for in Section 721.5.2.2, structural steel beams in approved fire-resistant assemblies shall be considered the minimum permissible size. Other beam or girder shapes shall be permitted to be substituted provided that the weight-to-heated-perimeter ratio (W/D) of the substitute beam is equal to or greater than that of the beam specified in the approved assembly.

721.5.2.2 Spray-applied fire-resistant materials. The provisions in this section apply to unrestrained structural steel beams and girders protected with spray-applied fire-resistant materials. Larger or smaller unrestrained beam and girder

shapes shall be permitted to be substituted for beams specified in approved unrestrained or restrained fire-resistant assemblies provided that the thickness of the fire-resistant material is adjusted in accordance with the following expression:

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721.5.2.2.1 Minimum thickness. Equation 7-17 is limited to beams with a weight-to-heated-perimeter ratio (W/D) of 0.37 or greater. The minimum thickness of fire-resistant material shall not be less than 3/8 inch (9.5 mm).

721.5.2.3 Structural steel trusses. The fire resistance of structural steel trusses protected with fire-resistant materials spray applied to each of the individual truss elements shall be permitted to be determined in accordance with this section. The thickness of the fire-resistant material shall be determined in accordance with Section 721.5.1.3. The weight-to-heated-perimeter ratio (W/D) of truss elements which can be simultaneously exposed to fire on all sides shall be determined on the same basis as columns, as specified in Section 721.5.1.1. The weight-to-heated-perimeter ratio (W/D) of truss elements which directly support floor or roof construction shall be determined on the same basis as beams and girders, as specified in Section 721.5.2.1.

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721.6 Wood assemblies. The provisions of this section contain procedures by which the fire-resistance ratings of wood assemblies are established by calculations.

721.6.1 General. This section contains procedures for calculating the fire-resistance ratings of walls, floor/ceiling and roof/ceiling assemblies based in part on the standard method of testing referenced in Section 703.2.

721.6.1.1 Maximum fire-resistance rating. Fire-resistance ratings calculated using the procedures in this section shall be used only for 1-hour rated assemblies.

721.6.1.2 Dissimilar membranes. Where dissimilar membranes are used on a wall assembly, the calculation shall be made from the least fire-resistant (weaker) side.

721.6.2 Walls, floors and roofs. These procedures apply to both load-bearing and nonload-bearing assemblies.

721.6.2.1 Fire-resistance rating of wood frame assemblies. The fire-resistance rating of a wood frame assembly is equal to the sum of the time assigned to the membrane on the fire-exposed side, the time assigned to the framing members and the time assigned for additional contribution by other protective measures such as insulation. The membrane on the unexposed side shall not be included in determining the fire resistance of the assembly.

721.6.2.2 Time assigned to membranes. Table 721.6.2(1) indicates the time assigned to membranes on the fire-exposed side.

721.6.2.3 Exterior walls. For an exterior wall having more than 5 feet (1524 mm) of horizontal separation, the wall is assigned a rating dependent on the interior membrane and the framing as described in Tables 721.6.2(1) and 721.6.2(2). The membrane on the outside of the nonfire-exposed side of exterior walls having more than 5 feet (1524 mm) of horizontal separation may consist of sheathing, sheathing paper, and siding as described in Table 721.6.2(3).

721.6.2.4 Floors and roofs. In the case of a floor or roof, the standard test provides only for testing for fire exposure from below. Except as noted in Section 703.3, Item 5, floor or roof assemblies of wood framing shall have an upper membrane consisting of a subfloor and finished floor conforming to Table 721.6.2(4) or any other membrane that has a contribution to fire resistance of at least 15 minutes in Table 721.6.2(1).

721.6.2.5 Additional protection. Table 721.6.2(5) indicates the time increments to be added to the fire resistance where glass fiber, rock wool, slag mineral wool, or cellulose insulation is incorporated in the assembly.

721.6.2.6Fastening.Fastening of wood frame assemblies and the fastening of membranes to the wood framing members shall be done in accordance with Chapter 23.

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Beams:2.54Zb (4 -(b/d)) for beams which may be exposed to fire on four sides.(Equation 7-18)2.54Zb (4 -(b/d)) for beams which may be exposed to fire on three sides.(Equation 7-19)

Columns:2.54Zd (3 -(d/b)) for columns which may be exposed to fire on four sides.(Equation 7-20)2.54Zd (3 -(d/2b)) for columns which may be exposed to fire on three sides.(Equation 7-21)

where:

b = The breadth (width) of a beam or larger side of a column before exposure to fire (inches).

d = The depth of a beam or smaller side of a column before exposure to fire (inches).

Z = Load factor, based on Figure 720.6.3(1).

721.6.3.1Equation 7-21.Equation 7-21 applies only where the unexposed face represents the smaller side of the column. If a column is recessed into a wall, its full dimension shall be used for the purpose of these calculations.

721.6.3.2Allowable loads.Allowable loads on beams and columns are determined using design values given in ANSI/AF&PA NDS.

721.6.3.3Fastener protection.Where minimum 1-hour fire resistance is required, connectors and fasteners shall be protected from fire exposure by 1 1/2 inches (38 mm) of wood, or other approved covering or coating for a 1-hour rating. Typical details for commonly used fasteners and connectors are shown in AITC Technical Note 7.

721.6.3.4Minimum size.Wood members are limited to dimensions of 6 inches (152 mm) nominal or greater. Glued-laminated timber beams utilize standard laminating combinations except that a core lamination is removed. The tension zone is moved inward and the equivalent of an extra nominal 2-inch-thick (51 mm) outer tension lamination is added.

721.7Other reference documents.Refer to Section 703.3, Item 1, and NBS BMS 71 and NBSTRBM-44 for fire-resistance ratings of materials and assemblies.

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HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

Table 721.2.3(2) repealed and added L.L. 8/2008 § 102, eff. July 1, 2008.

721.3.5 added L.L. 8/2008 § 103, eff July 1, 2008.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 8: INTERIOR FINISHES
SECTION BC 801: GENERAL

NYC Administrative Code § 28-BC 801

801.1 Scope.

Provisions of this chapter shall govern the use of materials used as interior finishes, trim and decorative materials.

801.1.1 Interior finishes. These provisions shall limit the allowable flame spread and smoke development based on location and occupancy classification.

Exceptions:

1. Materials having a thickness less than 0.036 inch (0.91 mm) applied directly to a non-combustible, or fire-retardant treated wood, substrate.
2. Exposed portions of structural members complying with the requirements for buildings of Type IV construction in Section 602.4.

801.1.2 Applicability in flood hazard areas. For buildings in flood hazard areas as established in Appendix G, interior finishes, trim and decorative materials below the design flood elevation shall be flood-damage-resistant materials.

801.2 Application. Combustible materials complying with the requirements of this chapter shall be permitted to be used as finish for walls, ceilings, floors and other interior surfaces of buildings.

801.2.1 Windows. Show windows in the first story of buildings shall be permitted to be of wood or of unprotected metal framing.

801.2.2 Foam plastics. Foam plastics shall not be used as interior finish or trim except as provided in Section 2603.7 or 2604.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 8: INTERIOR FINISHES
SECTION BC 802: DEFINITIONS

NYC Administrative Code § 28-BC 802

802.1 General.

The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

EXPANDED VINYL WALL COVERING. Wall covering consisting of a woven textile backing, an expanded vinyl base coat layer and a non-expanded vinyl skin coat. The expanded base coat layer is a homogeneous vinyl layer that contains a blowing agent. During processing, the blowing agent decomposes, causing this layer to expand by forming closed cells. The total thickness of the wall covering is approximately 0.055 inch to 0.070 inch (1.4 mm to 1.8 mm).

FLAME RESISTANCE. That property of materials or combinations of component materials that restricts the spread of flame in accordance with NFPA 701.

FLAME SPREAD. The propagation of flame over a surface.

FLAME SPREAD INDEX. The numerical value assigned to a material tested in accordance with ASTM E 84.

INTERIOR FINISH. Interior finish includes interior wall and ceiling finish and interior floor finish.

INTERIOR FLOOR FINISH. The exposed floor surfaces of buildings including coverings applied over a finished floor or stair, including risers.

INTERIOR WALL AND CEILING FINISH. The exposed interior surfaces of buildings including, but not limited to: fixed or movable walls and partitions; columns; ceilings; and interior wainscoting, paneling or other finish applied structurally or for decoration, acoustical correction, surface insulation, structural fire resistance or similar purposes, but not including trim.

SMOKE-DEVELOPED INDEX. The numerical value assigned to a material tested in accordance with ASTM E 84.

TRIM. Picture molds, chair rails, baseboards, handrails, door and window frames and similar decorative or protective materials used in fixed applications.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 8: INTERIOR FINISHES
SECTION BC 803: WALL AND CEILING FINISHES

NYC Administrative Code § 28-BC 803

803.1 General.

Interior wall and ceiling finishes shall be classified in accordance with ASTM E 84. Such interior finish materials shall be grouped in the following classes in accordance with their flame spread index.

Class A: Flame spread 0-25.

Class B: Flame spread 26-75.

Class C: Flame spread 76-200.

Exception: Materials, other than textiles, tested in accordance with Section 803.2.

803.1.1 Smoke developed index. Smoke developed index shall range from 0-450 with the following restrictions:

Exits, corridors 25

Occupancy Group I 50

Rooms in which the net floor area per occupant is 10

square feet or less 100

Exception: Materials other than textiles, tested in accordance with Section 803.2.

803.2. Interior wall or ceiling finishes other than textiles. Interior wall or ceiling finishes, other than textiles, shall be permitted to be tested in accordance with NFPA 286. Finishes tested in accordance with NFPA 286 shall comply with Sections 803.2.1 and 803.2.2.

803.2.1 Acceptance criteria. During the 40 kW exposure, the interior finish shall comply with Item 1. During the 160 kW exposure, the interior finish shall comply with Item 2. During the entire test, the interior finish shall comply with Item 3.

1. During the 40 kW exposure, flames shall not spread to the ceiling.
2. During the 160 kW exposure, the interior finish shall comply with the following:
 - 2.1. Flame shall not spread to the outer extremity of the sample on any wall or ceiling.
 - 2.2. Flashover, as defined in NFPA 286, shall not occur.
3. The total smoke released throughout the NFPA 286 test shall not exceed 1,000 m².

803.2.2 Toxicity. Interior wall or ceiling finishes, other than textiles, upon exposure to fire, shall not produce products of decomposition or combustion that are more toxic in point of concentration than those given off by wood or paper when decomposing or burning under comparable conditions.

803.3 Stability. Interior finish materials regulated by this chapter shall be applied or otherwise fastened in such a manner that such materials will not readily become detached where subjected to room temperatures of 200(degrees)F (93(degrees)C) for not less than 30 minutes.

803.4 Application. Where these materials are applied on walls, ceilings or structural elements required to have a fire-resistance rating or to be of noncombustible construction, they shall comply with the provisions of this section.

803.4.1 Direct attachment and furred construction. Where walls and ceilings are required by any provision in this code to be of fire-resistance-rated or noncombustible construction, the interior finish material shall be applied directly against such construction or to furring strips not exceeding 1.75 inches (44 mm) applied directly against such surfaces. The intervening spaces between such furring strips shall be filled with inorganic or Class A material or shall be fire blocked at a maximum of 8 feet (2438 mm) in any direction in accordance with Section 717.

803.4.2 Set-out construction. Where walls and ceilings are required to be of fire-resistance-rated or noncombustible construction and walls are set out or ceilings are dropped distances greater than specified in Section 803.4.1, Class A finish materials shall be used except where interior finish materials are protected on both sides by an automatic sprinkler system or attached to noncombustible backing or furring strips installed as specified in Section 803.4.1. The hangers and assembly members of such dropped ceilings that are below the main ceiling line shall be of noncombustible materials, except that in Type III and V construction, fire-retardant-treated wood shall be permitted. The construction of each set-out wall shall be of fire-resistance-rated construction as required elsewhere in this code.

803.4.3 Heavy timber construction. Wall and ceiling finishes of all classes as permitted in this chapter that are installed directly against the wood decking or planking of Type IV construction or to wood furring strips applied directly to the wood decking or planking shall be fire blocked as specified in Section 803.4.1.

803.4.4 Materials. An interior wall or ceiling finish that is not more than 0.25 inch (6.4 mm) thick shall be applied directly against a noncombustible backing.

Exceptions:

1. Class A materials.
2. Materials where the qualifying tests were made with the material suspended or furred out from the noncombustible backing.

803.5Interior finish requirements based on occupancy group.Interior wall and ceiling finish shall have a flame spread index not greater than that specified in Table 803.5 for the group and location designated. Interior wall and ceiling finish materials, other than textiles, tested in accordance with NFPA 286 and meeting the acceptance criteria of Sections 803.2.1 and 803.2.2, shall be permitted to be used where a Class A classification in accordance with ASTM E 84 is required.

803.6Textiles.Where used as interior wall or ceiling finish materials, textiles, including materials having woven or non-woven, napped, tufted, looped or similar surface, shall comply with the requirements of this section.

803.6.1Textile wall coverings.Textile wall coverings shall have a Class A flame spread index in accordance with ASTM E 84 and be protected by automatic sprinklers installed in accordance with Section 903.3.1.1 or 903.3.1.2 or the covering shall meet the criteria of Section 803.6.1.1 or 803.6.1.2 when tested in the manner intended for use in accordance with NFPA 265 using the product mounting system, including adhesive.

803.6.1.1Method A test protocol.During the Method A protocol, flame shall not spread to the ceiling during the 40 kW exposure. During the 150 kW exposure, the textile wall covering shall comply with all of the following:

1. Flame shall not spread to the outer extremity of the sample on the 8-foot by 12-foot (2438 mm by 3658 mm) wall.
2. The specimen shall not burn to the outer extremity of the 2-foot-wide (610 mm) samples mounted in the corner of the room.
3. Burning droplets deemed capable of igniting textile wall coverings or that burn for 30 seconds or more shall not form.
4. Flashover, as defined in NFPA 265, shall not occur.
5. The maximum net instantaneous peak heat release rate, determined by subtracting the burner output from the maximum heat release rate, does not exceed 300 kW.

803.6.1.2Method B test protocol.During the Method B protocol, flames shall not spread to the ceiling at any time during the 40 kW exposure. During the 150 kW exposure, the textile wall covering shall comply with the following:

1. Flame shall not spread to the outer extremities of the samples on the 8-foot by 12-foot (2438 mm by 3658mm) walls.
2. Flashover, as described in NFPA 265, shall not occur.

803.6.2Textile ceiling finish.Where used as a ceiling finish, carpet and similar textile materials shall have a Class A flame spread index in accordance with ASTM E 84 and be protected by automatic sprinklers.

803.7Expanded vinyl wall coverings.Expanded vinyl wall coverings shall comply with the requirements for textile wall and ceiling materials and their use shall comply with Section 803.6.

Exception: Expanded vinyl wall or ceiling coverings complying with Section 803.2 shall not be required to comply with Section 803.1 or 803.6.

803.8Insulation.Thermal and acoustical insulation shall comply with Section 719.

803.9Acoustical ceiling systems.The quality, design, fabrication and erection of metal suspension systems for acoustical tile and lay-in panel ceilings in buildings or structures shall conform with the provisions of this chapter and other applicable requirements of this code.

803.9.1 Materials and installation. Acoustical materials complying with the interior finish requirements of Section 803 shall be installed in accordance with the manufacturer's recommendations and applicable provisions for applying interior finish.

803.9.1.1 Suspended acoustical ceilings. Acoustical ceilings that are to be suspended below floor or roof construction by means of a framing system shall consist of supporting hangers of minimum 1/4 inch (6.4 mm) diameter steel rods, carrying channels of minimum 1 1/2 inch (38 mm) deep cold-rolled steel weighing 0.457 pounds per linear foot (0.707 kg/m), and a supporting grid complying with Appendix R. Use of wire hangers shall not be permitted. Direct hung suspension systems shall not be permitted.

Exception: Acoustical ceiling systems in Groups R-2 and R-3 occupancies shall be permitted to be installed in accordance with ASTM C 635 and ASTM C 636 without modifications.

803.9.1.2 Fire-resistance-rated construction. Acoustical ceiling systems that are part of fire-resistance-rated construction shall be installed in the same manner used in the assembly tested and shall comply with the provisions of Chapter 7.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

803.7 and exception amended L.L. 8/2008 § 104, eff. July 1, 2008.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 8: INTERIOR FINISHES
SECTION BC 804: INTERIOR FLOOR FINISH

NYC Administrative Code § 28-BC 804

804.1 General.

Interior floor finish and floor covering materials shall comply with this section

804.2 Classification. Interior floor finish and floor covering materials required by Section 804.5.1 to be of Class I or II materials shall be classified in accordance with NFPA 253. The classification referred to herein corresponds to the classifications determined by NFPA 253 as follows: Class I, 0.45 watts/cm² or greater; Class II, 0.22 watts/cm² or greater.

804.3 Testing and identification. Floor covering materials shall be tested by an approved agency in accordance with NFPA 253 and identified by a hang tag or other suitable method so as to identify the manufacturer or supplier and style, and shall indicate the interior floor finish or floor covering classification according to Section 804.2. Carpet-type floor coverings shall be tested as proposed for use, including underlayment. Test reports confirming the information provided in the manufacturer's product identification shall be furnished to the department upon request.

804.4 Application. Combustible materials installed in or on floors of buildings of Type I or II construction shall conform with the requirements of Sections 804.4.1 through 804.4.4.

Exception: Stages and platforms constructed in accordance with Sections 410.3 and 410.4, respectively.

804.4.1 Sub-floor construction. Floor sleepers, bucks and nailing blocks shall not be constructed of combustible materials, unless the space between the fire-resistance-rated floor construction and the flooring is either solidly filled with approved noncombustible materials or fireblocked in accordance with Section 717, and provided that such open spaces shall not extend under or through permanent partitions or walls.

804.4.2 Wood finish flooring. Wood finish flooring is permitted to be attached directly to the embedded or fireblocked wood sleepers and shall be permitted where cemented directly to the top surface of approved

fire-resistance-rated construction or directly to a wood subfloor attached to sleepers as provided for in Section 804.4.1.

804.4.3 Insulating boards. Combustible insulating boards not more than 0.5-inch (12.7 mm) thick and covered with approved finished flooring are permitted, where attached directly to a noncombustible floor assembly or to wood subflooring attached to sleepers as provided for in Section 804.4.1.

804.4.4 Carpet-type floor coverings. Carpet-type floor coverings are permitted where cemented directly to the top surface of approved fire-resistance-rated construction or directly to a wood subfloor attached to sleepers as provided for in Section 804.4.1.

804.5 Interior floor finish limitations. In buildings and spaces classified in Occupancy Group H and in all exits and exit passageways of any Occupancy Group, floor finishes shall be of non-combustible materials.

Exception: Interior floor finish may be of combustible materials in the following spaces. Carpet-type materials must be able to withstand a minimum critical radiant flux as specified in Section 804.5.1.

1. Buildings of Type VB Construction
2. Interior stairs in buildings of Types III, IV and V Construction in Occupancy Groups B, F, M or S-2, when the buildings are two stories in height or less.
3. Interior stairs in buildings of Types III, IV and V Construction in Occupancy Group R-2 and R-3 when the buildings are three stories in height or less.
4. Interior stairs in buildings of Types III, IV and V Construction in Occupancy Group R-2 when occupied by three families or less.

804.5.1 Minimum critical radiant flux. Interior floor finishes shall not be less than Class I in Occupancy Groups I-2 and I-3 and not less than Class II in Occupancy Groups A, B, E, H, I-4, M, R-1, R-2 and S. In all other Occupancy Groups, the interior floor finish shall comply with the DOC FF-1 "pill test" (CPSC 16 CFR, Part 1630).



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Chapter 8: INTERIOR FINISHES
SECTION BC 805: DECORATIONS AND TRIM

NYC Administrative Code § 28-BC 805

805.1 Decorations.

All decorations shall comply with the requirements of the New York City Fire Code.

805.2 Reserved.

805.3 Trim. Material used as interior trim shall have minimum Class C flame spread as required by Section 803.1 and smoke-developed index as required by Section 803.1.1. Combustible trim, excluding handrails and guardrails, shall not exceed 10 percent of the aggregate wall or ceiling area in which it is located.

805.4 Foam plastic as trim. Foam plastic used as trim shall be permitted in Group R-3 occupancies, within individual dwelling units of Group R-1 and R-2 occupancies, and where approved in accordance with the special provisions of Section 2603.8. Foam plastics used as trim in any occupancy shall comply with the requirements of Section 2604.2.

805.5 Pyroxylin plastic. Imitation leather or other material consisting of or coated with a pyroxylin or similarly hazardous base shall not be used in Group A occupancies.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 901: GENERAL

NYC Administrative Code § 28-BC 901

901.1 Scope.

The provisions of this chapter shall specify where fire protection systems are required and shall apply to the design, installation and operation of fire protection systems.

901.1.1 Referenced standards. Where this code makes reference to the nationally recognized standards NFPA 13, NFPA 13D, NFPA 13R, NFPA 14, or NFPA 72, such standard shall be as modified for New York City in accordance with Appendix Q.

901.2 Fire protection systems. Fire protection systems shall be installed, repaired, operated and maintained in accordance with this code and the New York City Fire Code. Any fire protection system for which an exception or reduction to the provisions of this code has been granted shall be considered to be a required system.

Exception: Any fire protection system or portion thereof not required by this code shall be permitted to be installed provided that such system meets the requirements of this code.

901.3 Modifications. No person shall remove or modify any fire protection system installed or maintained under the provisions of this code or the New York City Fire Code without approval by the commissioner.

901.4 Threads. Threads provided for Fire Department connections to sprinkler systems, standpipes, yard hydrants or any other fire hose connection shall be compatible with the connections used by the Fire Department.

901.5 Acceptance tests. Fire protection systems shall be tested in accordance with the requirements of this code and the New York City Fire Code. When required, the tests shall be conducted in the presence of the department or an approved agency. Tests required by this code, the New York City Fire Code and the standards listed in this code shall be conducted at the expense of the owner or the owner's representative. It shall be unlawful to occupy portions of a structure until the required fire protection systems within that portion of the structure have been tested and approved.

901.6Supervisory service.Where required, fire protection systems shall be monitored by an approved supervising station in accordance with NFPA 72.

901.6.1Automatic sprinkler systems.Automatic sprinkler systems shall be monitored by an approved supervising station.

Exceptions:

1. A supervising station is not required for automatic sprinkler systems protecting one- and two-family dwellings.
2. Limited area sprinkler systems serving fewer than 20 sprinkler heads.

901.6.2Fire alarm systems.Fire alarm systems required by the provisions of Section 907.2 of this code and the New York City Fire Code shall be monitored by an approved supervising station in accordance with Section 907.14.

Exceptions:

1. Single- and multiple-station smoke alarms and carbon monoxide alarms required by Section 907.2.10.
2. Smoke detectors in Group I-3 occupancies.
3. Supervisory service is not required for automatic sprinkler systems in one- and two-family dwellings.

901.6.3Group H.Manual fire alarm, automatic fire-extinguishing and emergency alarm systems in Group H occupancies shall be monitored by an approved supervising station.

901.7Fire areas.Where buildings, or portions thereof, are divided into fire areas so as not to exceed the limits established for requiring a fire protection system in accordance with this chapter, such fire areas shall be separated by fire barriers having a fire-resistance rating of not less than that determined in accordance with Section 706.3.7.



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Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 902: DEFINITIONS

NYC Administrative Code § 28-BC 902

902.1 Definitions.

The following words and terms shall, for the purposes of this chapter, and as used elsewhere in this code, have the meanings shown herein.

ALARM NOTIFICATION APPLIANCE. A fire alarm system component such as a bell, horn, speaker, light or text display that provides audible, tactile or visible outputs, or any combination thereof.

ALARM SIGNAL. A signal indicating an emergency requiring immediate action, such as a signal indicative of fire.

ANNUNCIATOR. A unit containing one or more indicator lamps, alphanumeric displays or other equivalent means in which each indication provides status information about a circuit, condition or location.

AUDIBLE ALARM NOTIFICATION APPLIANCE. A notification appliance that alerts by the sense of hearing.

AUTOMATIC. As applied to fire protection devices, any device, equipment, or system that initiates a system function as a result of a predetermined temperature rise, rate of temperature rise or combustion products, without the necessity for human intervention.

AUTOMATIC FIRE-EXTINGUISHING SYSTEM. An approved system of devices and equipment that automatically detects a fire and discharges an approved fire-extinguishing agent onto or in the area of a fire.

AUTOMATIC SPRINKLER SYSTEM. An automatic fire-extinguishing system utilizing water, designed in accordance with fire protection engineering standards. The system includes a suitable water supply and a network of specially sized or hydraulically designed piping installed in a structure or area, generally overhead, to which automatic sprinklers are connected in a systematic pattern. The system is usually activated by heat from a fire and discharges water over the fire area.

AVERAGE AMBIENT SOUND LEVEL. The root mean square, A-weighted sound pressure level measured over a 24-hour period.

CARBON DIOXIDE EXTINGUISHING SYSTEMS. An automatic fire-extinguishing system supplying carbon dioxide (CO₂) from a pressurized vessel through fixed pipes and nozzles. The system includes a manual- or automatic-actuating mechanism.

CARBON MONOXIDE ALARM. A single- or multiple-station alarm responsive to carbon monoxide and not connected to a system.

CARBON MONOXIDE DETECTOR. A listed device that senses carbon monoxide.

CARBON MONOXIDE PRODUCING EQUIPMENT. Any furnace, boiler, water heater, fireplace, cooking appliance, gas clothes dryer, apparatus, appliance or device that burns coal, kerosene, oil, wood, fuel gases and other petroleum products including, but not limited to, methane, natural gas, liquefied natural gas and manufactured fuel gases.

CEILING LIMIT. The maximum concentration of an air-borne contaminant to which one may be exposed, as published in DOL 29 CFR Part 1910.1000.

CENTRAL STATION. A facility that receives alarm signals from a protected premise and/or retransmits such alarm signals to a Fire Department communication office.

CLEAN AGENT. Electrically nonconducting, volatile or gaseous fire extinguishant that does not leave a residue upon evaporation.

COMMERCIAL COOKING SYSTEM. A system consisting of commercial cooking equipment, exhaust hood, filters, exhaust duct system, fire suppression system and other related appurtenances designed to capture grease-laden cooking vapors and exhaust them safely to the outdoors.

CONSTANTLY ATTENDED LOCATION. A designated location at a facility staffed by trained personnel on a continuous basis where alarm or supervisory signals are monitored and facilities are provided for notification of the Fire Department or other emergency services.

DELUGE SPRINKLER SYSTEM. A sprinkler system employing open sprinklers attached to a piping system connected to a water supply through a valve that is opened by the operation of a detection system installed in the same areas as the sprinklers. When this valve opens, water flows into the piping system and discharges from all sprinklers attached thereto.

DETECTOR, HEAT. A fire detector that senses heat produced by burning substances. Heat is the energy produced by combustion that causes substances to rise in temperature.

DRY-CHEMICAL EXTINGUISHING SYSTEM. A fire extinguishing system designed to discharge a powder composed of small particles, usually of sodium bicarbonate, potassium bicarbonate, urea-potassium-based bicarbonate, potassium chloride or monoammonium phosphate, with added particulate material supplemented by special treatment to provide resistance to packing, resistance to moisture absorption (caking) and the proper flow capabilities.

EMERGENCY ALARM SYSTEM. A system to provide indication and warning of an emergency condition involving hazardous materials.

EMERGENCY VOICE/ALARM COMMUNICATIONS. Dedicated manual or automatic facilities for originating and distributing voice instructions, as well as alert and evacuation signals pertaining to a fire emergency, to the occupants of a building.

FIRE ALARM BOX, MANUAL. See "Manual Fire Alarm Box."

FIRE ALARM CONTROL PANEL. A system component that receives inputs from automatic and manual fire alarm devices and is capable of supplying power to detection devices and transponder(s) or off-premises transmitter(s). The control panel is capable of providing a transfer of power to the notification appliances and transfer of condition to relays or devices.

FIRE ALARM SIGNAL. A signal initiated by a fire alarm-initiating device such as a manual fire alarm box, automatic fire detector, water flow switch, or other device whose activation is indicative of the presence of a fire or fire signature.

FIRE ALARM SYSTEM. A system or portion of a combination system consisting of components and circuits arranged to monitor and annunciate the status of fire alarm or supervisory signal-initiating devices and to initiate the appropriate response to those signals.

FIRE COMMAND CENTER. The principal attended or unattended location where the status of detection, alarm communications and control systems is displayed, and from which the system(s) can be manually controlled.

FIRE DETECTOR, AUTOMATIC. A device designed to detect the presence of a fire signature and to initiate action.

FIRE PROTECTION SYSTEM. Approved devices, equipment and systems or combinations of systems used to detect a fire, activate an alarm, extinguish or control a fire, control or manage smoke and products of a fire or any combination thereof.

FIRE SAFETY FUNCTIONS. Building and fire control functions that are intended to increase the level of life safety for occupants or to control the spread of harmful effects of fire.

FOAM-EXTINGUISHING SYSTEM. A fire extinguishing system designed to discharge a foam made from concentrates, either mechanically or chemically, over the area to be protected.

HALOGENATED EXTINGUISHING SYSTEM. An automatic fire-extinguishing system using one or more of the following halogen elements: fluorine, chlorine, bromine and iodine.

INITIATING DEVICE. A system component that originates transmission of a change-of-state condition, such as in a smoke detector, manual fire alarm box or supervisory switch.

LIMITED AREA SPRINKLER SYSTEM. An automatic sprinkler system serving fewer than 20 sprinkler heads on any single connection.

LISTED. See Chapter 1 of Title 28 of the Administrative Code.

MANUAL FIRE ALARM BOX. A manually operated device used to initiate an alarm signal.

MULTIPLE-STATION ALARM DEVICE. Two or more single-station alarm devices that are capable of interconnection such that actuation of one causes all integral or separate audible alarms to operate. It also can consist of one single-station alarm device having connections to other detectors or to a manual fire alarm box.

MULTIPLE-STATION SMOKE ALARM. Two or more single-station smoke alarm devices that are capable of interconnection such that actuation of one causes all integral or separate audible alarms to operate.

PRESIGNAL SYSTEM. A fire alarm system having a feature that allows initial fire alarm signals to sound in a constantly attended central location and for which a human action is subsequently required to achieve a general alarm,

or a feature that allows the control equipment to delay the general alarm by more than 1 minute after the start of the alarm processing.

RECORD DRAWINGS. Drawings ("as built") that document the location of all devices, appliances, wiring sequences, wiring methods and connections of the components of a fire alarm system as installed.

SINGLE-STATION SMOKE ALARM. An assembly incorporating the detector, the control equipment and the alarm-sounding device in one unit, operated from a power supply either in the unit or obtained at the point of installation.

SMOKE ALARM. A single- or multiple-station alarm responsive to smoke and not connected to a system.

SMOKE DETECTOR. A listed device that senses visible or invisible particles of combustion.

SMOKEPROOF ENCLOSURE. An exit stairway designed and constructed so that the movement of the products of combustion produced by a fire occurring in any part of the building into the enclosure is limited.

STANDPIPE SYSTEM. Piping installed in a building or structure that serves to transfer water from a water supply to hose connections at one or more locations in a building or structure for firefighting purposes, including the following types of systems:

Automatic dry. A dry standpipe system, normally filled with pressurized air, that is arranged through the use of a device, such as dry pipe valve, to admit water into the system piping automatically upon the opening of a hose valve. The water supply for an automatic dry standpipe system shall be capable of supplying the system demand.

Automatic wet. A wet standpipe system that has a water supply that is capable of supplying the system demand automatically.

Manual dry. A dry standpipe system that does not have a permanent water supply attached to the system. Manual dry standpipe systems require water from a Fire Department pumper to be pumped into the system through the Fire Department connection in order to meet the system demand.

Manual wet. A wet standpipe system connected to a water supply for the purpose of maintaining water within the system but that does not have a water supply capable of delivering the system demand attached to the system. Manual-wet standpipe systems require water from a Fire Department pumper to be pumped into the system in order to meet the system demand.

Semiautomatic dry. A dry standpipe system that is arranged through the use of a device, such as a deluge valve, to admit water into the system piping upon activation of a remote control device located at a hose connection. A remote control activation device shall be provided at each hose connection. The water supply for a semiautomatic dry standpipe system shall be capable of supplying the system demand.

STANDPIPE SYSTEM, CLASSES OF. Standpipe classes are as follows:

Class I system. A system providing 2.5-inch (64 mm) hose connections to supply water for use by the Fire Department and those trained in handling heavy fire streams.

Class II system. A system providing 1.5-inch (38 mm) hose stations to supply water for use primarily by the building occupants or by the Fire Department during initial response.

Class III system. A system providing 1.5-inch (38 mm) hose stations to supply water for use by building occupants and 2.5-inch (64 mm) hose connections to supply a larger volume of water for use by the Fire Department and those trained in handling heavy fire streams.

SUPERVISING STATION. A facility that receives signals and at which personnel are in attendance at all times to respond to these signals.

SUPERVISORY SERVICE. The service required to monitor performance of guard tours and the operative condition of fixed suppression systems or other systems for the protection of life and property.

SUPERVISORY SIGNAL. A signal indicating the need for action in connection with the supervision of guard tours, fire suppression systems or equipment, fire alarm systems, or the maintenance features of related systems.

SUPERVISORY SIGNAL-INITIATING DEVICE. An initiation device, such as a valve supervisory switch, water-level indicator or low-air pressure switch on a dry-pipe sprinkler system, whose change of state signals an off-normal condition and its restoration to normal of a fire protection or life safety system, or a need for action in connection with the supervision of guard tours, fire suppression systems or equipment, fire alarm systems, or the maintenance features of related systems.

TIRES, BULK STORAGE OF. Storage of tires where the area available for storage exceeds 20,000 cubic feet (566 m³).

TROUBLE SIGNAL. A signal initiated by the fire alarm system or device indicative of a fault in a monitored circuit or component.

VISIBLE ALARM NOTIFICATION APPLIANCE. A notification appliance that alerts by the sense of sight.

WET-CHEMICAL EXTINGUISHING SYSTEM. A solution of water and potassium-carbonate-based chemical, potassium-acetate-based chemical or a combination thereof, forming an extinguishing agent.

WIRELESS PROTECTION SYSTEM. A system or a part of a system that can transmit and receive signals without the aid of wire.

ZONE. A defined area within the protected premises. A zone can define an area from which a signal can be received, an area to which a signal can be sent or an area in which a form of control can be executed.



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Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 903: AUTOMATIC SPRINKLER SYSTEMS

NYC Administrative Code § 28-BC 903

903.1 General.

Automatic sprinkler systems shall comply with this section. Installation of automatic sprinkler systems shall comply with the special inspection requirements of Chapter 17.

903.1.1 Alternative protection. Where the discharge of water would be hazardous, alternative automatic fire-extinguishing systems complying with Section 904 shall be permitted in lieu of automatic sprinkler protection where recognized by the applicable standard and approved by the commissioner.

903.1.2 Construction documents. Construction documents for automatic sprinkler systems shall contain plans that include the following data and information:

1. The location and size of water supplies and the location, spacing, number, and type of sprinkler heads to be used, with approximate location and size of all feed mains, valves and other essential features of the system. For hydraulically calculated systems, hydraulic data substantiating pipe sizes shown shall be submitted and hydraulic reference points and areas must be indicated on the plan.
2. A diagram showing the proposed sprinkler system in relation to principal construction features of the building, such as its size, walls, columns, and partitions; and such other information as may be necessary for the evaluation of the system.
3. The location, number, and type of any electrical or automatic devices or alarms to be used in the system.
4. In buildings where a new separate fire sprinkler system is required, the available water pressure at the top and bottom floors of each zone shall be shown on the riser diagram.
5. For street pressure-fed systems and fire pumps, a statement from the New York City Department of Environmental Protection, giving the minimum water pressure in the main serving the building.

903.2 Where required. Approved automatic sprinkler systems in new buildings and structures shall be provided in the locations described in this section.

Exception: Sprinklers shall not be required in electrical equipment rooms where all of the following conditions are met:

1. The room is dedicated to electrical equipment only.
2. Only dry-type electrical equipment is used.
3. Equipment is installed in a 2-hour fire-rated enclosure including protection for penetrations.
4. No combustible storage is permitted to be stored in the room.

903.2.1 Group A. An automatic sprinkler system shall be provided throughout buildings and portions thereof used as Group A occupancies as provided in this section. The automatic sprinkler system shall be provided throughout the floor area where the Group A occupancy is located, and in all floors between the Group A occupancy and the level of exit discharge. In all Group A occupancies providing live entertainment, dressing rooms and property rooms used in conjunction with such assembly occupancy shall be provided with an automatic sprinkler system. Stages shall comply with Section 410.6.

903.2.1.1 Group A-1. An automatic sprinkler system shall be provided for Group A-1 occupancies where any one of the following conditions exists:

1. The fire area exceeds 12,000 square feet (1115 m²).
2. The fire area has an occupant load of 300 or more.
3. The aggregate occupant load of all fire areas occupied by Group A, located on any given floor other than the level of exit discharge, is 300 or more.
4. The fire area contains a multitheater complex.

903.2.1.2 Group A-2. An automatic sprinkler system shall be provided for Group A-2 occupancies where any one of the following conditions exists:

1. The fire area exceeds 5,000 square feet (464.5 m²).
2. The fire area has an occupant load of 300 or more.
3. The aggregate occupant load of all fire areas occupied by Group A, located on any given floor other than the level of exit discharge, is 300 or more.
4. The A-2 occupancy is used as a cabaret.

903.2.1.3 Group A-3. An automatic sprinkler system shall be provided for Group A-3 occupancies where any one of the following conditions exists:

1. The fire area exceeds 12,000 square feet (1115 m²).
2. The fire area has an occupant load of 300 or more.
3. The aggregate occupant load of all fire areas occupied by Group A, located on any given floor other than the level of exit discharge, is 300 or more.

Exception: Areas used exclusively as participant sports areas where the main floor area is located at the same level as the level of exit discharge of the main entrance and exit.

903.2.1.4 Group A-4. An automatic sprinkler system shall be provided for Group A-4 occupancies where any one of the following conditions exists:

1. The fire area exceeds 12,000 square feet (1115 m²).
2. The fire area has an occupant load of 300 or more.
3. The aggregate occupant load of all fire areas occupied by Group A, located on any given floor other than the level of exit discharge, is 300 or more.

Exception: Areas used exclusively as participant sports areas where the main floor area is located at the same level as the level of exit discharge of the main entrance and exit.

903.2.1.5 Group A-5. An automatic sprinkler system shall be provided in all enclosed areas of the structure, including but not limited to the concession concourse, concession stands, retail areas, press boxes and other accessory occupancies, in excess of 1,000 square feet (93 m²).

903.2.2 Group E. An automatic sprinkler system shall be provided for Group E occupancies as follows:

1. Throughout all Group E fire areas greater than 20,000 square feet (1858 m²) in area.
2. Throughout every portion of educational buildings below the level of exit discharge.

Exception: An automatic sprinkler system is not required in any fire area or area below the level of exit discharge where every classroom throughout the building has at least one exterior exit door at ground level without intervening corridors, passageways, or exit enclosures.

903.2.3 Group F. An automatic sprinkler system shall be provided throughout all buildings containing a Group F occupancy where any one of the following conditions exists:

1. Where a Group F-1 fire area exceeds 12,000 square feet (1115 m²);
2. Where a Group F-1 fire area is located more than three stories above grade; or
3. Where the combined area of all Group F-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²); or
4. Where required by Section 280 of the New York State Labor Law for "factory buildings" defined in Section 2 of such law.

903.2.3.1 Woodworking operations. An automatic sprinkler system shall be provided throughout any Group F-1 occupancy fire area that contains wood working operations in excess of 2,500 square feet (232 m²) in area that generate finely divided combustible waste or use finely divided combustible materials.

903.2.3.2 Repair garages. An automatic sprinkler system shall be provided throughout all buildings used as repair garages in accordance with Section 406, as follows:

1. Buildings two or more stories in height, including basements, with a fire area containing a repair garage exceeding 10,000 square feet (929 m²).
2. One-story buildings with a fire area containing a repair garage exceeding 12,000 square feet (1115 m²).

3. Buildings with a repair garage servicing vehicles parked in the basement.

903.2.3.3 Group F-1 fire areas. An automatic sprinkler system shall be provided throughout any Group F-1 occupancy fire area where any one of the following conditions exists:

1. The fire area exceeds 7,500 square feet (697 m²).
2. The fire area of any size is located more than 3 stories above grade.

903.2.4 Group H. Automatic sprinkler systems shall be provided in high-hazard occupancies as required in Sections 903.2.4.1 through 903.2.4.3 and the New York City Fire Code.

903.2.4.1 General. An automatic sprinkler system shall be installed in Group H occupancies. An automatic sprinkler system shall be installed throughout buildings with a main use or dominant occupancy of Group H.

903.2.4.2 Group H-5. An automatic sprinkler system shall be installed throughout buildings containing Group H-5 occupancies. The design of the sprinkler system shall not be less than that required by this code for the occupancy hazard classifications in accordance with Table 903.2.4.2. Where the design area of the sprinkler system consists of a corridor protected by one row of sprinklers, the maximum number of sprinklers required to be calculated is 13. [F] Table 903.2.4.2 Group H-5 Sprinkler Design Criteria Location Occupancy Hazard Classification Fabrication areas Ordinary Hazard Group 2 Service corridors Ordinary Hazard Group 2 Storage rooms without dispensing Ordinary Hazard Group 2 Storage rooms with dispensing Extra Hazard Group 2 Corridors Ordinary Hazard Group 2

903.2.4.3 Pyroxylin plastics. An automatic sprinkler system shall be provided in buildings, or portions thereof, where cellulose nitrate film or pyroxylin plastics are manufactured, stored or handled in quantities exceeding 100 pounds (45 kg).

903.2.5 Group I. An automatic sprinkler system shall be provided in Group I occupancies. An automatic sprinkler system shall be installed throughout buildings with a main use or dominant occupancy of Group I.

Exception: An automatic sprinkler system installed in accordance with Section 903.3.1.2 or 903.3.1.3 shall be allowed in Group I-1 facilities.

903.2.6 Group M. An automatic sprinkler system shall be provided throughout buildings containing a Group M occupancy where any one of the following conditions exists:

1. Where a Group M fire area exceeds 12,000 square feet (1115 m²);
2. Where the combined area of all Group M fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).

903.2.6.1 High-piled storage. An automatic sprinkler system shall be provided in accordance with the New York City Fire Code in all buildings of Group M where storage of merchandise is in high-piled or rack storage arrays.

903.2.6.2 Group M fire areas. An automatic sprinkler system shall be provided throughout any Group M occupancy fire area where any one of the following conditions exists:

1. The fire area exceeds 7,500 square feet (697 m²).
2. The fire area of any size is located more than 3 stories above grade.
3. The fire area of any size is located in a high-rise building.

4. The fire area of any size contains an unenclosed stair or escalator connecting two or more floors.

903.2.7Group R.An automatic sprinkler system shall be installed in Group R fire areas. An automatic sprinkler system shall be installed throughout buildings with a main use or dominant occupancy of Group R.

Exception: An automatic sprinkler system shall not be required in detached one- and two-family dwellings and multiple single-family dwellings (town houses), provided that such structures are not more than three stories above grade plane in height and have separate means of egress.

903.2.8Group S-1.An automatic sprinkler system shall be provided throughout all buildings containing a Group S-1 occupancy where any one of the following conditions exists:

1. A Group S-1 fire area exceeds 12,000 square feet (1115 m²);
2. The building is greater than 1,000 square feet (92.9 m²) in area and the main use or dominant occupancy is Group S-1; or
3. The combined area of all Group S-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).

903.2.8.1Group S-1 fire areas.An automatic sprinkler system shall be provided throughout any Group S-1 occupancy fire area where any one of the following conditions exists:

1. The fire area exceeds 500 square feet (46 m²).
2. The fire area of any size is located more than 3 stories above grade.

903.2.8.2Bulk storage of tires.Buildings and structures where the area for the storage of tires exceeds 500 square feet (47 m²) or 7,500 cubic feet (212 m³) shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

903.2.9Group S-2.An automatic sprinkler system shall be installed throughout buildings greater than 5,000 square feet (465 m²) in area where the main use or dominant occupancy is Group S-2.

903.2.9.1Commercial parking garages.An automatic sprinkler system shall be provided throughout buildings used for storage of commercial trucks or buses where the fire area exceeds 5,000 square feet (465 m²).

903.2.9.2Group S-2 fire areas.An automatic sprinkler system shall be provided throughout any Group S-2 occupancy fire area greater than 5,000 square feet (465 m²).

903.2.9.3Parking garages.An automatic sprinkler system shall be provided throughout buildings classified as enclosed parking garages in accordance with Section 406.4 or where an open or enclosed parking garage is located beneath other occupancy groups.

Exception: Parking garages located beneath Group R-3 occupancies.

903.2.10All occupancies.An automatic sprinkler system shall be installed in the locations set forth in Sections 903.2.10.1 through 903.2.10.6.

903.2.10.1Above or below-grade stories.An automatic sprinkler system shall be installed throughout every above or below grade story of all buildings where the floor area exceeds 1,500 square feet (139.4 m²) and where there is not provided at least one of the following types of exterior wall openings:

1. Openings below grade that lead directly to ground level by an exterior stairway complying with Section 1009 or an outside ramp complying with Section 1010. Openings shall be located in each 50 linear feet (15 240 mm), or fraction thereof, of exterior walls facing onto a street, public way or frontage space, in the story on at least one side.

2. Openings entirely above the adjoining ground level totaling at least 20 square feet (1.86 m²) in each 50 linear feet (15 240 mm), or fraction thereof, of exterior walls facing onto a street, public way or frontage space, in the story on at least one side.

903.2.10.1.1 Opening dimensions and access. Such openings shall have a minimum dimension of not less than 30 inches (762 mm). Such openings shall be accessible to the Fire Department from the exterior and shall not be obstructed in a manner that fire fighting or rescue cannot be accomplished from the exterior.

903.2.10.1.2 Openings on one side only. Where such openings in a story are provided on only one side and the opposite wall of such story is more than 100 feet (30 480 mm) from such openings, the story shall be equipped throughout with an approved automatic sprinkler system, or openings as specified above shall be provided on at least two sides of the story.

903.2.10.1.3 Below-grade stories. Where any portion of a below-grade story is located more than 75 feet (22 860 mm) from openings required by Section 903.2.10.1, the below-grade story shall be equipped throughout with an approved automatic sprinkler system.

903.2.10.2 Rubbish and linen chutes. An automatic sprinkler system shall be installed at the top of rubbish and linen chutes, in chute access rooms, and in their terminal rooms. Chutes extending through three or more floors shall have additional sprinkler heads installed within such chutes at alternate floors. Chute sprinklers shall be accessible for servicing.

903.2.10.3 Buildings over 55 feet in height. An automatic sprinkler system shall be installed throughout buildings with a floor level having an occupant load of 30 or more that is located 55 feet (16 764 mm) or more above the lowest level of fire department vehicle access.

903.2.10.4 Steel-plated and vault-like occupancies. An automatic sprinkler system shall be installed throughout all steel-plated or similarly reinforced or secured vault-like occupancies regardless of area.

903.2.10.5 Refuse collection and disposal areas. An automatic sprinkler system shall be installed throughout all areas used for the storage and sorting of refuse and recyclables.

903.2.10.6 Laundry drying areas. An automatic sprinkler system shall be installed in spaces in which two or more clothes drying machines are installed. Sprinkler heads shall be spaced to cover the areas 5 feet (1524 mm) on all sides of the drying machines.

903.2.11 During construction. Automatic sprinkler systems required during construction, alteration and demolition operations shall be provided in accordance with Chapter 33 and the New York City Fire Code.

903.2.12 Other hazards. Automatic sprinkler protection shall be provided for the hazards indicated in Sections 903.2.12.1 and 903.2.12.2.

903.2.12.1 Ducts conveying hazardous exhausts. Where required by the New York City Mechanical Code, automatic sprinklers shall be provided in ducts conveying hazardous exhaust, or flammable or combustible materials.

Exception: Ducts in which the largest cross-sectional diameter of the duct is less than 10 inches (254 mm).

903.2.12.2 Commercial cooking operations. An automatic sprinkler system shall not be installed in a commercial kitchen exhaust hood and duct system. Fire extinguishing systems shall be installed in commercial cooking systems in

accordance with Section 904.11

903.2.13 Other buildings, occupancies, and areas. In addition to the requirements of Section 903.2, the provisions indicated in Table 903.2.13 also require the installation of a suppression system for certain buildings and areas. Suppression systems shall also be required as provided for in other sections of this code, the New York City Fuel Gas Code, and the New York City Mechanical Code.3]Table 903.2.13 Additional Required Suppression Systems Section Subject 1]Section Subject 2]402.8 Covered malls403.2, 403.3 High-rise buildings404.3 Atriums405.3 Underground structures407.5 Group I-2410.6 Stages411.4 Special amusement buildings415.7.2.4 Group H-2416.4 Flammable finishes417.4 Drying rooms507 Unlimited area buildingsNYCFCNFPA-13 as modified for NYC

903.3 Installation requirements. Automatic sprinkler systems shall be designed and installed in accordance with Sections 903.3.1 through 903.3.7.

903.3.1 Standards. Sprinkler systems shall be designed and installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3.

903.3.1.1 NFPA 13 sprinkler systems. Where the provisions of this code require that a building or portion thereof be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, sprinklers shall be installed throughout in accordance with NFPA 13 as modified in Appendix Q except as provided in Section 903.3.1.1.1.

903.3.1.1.1 Exempt locations protected by other means. Automatic sprinklers shall not be required in the following rooms or areas where such rooms or areas are protected with an approved automatic fire detection system in accordance with Section 907.2 that will respond to visible or invisible particles of combustion and an alternative extinguishing system in accordance with Section 904. Sprinklers shall not be omitted from any room merely because it is damp, of fire-resistance-rated construction or contains electrical equipment.

1. Any room where the application of water, or flame and water, constitutes a serious life or fire hazard.
2. Any room or space where sprinklers are considered undesirable because of the nature of the contents, when approved by the commissioner.
3. Generator and transformer rooms separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a fire-resistance rating of not less than 2 hours.

903.3.1.2 NFPA 13R sprinkler systems. Where allowed in buildings of Group R, up to and including six stories in height, automatic sprinkler systems shall be installed throughout in accordance with NFPA 13R as modified in Appendix Q.

903.3.1.2.1 Balconies. Sprinkler protection shall be provided for exterior balconies and ground-floor patios of dwelling units where the building is of Type V construction and automatic sprinkler protection is required for the Group R occupancy. Side wall sprinklers that are used to protect such areas shall be permitted to be located such that their deflectors are within 1 inch (25 mm) to 6 inches (152 mm) below the structural members, and a maximum distance of 14 inches (356 mm) below the deck of the exterior balconies that are constructed of open wood joist construction.

903.3.1.3 NFPA 13D sprinkler systems. Where allowed, automatic sprinkler systems in one- and two-family dwellings shall be installed throughout in accordance with NFPA 13D as modified.

903.3.2 Quick-response and residential sprinklers. Where automatic sprinkler systems are required by this code, quick-response or residential automatic sprinklers shall be installed in the following areas in accordance with Section 903.3.1 and their listings:

1. Throughout all spaces within a smoke compartment containing patient dwelling units in Group I-2 in accordance

with this code.

2. Dwelling units in Group R and I-1 occupancies.

3. Light-hazard occupancies as defined in NFPA 13.

903.3.3 Obstructed locations. Automatic sprinklers shall be installed with due regard to obstructions that will delay activation or obstruct the water distribution pattern. Automatic sprinklers shall be installed in or under covered kiosks, displays, booths, concession stands, or equipment that exceeds 4 feet (1219 mm) in width. Not less than a 3-foot (914 mm) clearance shall be maintained between automatic sprinklers and the top of piles of combustible fibers.

Exception: Kitchen equipment under exhaust hoods protected with a fire-extinguishing system in accordance with Section 904.

903.3.4 Actuation. Automatic sprinkler systems shall be automatically actuated unless otherwise specifically provided in this code.

903.3.5 Water supplies. Water supplies for automatic sprinkler systems shall comply with this section and the standards referenced in Section 903.3.1. The potable water supply shall be protected against back flow in accordance with the requirements of this section, the New York City Plumbing Code, and Rules of the New York City Department of Environmental Protection.

903.3.5.1 Domestic services. Where the domestic service provides the water supply for the automatic sprinkler system, the supply shall be in accordance with NFPA 13.

903.3.5.1.1 Limited area sprinkler systems. Limited area sprinkler systems serving fewer than 20 sprinklers on any single connection are permitted to be connected to the domestic service where a wet automatic standpipe is not available. Limited area sprinkler systems connected to domestic water supplies shall comply with NFPA 13.

The domestic service shall be capable of supplying the simultaneous domestic demand and the sprinkler demand required to be hydraulically calculated by NFPA 13, NFPA 13R or NFPA 13D.

903.3.5.1.2 Residential combination services. A single combination water supply shall be permitted in accordance with NFPA 13R.

903.3.5.2 Secondary water supply. A secondary on-site water supply equal to the hydraulically calculated sprinkler demand, including the hose stream requirement, shall be provided for high-rise buildings in Seismic Design Category C or D as determined by this code, and in any high-rise building greater than 300 feet (91 440 mm) in height. The secondary water supply shall have a duration not less than 30 minutes as determined by the occupancy hazard classification in accordance with NFPA 13.

903.3.6 Hose threads. Fire hose threads used in connection with automatic sprinkler systems shall be approved and compatible with Fire Department hose threads.

903.3.7 Fire Department connections. The location of Fire Department connections shall be installed in accordance with Section 905 of this code.

903.4 Sprinkler system monitoring and alarms. All valves controlling the water supply for automatic sprinkler systems, pumps, tanks, water levels and temperatures, critical air pressures and water-flow switches on all sprinkler systems shall be electrically supervised by the fire alarm system.

Exceptions:

1. Automatic sprinkler systems protecting one- and two-family dwellings.
2. Automatic sprinkler systems installed in accordance with NFPA 13R where a common supply main is used to supply both domestic water and the automatic sprinkler systems and a separate shutoff valve for the automatic sprinkler system is not provided.
3. Jockey pump control valves that are sealed or locked in the open position.
4. Control valves to commercial kitchen hoods, paint spray booths or dip tanks that are sealed or locked in the open position.
5. Valves controlling the fuel supply to fire pump engines that are sealed or locked in the open position.
6. Trim valves to pressure switches in dry, preaction and deluge sprinkler systems that are sealed or locked in the open position.

903.4.1 Signals. Alarm, supervisory and trouble signals shall be distinctly different and automatically transmitted to an approved central station, remote supervising station or proprietary supervising station as defined in NFPA 72 or, when approved by the commissioner, shall sound an audible signal at a constantly attended location.

Exceptions:

1. Underground key or hub valves in roadway boxes provided by the city or a public utility are not required to be monitored.
2. Back flow prevention device test valves, located in limited area sprinkler system supply piping, shall be locked in the open position. In occupancies required to be equipped with a fire alarm system, the back flow preventer valves shall be electrically supervised by a tamper switch installed in accordance with NFPA 72 and separately annunciated.

903.4.2 Alarms. Approved audible devices shall be connected to every automatic sprinkler system. Such sprinkler water-flow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Alarm devices shall be provided on the exterior of the building in an approved location. Where a fire alarm system is installed, actuation of the automatic sprinkler system shall actuate the building fire alarm system.

903.4.3 Floor control valves. Approved supervised indicating control valves shall be provided at the point of connection to the riser on each floor in high-rise buildings.

903.5 Testing and maintenance. Sprinkler systems shall be tested and maintained in accordance with the New York City Fire Code.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.
903.2.1.5 amended L.L. 8/2008 § 105, eff. July 1, 2008.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 904: ALTERNATIVE AUTOMATIC FIRE-EXTINGUISHING SYSTEMS

NYC Administrative Code § 28-BC 904

904.1 General.

Automatic fire-extinguishing systems, other than automatic sprinkler systems, shall be designed, installed, inspected, tested and maintained in accordance with the provisions of this section, the New York City Fire Code, and the applicable referenced standards.

904.1.1 Construction documents. Construction documents for alternative automatic fire-extinguishing systems shall be approved by the Fire Department and shall contain plans that include at least the following data and information:

1. Commercial kitchen suppression systems:

1.1. Location of all surface, plenum and duct nozzles; surface dimensions and location of all cooking appliances; the location of automatic fuel shut-off and statement as to type (gas or electric); location and distance of the remote control or manual pull station;

1.2. Identification of the grease filters to be used in any kitchen hood; the dimensions of all hoods and all related ducts, including termination of duct at the exterior of the building;

1.3. Identification of: the fire suppression piping system; the make and model of the system; the type of extinguishing agent and number and size of agent containers; size, length, and type of all piping that will be used; the number and location of all fusible links or detectors and the temperature setting; any surface, plenum and duct nozzles.

2. For extinguishing agent systems, the plan should also include type and concentration of the extinguishing agent, the method of providing power supply to smoke or heat detectors, fire rating of partitions, location of all audible/visible alarms within and outside the location involved and the details of construction of the room to contain the extinguishing agent. If the area is not sprinklered, the following information is required:

2.1. The size and location of the reserve supply, and

3. The plans must note whether the proposed system is connected to the building's fire alarm system.

Exception: For that portion of a fire suppression piping system within an approved pre-engineered system, a schematic isometric diagram shall be acceptable in lieu of full plans, provided that the location and method of pressure relief must be indicated with areas and volumes to where said relief is taken.

904.2 Where required. Automatic fire-extinguishing systems installed as an alternative to the required automatic sprinkler systems of Section 903 shall be approved by the commissioner. Automatic fire-extinguishing systems shall not be considered alternatives for the purposes of exceptions or reductions permitted by other requirements of this code.

Exception: Automatic fire-extinguishing systems installed in Group H occupancies as an alternative to the required automatic sprinkler systems of Section 903 shall be approved by the Fire Commissioner.

904.2.1 Hood system suppression. Each required commercial kitchen exhaust hood and duct system required by the New York City Fire Code or the New York City Mechanical Code to have a Type I hood shall be protected with an approved automatic fire-extinguishing system installed in accordance with this code.

904.3 Installation. Automatic fire-extinguishing systems shall be installed in accordance with this section.

904.3.1 Electrical wiring. Electrical wiring shall be in accordance with the New York City Electrical Code.

904.3.2 Actuation. Automatic fire-extinguishing systems shall be automatically actuated and provided with a manual means of actuation in accordance with Section 904.11.1.

904.3.3 System interlocking. Automatic equipment interlocks with fuel shutoffs, ventilation controls, door closers, window shutters, conveyor openings, smoke and heat vents and other features necessary for proper operation of the fire-extinguishing system shall be provided as required by the design and installation standard utilized for the hazard.

904.3.4 Alarms and warning signs. Where alarms are required to indicate the operation of automatic fire-extinguishing systems, distinctive audible and visible alarms and warning signs shall be provided to warn of pending agent discharge. Where exposure to automatic-extinguishing agents poses a hazard to persons and a delay is required to ensure the evacuation of occupants before agent discharge, a separate warning signal shall be provided to alert occupants once agent discharge has begun. Audible signals shall be in accordance with Section 907.9.2.

904.3.5 Monitoring. Where a building fire alarm system is installed, automatic fire-extinguishing systems shall be monitored by the building fire alarm system in accordance with NFPA 72.

904.4 Inspection and testing. Automatic fire-extinguishing systems shall be inspected and tested in accordance with the provisions of this section prior to acceptance.

904.4.1 Inspection. Prior to conducting final acceptance tests, the following items shall be inspected:

1. Hazard specification for consistency with design hazard.
2. Type, location and spacing of automatic- and manual-initiating devices.
3. Size, placement and position of nozzles or discharge orifices.
4. Location and identification of audible and visible alarm devices.
5. Identification of devices with proper designations.
6. Operating instructions.

904.4.2 Alarm testing. Notification appliances, connections to fire alarm systems and connections to approved supervising stations shall be tested in accordance with this section and Section 907 to verify proper operation.

904.4.2.1 Audible and visible signals. The audibility and visibility of notification appliances signaling agent discharge or system operation, where required, shall be verified.

904.4.3 Monitor testing. Connections to protected premises and supervising station fire alarm systems shall be tested to verify proper identification and retransmission of alarms from automatic fire-extinguishing systems.

904.5 Wet-chemical systems. Wet-chemical extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with the New York City Fire Code.

904.6 Dry-chemical systems. Dry-chemical extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with the New York City Fire Code. New dry-chemical extinguishing systems are not permitted for the protection of kitchen equipment.

904.7 Foam systems. Foam-extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with the New York City Fire Code.

904.8 Carbon dioxide systems. Carbon dioxide extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with the New York City Fire Code.

904.9 Halon systems. Halogenated extinguishing systems shall not be permitted. However, existing systems shall be maintained, periodically inspected and tested in accordance with the New York City Fire Code.

904.10 Clean-agent systems. Clean-agent fire-extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with the New York City Fire Code.

904.11 Commercial cooking systems. The automatic fire-extinguishing system for commercial cooking systems shall be of a type recognized for protection of commercial cooking equipment and exhaust systems of the type and arrangement protected. Pre-engineered automatic wet-chemical extinguishing systems shall be approved by the Fire Commissioner, tested in accordance with UL 300, and listed and labeled for the intended application. The protected area shall include the area under the hood and over the cooking equipment, the area above or behind the filters and the opening of the hood into the branch duct. Where a pre-engineered system is installed and the size of the protected area exceeds that allowed for a single pre-engineered system, additional pre-engineered systems arranged for simultaneous operation shall be provided. Other types of automatic fire-extinguishing systems shall be listed and labeled for specific use as protection for commercial cooking operations. The system shall be installed in accordance with this code, its listing and the manufacturer's installation instructions. Automatic fire-extinguishing systems of the following types shall be installed in accordance with the New York City Fire Code and the referenced standard indicated, as shown:

1. Carbon dioxide extinguishing systems, in accordance with the New York City Fire Code.
2. Wet-chemical extinguishing systems, in accordance with the New York City Fire Code.

904.11.1 Manual system operation. A manual actuation device shall be located at or near a means of egress from the cooking areas, a minimum of 10 feet (3048 mm) and a maximum of 20 feet (6096 mm) from the kitchen exhaust system. The manual activation device shall be located at a minimum of 42 inches (1067 mm) and a maximum of 48 inches (1219 mm) above the floor at its center. The manual actuation device shall require a maximum force of 40 pounds (178 N) and a maximum movement of 14 inches (356 mm) to actuate the fire suppression system.

Exception: Automatic sprinkler systems shall not be required to be equipped with manual actuation means.

904.11.2 System interconnection. The actuation of the fire suppression system shall automatically shut down the fuel

or electrical power supply to the cooking equipment. The fuel and electrical supply reset shall be manual.

904.11.3 Carbon dioxide systems. When carbon dioxide systems are used, there shall be a nozzle at the top of the ventilating duct. Additional nozzles that are symmetrically arranged to give uniform distribution shall be installed within vertical ducts exceeding 20 feet (6096 mm) and horizontal ducts exceeding 50 feet (15 240 mm). Dampers shall be installed at either the top or the bottom of the duct and shall be arranged to operate automatically upon activation of the fire-extinguishing system. Where the damper is installed at the top of the duct, the top nozzle shall be immediately below the damper. Automatic carbon dioxide fire-extinguishing systems shall be sufficiently sized to protect against all hazards venting through a common duct simultaneously.

904.11.3.1 Ventilation system. Commercial-type cooking equipment protected by an automatic carbon dioxide-extinguishing system shall be arranged to shut off the ventilation system upon activation.

904.11.4 Special provisions for automatic sprinkler systems. [Repealed]

904.11.4.1 Listed sprinklers. [Repealed]

904.12 Water-mist systems. Water-mist fire-extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with the New York City Fire Code.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

904.11.4 repealed L.L. 8/2008 § 106, eff. July 1, 2008.

904.11.4.1 repealed L.L. 8/2008 § 106, eff. July 1, 2008.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 905: STANDPIPE SYSTEMS

NYC Administrative Code § 28-BC 905

905.1 General.

Standpipe systems shall be provided in buildings and structures in accordance with this section. Fire hose threads used in connection with standpipe systems shall be approved by the Fire Commissioner. The location of Fire Department hose connections shall be approved by the Fire Commissioner. Standpipe systems in buildings used for high-piled combustible storage shall be in accordance with the New York City Fire Code. Installation of standpipe systems shall comply with the special inspection requirements of Chapter 17.

Any space or room that contains equipment of such nature that the use of water would be ineffective in fighting a fire therein, or would be otherwise hazardous, shall have a conspicuous sign on each door opening on such space or room stating the nature of the use and the warning: "IN CASE OF FIRE, USE NO WATER".

905.1.1 Construction documents. Construction documents for standpipe systems shall contain plans that include at least the following data and information:

1. The locations and sizes of all risers, cross-connections, hose racks, valves, siamese connections, sources of water supply, piping, and other essential features of the system;
2. A floor plan for each group of floors that have typical riser locations and no special features within such group of floor levels, with the indication in title block of such plan indicating clearly the floors to which the arrangement is applicable;
3. A riser diagram showing the essential features of the system, including the risers, cross-connections, valves, siamese connections, tanks, pumps, sources of water supply, pipe sizes, capacities, floor heights, zone pressures, and other essential data and features of the system; and
4. The available water pressure at the top and bottom floors of each zone, and at each floor where the weight pipe

fittings change, shall be shown on the riser diagram.

5. For street pressure-fed systems and fire pumps, a statement from the New York City Department of Environmental Protection, giving the minimum water pressure in the main serving the building.

905.2 Installation standards. Standpipe systems shall be installed in accordance with this section and NFPA 14 as modified in Appendix Q.

905.3 Required installations. Standpipe systems shall be installed where required by Sections 905.3.1 through 905.3.6 and in the locations indicated in Sections 905.4, 905.5 and 905.6. Standpipe systems are permitted to be combined with automatic sprinkler systems.

Exception: Standpipe systems are not required in buildings occupied entirely by Group R-3.

905.3.1 Applicability. Class III standpipe systems shall be installed throughout the following buildings:

1. In buildings 2 stories or more in height with floor area of 10,000 square feet (929 m²) or greater on any story;
2. In buildings 3 stories or more in height with floor area of 7,500 square feet (697 m²) or greater on any story;
3. In buildings of any area with a floor level having an occupant load of 30 or more that is located 55 feet (16 764 mm) or more above the lowest level of fire department vehicle access.
4. In buildings of any area, constructed in accordance with Section 403, with occupied floors located 75 feet (22 860 mm) or more above the lowest level of fire department vehicle access.

Exceptions. The following exceptions are allowed as an alternative to the requirement of a Class III standpipe system:

1. Class I standpipes are allowed in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 provided that the following additional requirements are met:

1.1. A locked storage cabinet shall be provided on the main entrance floor in a location approved by the Fire Commissioner near the standpipe riser enclosure. Such cabinet shall contain at least three open nozzles, two 1.5 inch (38 mm) spanner wrenches, two 2.5 inch (64 mm) spanner wrenches, two 2.5 inch (64 mm) by 1.5 inch (38 mm) non-swivel reducing couplings, and 375 feet (114 m) of 1.5 inch (38 mm) hose. However, the hose may be omitted when serving Group R-2 occupancies.

1.1.1. A key for unlocking the storage cabinet shall be kept in a location where it is readily available to authorized persons, but not available to the general public. A sign shall be placed on the storage cabinet indicating the location of such key.

1.1.2. An additional labeled key shall be kept in a locked receptacle near the storage cabinet openable by a Fire Department standard key. Such receptacle shall be labeled, "FOR FIRE DEPARTMENT USE ONLY."

1.1.3. A metal sign shall be placed in each stair enclosure on the main entrance floor stating clearly where the storage cabinet is located.

1.2. Hose valves are capped with a hose valve cap fastened to the valve with a chain.

2. Class I manual standpipes are allowed in open parking garages where the highest floor is located not more than 150 feet (45 720 mm) above the lowest level of fire department vehicle access.

3. Class I manual dry standpipes are allowed in open parking garages that are subject to freezing temperatures, provided that the hose connections are located as required for Class II standpipes in accordance with Section 905.5.

4. Class I standpipes are allowed in below-grade stories equipped throughout with an automatic sprinkler system.

5. Standpipe outlets may be omitted in portions of first floors or basements that are completely separated from the entrance hall or enclosed stairways leading to the upper floors, provided that portable fire extinguishers are installed, subject to the approval of the Fire Commissioner.

905.3.2 Group A. Class I automatic wet standpipes shall be provided in nonsprinklered Group A buildings having an occupant load exceeding 1,000 persons.

Exceptions:

1. Open-air-seating spaces without enclosed spaces.

2. Class I automatic dry and semiautomatic dry standpipes or manual wet standpipes are allowed in buildings where the highest floor surface used for human occupancy is 75 feet (22 860 mm) or less above the lowest level of fire department vehicle access. Dry standpipes are permitted only where subject to freezing temperatures.

905.3.3 Covered mall buildings. Covered mall buildings and buildings connected thereto shall be equipped throughout with a Class I automatic wet standpipe system, except as permitted by Section 905.3.3.1 through 905.3.3.3.

905.3.3.1 Covered mall building height. Covered mall buildings where the highest occupied floor level is located not more than 30 feet (9144 mm) above the lowest level of the fire department vehicle access shall be permitted to be provided with Class I hose connections connected to the mall sprinkler system in accordance with NFPA 13 Section 8.16.5.2 regarding Hose Connections for Fire Department Use and under the following conditions:

1. Any individual outlet shall be capable of delivering water flow at a rate of 250 gallons per minute (946 L/m) while concurrently supplying the mall sprinkler demand; and

2. Each of the two most hydraulically remote outlets shall be capable of concurrently delivering 250 gallons per minute (946 L/m) at a pressure of 100 pounds per square inch (689.4 kPa) with no mall sprinkler demand, based on a supply pressure at the system Fire Department connection of not more than 175 pounds per square inch (1207 kPa). Adequacy of the water supply available to the Fire Department to meet the hydraulic calculations shall be demonstrated by the registered design professional.

905.3.3.2 Location of hose connections. Hose connections shall be provided in accordance with Section 905.4 and at each of the following locations:

1. Within the mall at the entrance to each exit passageway or exit.

2. At each floor-level landing within enclosed stairways opening directly on the mall.

3. At exterior public entrances to the mall.

905.3.3.3 Installation standard. Except as provided in Sections 905.3.3.1 and 905.3.3.2, the Class I hose connections and Fire Department connections shall be designed in conformance with NFPA 14.

905.3.4 Stages. Stages greater than 1,000 square feet in area (93 m²) shall be equipped with a Class III wet standpipe system with 1.5-inch and 2.5-inch (38 mm and 64 mm) hose connections on each side of the stage.

Exception: Where the building or area is equipped throughout with an automatic sprinkler system, the hose

connections are allowed to be supplied from the automatic sprinkler system in accordance with NFPA 13 Section 8.16.5.2 and shall have a flow rate of not less than that required by NFPA 14 for Class III standpipes.

905.3.4.1Hose and cabinet.The 1.5-inch (38 mm) hose connections shall be equipped with sufficient lengths of 1.5-inch (38 mm) hose to provide fire protection for the stage area. Hose connections shall be equipped with an approved adjustable fog nozzle and be mounted in a cabinet or on a rack.

905.3.5Underground buildings.Underground buildings shall be equipped throughout with a Class I automatic wet or manual wet standpipe system.

905.3.6Helistops and heliports.Buildings with a helistop or heliport that are equipped with a standpipe shall extend the standpipe to the roof level on which the helistop or heliport is located in accordance with the New York City Fire Code. All portions of the helistop and heliport area shall be within 150 feet (45 720 mm) of a 2.5 inch (64 mm) outlet on a Class I or III standpipe, in accordance with the New York City Fire Code.

905.4Location of Class I standpipe hose connections.Class I standpipe hose connections shall be provided in all of the following locations:

1. In every required stairway, a hose connection shall be provided for each floor level above or below grade. Hose connections shall be readily accessible and located at the riser on each floor level landing and on the entrance floor above the standpipe riser control valve. Non-required enclosed stairways are not required to have hose connections. Stairways without hose connections shall have a sign on the door to the stairway stating, "No standpipe connections in stairway".

2. On each side of the wall adjacent to the exit opening of a horizontal exit.

3. In every exit passageway at the entrance from the exit passageway to the other areas of a building.

4. In covered mall buildings, in accordance with Section 905.3.3.2.

5. Where the roof has a slope of less than four units vertical in 12 units horizontal (33.3-percent slope), each standpipe shall be provided with a hose connection located either on the roof or at the highest landing of stairways with stair access to the roof. An additional hose connection shall be provided at the top of the most hydraulically remote standpipe for testing purposes.

6. Where the most remote portion of a floor or story is more than 150 feet (45 720 mm) from a hose connection, additional hose connections shall be provided in approved locations. For the purposes of this section, a penthouse with an occupant load greater than 10 shall be considered a story.

905.4.1Protection.Risers and laterals of Class I standpipe systems not located within an enclosed stairway or pressurized enclosure shall be protected by a degree of fire resistance equal to that required for vertical enclosures in the building in which they are located. No standpipe riser shall be placed in any shaft containing a gas or fuel pipeline.Exception: In buildings equipped throughout with an approved automatic sprinkler system, laterals that are not located within an enclosed stairway or pressurized enclosure are not required to be enclosed in fire-resistance-rated construction.

905.4.2Interconnection.In buildings where more than one standpipe is provided, the standpipes shall be interconnected in accordance with NFPA 14.

905.5Location of Class II standpipe hose connections.Class II standpipe hose connections shall be accessible and located so that all portions of the building are within 30 feet (9144 mm) of a nozzle attached to 100 feet (30 480 mm) of hose.

905.5.1 Groups A-1 and A-2. In Group A-1 and A-2 occupancies with occupant loads of more than 1,000, hose connections shall be located on each side of any stage.

905.5.2 Protection. Fire-resistance-rated protection of risers and laterals of Class II standpipe systems is not required.

905.6 Location of Class III standpipe hose connections. Class III standpipe systems shall have hose connections located as required for Class I standpipes in Section 905.4 and shall have Class II hose connections as required in Section 905.5.

905.6.1 Protection. Risers and laterals of Class III standpipe systems shall be protected as required for Class I systems in accordance with Section 905.4.1.

905.6.2 Interconnection. In buildings where more than one standpipe is provided, the standpipes shall be interconnected in accordance with NFPA 14.

905.7 Cabinets. Cabinets containing fire-fighting equipment such as standpipes, fire hoses, fire extinguishers or Fire Department valves shall not be blocked from use or obscured from view.

905.7.1 Cabinet equipment identification. Cabinets shall be identified in an approved manner by a permanently attached sign with white letters not less than 2 inches (51 mm) high and a red background color, indicating the equipment contained therein.

Exception: Doors that have either an approved visual identification clear glass panel or a complete glass door panel are not required to be marked.

905.7.2 Locking cabinet doors. Cabinets shall be unlocked.

Exceptions:

1. Visual identification panels of glass or other approved transparent frangible material that is easily broken and allows access.

2. Approved locking arrangements.

3. Locking of cabinets shall be permitted in Group I-3.

905.8 Dry standpipes. Dry standpipes shall not be installed.

Exception: Where subject to freezing and in accordance with NFPA 14.

905.9 Valve supervision. Valves controlling water supplies shall be supervised in the open position so that a change in the normal position of the valve will generate a supervisory signal at the supervising station required by Section 903.4. Where a fire alarm system is provided, a signal shall also be transmitted to the control unit.

Exceptions:

1. Valves to underground key or hub valves in roadway boxes provided by the city or a public utility do not require supervision.

2. Valves locked in the normal position and inspected as provided in this code in buildings not equipped with a fire alarm system.

905.10 During construction. Standpipe systems required during construction, alteration and demolition operations shall be provided in accordance with Section 3303.8.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

905.3.1 amended L.L. 8/2008 § 107, eff. July 1, 2008.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 906: PORTABLE FIRE EXTINGUISHERS

NYC Administrative Code § 28-BC 906

906.1 General.

Portable fire extinguishers shall be provided in occupancies and locations as required by the New York City Fire Code.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 907: FIRE ALARM AND DETECTION SYSTEMS

NYC Administrative Code § 28-BC 907

907.1 General.

This section covers the application, installation, performance and maintenance of fire alarm systems and their components. Systems shall be designed and installed in accordance with NFPA 72 as modified in Appendix Q and the New York City Electrical Code.

907.1.1 Construction documents. Construction documents for fire alarm systems shall be submitted for review and approval to the department and the Fire Department prior to system installation. Construction documents shall include, but not be limited to, all of the following:

1. A floor plan that indicates the use of all rooms.
2. Locations of alarm-initiating and notification appliances.
3. Alarm control and trouble signaling equipment.
4. Annunciation.
5. Power connection.
6. Fire alarm riser diagram and all fire alarm devices indicated on the floor plans. Quantities of devices on the floor plans shall match the quantities indicated on the riser diagram.
7. Copies of any variances granted by the department or the Fire Department.
8. Legend of all fire alarm symbols and abbreviations used.
9. Design criteria for fire alarm audibility in various occupancies indicated on plans.

10. Fire alarm sequence of operation for the fire alarm control panel and the central station transmitter.

11. The interface of fire safety control functions

907.1.2 Equipment. Systems and their components shall be listed for the purpose for which they are installed.

907.2 Where required. An approved manual, automatic or manual and automatic fire alarm system shall be provided in accordance with Sections 907.2.1 through 907.2.21. Where automatic sprinkler protection, installed in accordance with Section 903.3.1.1 or 903.3.1.2, is provided and connected to the building fire alarm system, automatic heat detection required by this section shall not be required. An approved automatic fire detection system shall be installed in accordance with the provisions of this code, the New York City Mechanical Code, and NFPA 72. Devices, combinations of devices, appliances and equipment shall comply with Section 907.1.2. The automatic fire detectors shall be smoke detectors, except that an approved alternative type of detector shall be installed in spaces such as boiler rooms where, during normal operation, products of combustion are present in sufficient quantity to actuate a smoke detector. All initiating devices related to fire or life safety, other than smoke alarms, shall be connected to the fire alarm system.

In all occupancies where an automatic fire alarm system is required by this section, selective coverage smoke detectors shall be located as follows, unless partial or total coverage automatic detection is specified.

1. In each mechanical equipment, electrical, transformer, telephone equipment or similar room, in elevator machine rooms, and in elevator lobbies.

2. In air distribution systems in accordance with Section 606 of the New York City Mechanical Code.

907.2.1 Group A. A manual and automatic fire alarm system shall be installed in accordance with NFPA 72 in Group A occupancies having an occupant load of 300 or more. Portions of Group E occupancies occupied for assembly purposes shall be provided with a fire alarm system as required for the Group E occupancy.

Exceptions:

1. Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system and the notification appliances will activate upon sprinkler water flow. This exception shall not apply to Group A-2 occupancies used as a cabaret.

2. A Group A-2 occupancy used as a cabaret with an occupant load of 75 or more, including associated stages, dressing rooms, and property rooms, shall be equipped with a manual fire alarm system. Such a Group A-2 occupancy with an occupant load of 300 or more shall also be equipped with an automatic fire alarm system.

907.2.1.1 System initiation in Group A occupancies. Activation of the fire alarm in Group A-1 occupancies with an occupant load of 300 or more, and in all other Group A occupancies with an occupant load of 1,000 or more, shall initiate a presignal system at a constantly attended location from which the Fire Department shall be notified and live voice evacuation instructions shall be initiated using an emergency voice/alarm communications system in accordance with NFPA 72.

907.2.1.2 Emergency power. Emergency voice/alarm communications systems where required by Section 907.2.1.1 shall be provided with an approved emergency power source and shall be designed and installed in accordance with NFPA 72 and the New York City Electrical Code.

907.2.2 Group B. A manual and automatic fire alarm system shall be installed in Group B occupancies having an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge. Where such occupancies are not protected by an automatic sprinkler system, a manual fire alarm and partial coverage

automatic smoke detection or automatic heat detection system shall be installed in accordance with NFPA 72.

907.2.2.1 High-Rise and large area buildings. In high-rise buildings constructed in accordance with Section 403, Group B occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access or having a total gross area exceeding 100,000 square feet (9290 m²) shall comply with the requirements of Section 907.2.12.

907.2.3 Group E. A manual and automatic fire alarm system shall be installed in Group E occupancies. When automatic sprinkler systems or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system.

907.2.4 Group F. A manual and automatic fire alarm system shall be installed in Group F occupancies that are two or more stories in height and have an occupant load of 100 or more, or when 25 persons or more are above or below the lowest level of exit discharge.

907.2.5 Group H. A manual and automatic fire alarm system shall be installed in Group H-5 occupancies and in occupancies used for the manufacture of organic coatings. In addition to the automatic fire alarm system requirements of Section 907.2, an automatic smoke detection system shall be installed for highly toxic gases, organic peroxides and oxidizers in accordance with the New York City Fire Code, and shall be connected to a central station.

Exceptions: A smoke detection system shall not be required in detached storage buildings equipped throughout with an approved automatic fire-extinguishing system and used only to store the following:

1. Organic peroxides.
2. Liquid or solid oxidizers.

907.2.6 Group I. A manual and automatic fire alarm system and an automatic fire detection system shall be installed in Group I occupancies. An electrically supervised, automatic smoke detection system shall be provided in waiting areas that are open to corridors.

907.2.6.1 Group I-2. Corridors in nursing homes (both intermediate-care and skilled nursing facilities), detoxification facilities and spaces open to the corridors shall be equipped with an automatic fire detection system.

907.2.6.2 Group I-3. Group I-3 occupancies shall be equipped with a manual and automatic fire alarm system installed for alerting staff.

907.2.6.2.1 System initiation. Actuation of an automatic fire-extinguishing system, a manual fire alarm box or a fire detector shall initiate an approved alarm signal that automatically notifies staff. Presignal systems shall not be used.

907.2.6.2.2 Manual fire alarm boxes. Manual fire alarm boxes are not required to be located in accordance with Section 907.3 where the fire alarm boxes are provided at staff-attended locations having direct supervision over areas where manual fire alarm boxes have been omitted. Manual fire alarm boxes shall be permitted to be locked in areas occupied by detainees, provided that staff members are present within the subject area and have keys readily available to operate the manual fire alarm boxes.

907.2.6.2.3 Smoke detectors. An approved automatic smoke detection system shall be installed throughout resident housing areas, including sleeping areas and contiguous day rooms, group activity spaces and other common spaces normally accessible to residents.

Exceptions:

1. Other approved smoke detection arrangements providing equivalent protection including, but not limited to,

placing detectors in exhaust ducts from cells or behind protective guards listed for the purpose are allowed when necessary to prevent damage or tampering.

2. Sleeping units in Use Conditions 2 and 3.

3. Smoke detectors are not required in sleeping units with four or fewer occupants in smoke compartments that are equipped throughout with an approved automatic sprinkler system.

907.2.7Group M.A manual and automatic fire alarm system shall be installed in Group M occupancies where any one of the following conditions exists:

1. Where a Group M fire area exceeds 12,000 square feet (1115 m²);
2. Where a Group M fire area is located more than three stories above grade;
3. Where the combined area of all Group M fire areas on all floors, including mezzanines, exceeds 24,000 square feet (2230 m²); or
4. Where a Group M fire area in a below-grade story exceeds 1,500 square feet (139 m²).

Where such occupancies are not protected by an automatic sprinkler system, a manual fire alarm and partial coverage automatic smoke detection or automatic heat detection system shall be installed in accordance with NFPA 72.

907.2.8Group R-1.Fire alarm systems shall be installed in Group R-1 occupancies as required in Sections 907.2.8.1 through 907.2.8.3.

907.2.8.1Manual fire alarm system.A manual fire alarm system shall be installed in Group R-1 occupancies.

Exception: A manual fire alarm system is not required in buildings not over two stories in height where all individual dwelling units and contiguous attic and crawl spaces are separated from each other and public or common areas by at least 1-hour fire partitions and each individual dwelling unit has an exit directly to a public way, exit court or yard.

907.2.8.2Automatic fire alarm system.An automatic fire alarm system shall be installed in Group R-1 occupancies. In addition to the automatic fire alarm system requirements of Section 907.2, smoke detectors shall be installed in all public corridors serving dwelling units and in accordance with Section 907.2.8.3.

Exception: An automatic fire detection system is not required in buildings that do not have public corridors serving dwelling units and each dwelling unit has a means of egress door opening directly to an exterior exit access that leads directly to an exit.

907.2.8.3Smoke detectors within dwelling units.Smoke detectors and audible notification appliances shall be installed in dwelling units and shall be annunciated by dwelling unit at a constantly attended location from which the fire alarm system is capable of being manually activated. Smoke detectors are required in the following areas:

1. In sleeping areas.
2. In every room in the path of the means of egress from the sleeping area to the door leading from the dwelling unit.
3. In each story within the unit, including below-grade stories. For dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level.

907.2.9Group R-2.An automatic fire alarm system without alarm notification appliances shall be provided in accordance with this section in Group R-2 occupancies, other than student apartments, where such occupancy satisfies any one of the following conditions:

1. Any dwelling unit is located three or more stories above the lowest level of exit discharge, including dwelling units in penthouses of any area;
2. Any dwelling unit is located more than one story below the highest level of exit discharge of exits serving the dwelling unit; or
3. The building contains more than 16 dwelling units.

Actuation of smoke detectors shall not initiate a signal to alarm notification appliances. The activation of any detector required by this section shall initiate a signal at a central station or a constantly attended location. Smoke detectors shall be located as follows:

1. In each mechanical equipment, electrical, transformer, telephone equipment or similar room, greater than 75 square feet (6.96 m²) in area.
2. In air distribution systems in accordance with Section 606 of the New York City Mechanical Code.
3. In elevator machine rooms and in elevator lobbies.

907.2.9.1Group R-2 student apartments.Where the main use or dominant occupancy of a building is classified as R-2 student apartments, as defined in Section 310.2, fire alarm systems shall be installed in accordance with Section 907.2.8. Where the main use or dominant occupancy of a building is not classified as R-2 student apartments and the building is occupied partially by Group R-2 student apartments, fire alarm systems shall be installed in accordance with Sections 907.2.9.1.1 through 907.2.9.1.3.

907.2.9.1.1Manual fire alarm system.A manual fire alarm system shall be installed throughout all public corridors serving student apartments and student related uses. Student related uses shall include common spaces such as recreation rooms, lounges, dining rooms, laundry rooms, and storage rooms.

Exceptions:

1. A manual fire alarm system is not required in buildings not over two stories in height where all individual dwelling units and contiguous attic and crawl spaces are separated from each other and public or common areas by at least 1-hour fire partitions and each individual dwelling unit has an exit directly to a public way, exit court or yard.
2. A manual fire alarm system is not required in buildings containing fewer than 15 student apartments.

907.2.9.1.2Automatic fire alarm system.An automatic fire alarm system without alarm notification appliances shall be installed in accordance with this section in Group R-2 student apartments and student related uses. The activation of any smoke detector required by this section shall initiate a signal at a central station or a constantly attended location. Smoke detectors shall be located as follows:

1. In each mechanical equipment, electrical, transformer, telephone equipment or similar room, in elevator machine rooms, and in elevator lobbies.
2. In air distribution systems in accordance with Section 606 of the New York City Mechanical Code.
3. Through out all public corridors serving student apartments and student related uses. Student related uses shall include common spaces such as recreation rooms, lounges, dining rooms, laundry rooms, and storage rooms. However,

smoke detectors shall not be required in such public corridors in buildings containing fewer than 15 student apartments.

Exception: An automatic fire alarm system is not required in buildings not over two stories in height where all individual dwelling units and contiguous attic and crawl spaces are separated from each other and public or common areas by at least 1-hour fire barriers and each individual dwelling unit has an exit directly to a public way, exit court or yard.

907.2.9.1.3Smoke alarms.Smoke alarms shall be installed as required by Section 907.2.10.

907.2.10Single- and multiple-station smoke alarms.Listed single- and multiple-station smoke alarms shall be installed in accordance with the provisions of this code and the household fire-warning equipment provisions of NFPA72.

907.2.10.1Where required.Single- or multiple-station smoke alarms shall be installed in the locations described in Sections 907.2.10.1.1.

907.2.10.1.1Smoke alarms in Groups R-2, R-3, and I-1.Single-or multiple-station smoke alarms shall be installed and maintained in Groups R-2, R-3, and I-1, regardless of occupant load at all of the following locations within a dwelling unit:

1. On the ceiling or wall outside of each room used for sleeping purposes within 15 feet (4572 mm) from the door to such room.

2. In each room used for sleeping purposes.

3. In each story within a dwelling unit, including below-grade stories and penthouses of any area, but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

907.2.10.2Power source.Required smoke alarms shall receive their primary power from a dedicated branch circuit or the unswitched portion of a branch circuit also used for power and lighting, and shall be equipped with a battery backup. Smoke alarms shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than as required for over-current protection.

907.2.10.3Interconnection.Where more than one smoke alarm or detector is required to be installed within an individual dwelling unit in Group R-2, R-3, or within an individual dwelling unit or sleeping unit in Group R-1, the smoke alarms or detectors shall be interconnected in such a manner that the activation of one alarm or detector will activate all of the alarms or detectors in the individual unit. The alarm or detector shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed.

907.2.10.4Acceptance testing.When the installation of the alarm devices is complete, each detector and interconnecting wiring for multiple-station alarm devices shall be tested in accordance with the household fire warning equipment provisions of NFPA 72.

907.2.10.5Group R-2 Occupancy.Smoke alarms shall be provided with the capability to support visible alarm notification appliances in accordance with ICC/ANSI A117.1.

907.2.11Special amusement buildings.An approved automatic smoke detection system shall be provided in special amusement buildings in accordance with this section.

Exception: In areas where ambient conditions will cause a smoke detection system to alarm, an approved alternative type of automatic detector shall be installed.

907.2.11.1Alarm. Activation of any single smoke detector, the automatic sprinkler system or any other automatic fire detection device shall immediately sound an alarm at the building at a constantly attended location from which emergency action can be initiated, including the capability of manual initiation of requirements in Section 907.2.11.2.

907.2.11.2System response. The following minimum system actuations and responses shall be required upon approval by the department and the Fire Department. The activation of two or more smoke detectors, a single smoke detector with alarm verification, the automatic sprinkler system or other approved fire detection device shall automatically:

1. Cause illumination of the means of egress with light of not less than 1 foot-candle (11 lux) at the walking surface level;

2. Stop any conflicting or confusing sounds and visual distractions; and

3. Activate an approved directional exit marking that will become apparent in an emergency. Such system response shall also include activation of a prerecorded message, clearly audible throughout the special amusement building, instructing patrons to proceed to the nearest exit. Alarm signals used in conjunction with the prerecorded message shall produce a sound that is distinctive from other sounds used during normal operation. The wiring to the auxiliary devices and equipment used to accomplish the above fire safety functions shall be monitored for integrity in accordance with NFPA 72.

907.2.11.3Emergency voice/alarm communication system. An emergency voice/alarm communication system, which is also allowed to serve as a public address system, shall be installed in accordance with NFPA 72, and shall be audible throughout the entire special amusement building.

907.2.12High-rise buildings. Buildings constructed in accordance with Section 403 and having floors used for human occupancy located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access shall be provided with automatic fire detection connected to an automatic fire alarm system in accordance with Section 907.2.12.1 and an emergency voice/alarm communication system in accordance with Section 907.2.12.2.

Exceptions:

1. Open parking garages in accordance with Section 406.3.

2. Buildings with an occupancy in Group A-5.

3. Low-hazard special occupancies in accordance with Section 503.1.2.

4. Buildings with an occupancy in Group H-1, H-2 or H-3 in accordance with Section 415.

907.2.12.1Automatic fire detection. In addition to smoke detection otherwise required by this code, smoke detectors shall be provided in accordance with this section. Smoke detectors shall be connected to an automatic fire alarm system. The activation of any detector required by this section shall operate the emergency voice/alarm communication system. Smoke detectors shall be located as follows:

1. In each mechanical equipment, electrical, transformer, telephone equipment or similar room, in elevator machine rooms and in elevator lobbies.

2. In air distribution systems in accordance with Section 606 of the New York City Mechanical Code.

3. In Group R-1 occupancies a listed smoke detector is allowed to be used in each return air riser carrying not more than 5,000 cfm (2.4 m³/s) and serving not more than 10 air inlet openings.

Exception for Group R-2 occupancies: In R-2 occupancies, the activation of smoke detectors shall initiate a signal at a central station or a constantly attended location and shall not initiate a signal to an alarm notification appliance.

907.2.12.2Emergency voice/alarm communication system.The operation of any automatic fire detector, sprinkler water-flow device or manual fire alarm box shall automatically sound an alarm tone followed by live voice instructions giving approved information and directions on a general or selective basis to the following areas on a minimum of the alarming floor, the floor above and the floor below in accordance with the New York City Fire Code.

1. Elevator lobbies.
2. Corridors.
3. Rooms and tenant spaces exceeding 1,000 square feet (93 m²) in area.
4. Dwelling units in Group R-1 occupancies.
5. Areas of rescue assistance as defined in Section 1002.

Exceptions:

1. Group I-1 and I-2 occupancies. In Group I-1 and I-2 occupancies, the alarm shall sound in a constantly attended area and a general occupant notification shall be broadcast over the overhead page.

2. Group R-2 occupancies 125 feet or less in height. Emergency voice/alarm communication systems shall not be required in Group R-2 occupancies in buildings 125 feet (33 100 mm) or less in height.

3. Group R-2 occupancies greater than 125 feet in height. In Group R-2 occupied buildings greater than 125 feet (33 100 mm) in height, activation of any smoke detector or sprinkler water flow device shall initiate a signal at a central station or constantly attended location and shall not initiate a signal to an alarm notification appliance. An emergency voice/alarm communication system shall not be required. However, a one-way voice communication shall be provided between the fire command center for use by Fire Department personnel and the following terminal areas:

3.1. Within dwelling units. An intercom system may be utilized when provided with an override feature for use by Fire Department personnel. Such intercom system shall comply with rules promulgated by the commissioner establishing installation requirements.

3.2. Within required exit stairs. Annunciation devices shall be located at least on every other story. Such annunciation devices shall comply with rules promulgated by the commissioner establishing installation requirements.

907.2.12.2.1Manual override.A manual override for emergency voice communication shall be provided for all paging zones with all-call capability and feature.

907.2.12.2.2Live voice messages.The emergency voice/alarm communication system shall have multi-channel capability to allow live voice messages via independent audio channels to the stairs, to all or selected floors without automatic interruption of the alarm tones on the floor of incidence, floor above or floor below.

907.2.12.2.3Standard.The emergency voice/alarm communication system shall be designed and installed in accordance with NFPA 72 as modified in Appendix Q.

907.2.12.3Fire Department communication system.An approved two-way, fire department communication system designed and installed in accordance with NFPA 72 shall be provided for Fire Department use. It shall operate between a fire command center complying with Section 911 and elevators, elevator lobbies, emergency power rooms, fire pump rooms, areas of refuge and inside enclosed exit stairways. The Fire Department communication device shall be provided

at each floor level within each enclosed stairway.

Exceptions:

1. Fire Department radio systems where approved by the Fire Department may be installed in lieu of a two-way fire department communication system.

2. Group R-2 occupancy.

907.2.13Atriums connecting more than two stories.A fire alarm system shall be installed in occupancies with an atrium that connects more than two stories. The system shall be activated in accordance with Section 907.6. Such occupancies in Group A, E or M shall be provided with an emergency voice/alarm communication system complying with the requirements of Section 907.2.12.2.

907.2.14High-piled combustible storage areas.An automatic fire detection system shall be installed throughout high-piled combustible storage areas where required by the New York City Fire Code.

907.2.15Delayed egress locks.Where delayed egress locks are installed on means of egress doors in accordance with Section 1008.1.8.6, an automatic smoke or heat detection system shall be installed as required by that section.

907.2.16Aerosol storage uses.Aerosol storage rooms and general-purpose warehouses containing aerosols shall be provided with an approved manual fire alarm system where required by the New York City Fire Code.

907.2.17Lumber, plywood and veneer mills.Lumber, plywood and veneer mills shall be provided with a manual fire alarm system.

907.2.18Underground buildings with smoke exhaust system.Where a smoke exhaust system is installed in an underground building as required by Section 405, automatic fire detectors shall be provided in accordance with this section.

907.2.18.1Smoke detectors.A minimum of one smoke detector listed for the intended purpose shall be installed in the following areas:

1. Mechanical equipment, electrical, transformer, telephone equipment, elevator machine or similar rooms.

2. Elevator lobbies.

3. The main supply and return and exhaust air plenum of each air-conditioning system serving more than one story and located in a serviceable area downstream from filters on supply ducts and in return/exhaust ducts downstream of the last duct inlet.

4. Each connection to a vertical duct or riser serving two or more floors from return air ducts or plenums of heating, ventilating and air-conditioning systems, except that in Group R occupancies, a listed smoke detector is allowed to be used in each return air riser carrying not more than 5,000 cfm (2.4 m³/s) and serving not more than 10 air inlet openings.

907.2.18.2Alarm required.Activation of the smoke exhaust system shall activate an audible alarm at a constantly attended location.

907.2.19Underground buildings.In underground buildings complying with Section 405 where the lowest level of a structure is more than 30 feet (18 144 mm) below the lowest level of exit discharge, the structure shall be equipped throughout with a manual and automatic fire alarm system, including an emergency voice/alarm communication system installed in accordance with Section 907.2.12.2.

907.2.19.1Public address system.In underground buildings complying with Section 405 where a fire alarm system is not required by Section 907.2, a public address system shall be provided that shall be capable of transmitting voice communications to the highest level of exit discharge serving the underground portions of the structure and all levels below.

907.2.20Covered mall buildings.Covered mall buildings exceeding 50,000 square feet (4645 m²) in total floor area shall be provided with an emergency voice/alarm communication system. An emergency voice/alarm communication system serving a mall, required or otherwise, shall be accessible to the Fire Department. The system shall be provided in accordance with Section 907.2.12.2.

907.2.20.1Battery rooms.An approved automatic smoke detection system shall be installed in areas containing stationary lead-acid battery systems having a liquid capacity of more than 50 gallons (189.3 L). The detection system shall be supervised by an approved central, proprietary or remote station service or a local alarm that will sound an audible signal at a constantly attended location.

907.3Manual fire alarm boxes.Manual fire alarm boxes shall be installed in accordance with Sections 907.3.1 through 907.3.5.

907.3.1Location.Manual fire alarm boxes shall be located not more than 5 feet (1524 mm) from the entrance to each exit. Additional manual fire alarm boxes shall be located so that travel distance to the nearest box does not exceed 200 feet (60 960 mm).

907.3.2Height.The height of the manual fire alarm boxes shall be a minimum of 42 inches (1067 mm) and a maximum of 48 inches (1219 mm), measured vertically, from the floor level to the activating handle or lever of the box.

907.3.3Color.Manual fire alarm boxes shall be red in color.

907.3.4 Signs.Where fire alarm systems are not monitored by a supervising station, an approved permanent sign that reads: WHEN ALARM SOUNDS-CALL FIRE DEPARTMENT shall be installed adjacent to each manual fire alarm box.

Exception: Where the manufacturer has permanently provided this information on the manual fire alarm box.

907.3.5Protective covers.The Fire Department is authorized to require the installation of listed manual fire alarm box protective covers to prevent malicious false alarms or provide the manual fire alarm box with protection from physical damage. The protective cover shall be transparent or red in color with a transparent face to permit visibility of the manual fire alarm box. Each cover shall include proper operating instructions. A protective cover that emits a local alarm signal shall not be installed unless approved.

907.4Power supply.The primary and secondary power supplies for the fire alarm system shall be provided in accordance with NFPA 72.

907.5Wiring.Wiring shall comply with the requirements of the New York City Electrical Code and NFPA 72. Wireless protection systems utilizing radio-frequency transmitting devices shall comply with the special requirements for supervision of low-power wireless systems in NFPA 72.

907.6Activation.Where an alarm notification system is required by another section of this code, it shall be activated by:

1. A required automatic fire alarm system.
2. Sprinkler water-flow devices.

3. Required manual fire alarm boxes.

4. Other required types of automatic fire detection devices or suppression systems.

907.7 Presignal system. Presignal systems shall not be installed unless approved by the Fire Department. Where a presignal system is installed, 24-hour personnel supervision shall be provided at a location approved by the Fire Department. Where a connection to a supervising station is required, the transmission of the alarm signal to the supervising station shall activate upon the initial alarm signal.

907.8 Zones. Each floor shall be zoned separately and a zone shall not exceed 22,500 square feet (2090 m²). The length of any zone shall not exceed 300 feet (91 440 mm) in any direction.

Exception: Automatic sprinkler system zones shall not exceed the area permitted by NFPA 13.

907.8.1 Zoning indicator panel. A zoning indicator panel and the associated controls shall be provided at the main building entrance accessible to responding Fire Department personnel and in other locations approved by the department and the Fire Department. The visual zone indication shall lock in until the system is reset and shall not be canceled by the operation of an audible alarm-silencing switch.

907.8.2 High-rise buildings. In high-rise buildings constructed in accordance with Section 403 and used for human occupancy that have occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, a separate zone by floor shall be provided for all of the following types of alarm-initiating devices where provided:

1. Smoke detectors.
2. Sprinkler water-flow devices.
3. Manual fire alarm boxes.
4. Other approved types of automatic fire detection devices or suppression systems.

907.9 Alarm notification appliances. Alarm notification appliances listed for their purpose shall be provided.

907.9.1 Visible alarms. Visible alarm notification appliances shall be provided in accordance with Sections 907.9.1.1 through 907.9.1.3.

Exception: Visible alarm notification appliances shall not be required in exits.

907.9.1.1 Public and common areas. Visible alarm notification appliances shall be provided in public areas and common areas.

907.9.1.2 Employee work areas. Where employee work areas have audible alarm coverage, the wiring systems shall be designed so that visible alarm notification appliances can be integrated into the alarm system.

907.9.1.3 Groups R-1. Group R-1 dwelling units in accordance with Table 907.9.1.3 shall be provided with a visible alarm notification appliance, activated by both the in-room smoke detector and the building fire alarm system. [F] Table 907.9.1.3 Visible and Audible Alarms Number of Dwelling Units Dwelling Units With Visible and Audible Alarms 6 to 25 226 to 50 451 to 75 776 to 100 9101 to 150 12151 to 200 14201 to 300 17301 to 400 20401 to 500 22501 to 1,000 5% of total 1,001 and over 50 plus 3 for each 100 over 1,000

907.9.2 Audible alarms. Audible alarm notification appliances shall be provided and shall sound a distinctive sound that is not to be used for any purpose other than that of a fire alarm. The audible alarm notification appliances shall

provide a sound pressure level of 15 decibels (dBA) above the average ambient sound level or 5 dBA above the maximum sound level having a duration of at least 60 seconds, whichever is greater, in every occupied space within the building. The minimum sound pressure levels shall be: 70 dBA in occupancies in Groups R and I-1; 90 dBA in mechanical equipment rooms and 60 dBA in other occupancies. The maximum sound pressure level for audible alarm notification appliances shall be 120 dBA at the minimum hearing distance from the audible appliance. Where the average ambient noise is greater than 105 dBA, visible alarm notification appliances shall be provided in accordance with NFPA72 and audible alarm notification appliances shall not be required to provide a maximum sound pressure level above 120 dBA.

Exception: Visible alarm notification appliances shall be allowed in lieu of audible alarm notification appliances in critical-care areas of Group I-2 occupancies.

907.10Fire safety functions.Where a fire alarm system is required by Section 907.2, automatic fire detectors utilized for the purpose of performing fire safety functions shall be connected to the building's fire alarm control panel. Detectors shall, upon actuation, perform the intended function and activate the alarm notification appliances or a visible and audible supervisory signal at a constantly attended location. In buildings not required to be equipped with a fire alarm system, the automatic fire detector shall be powered by normal electrical service and, upon actuation, perform the intended function. The detectors shall be located in accordance with NFPA 72.

907.11Duct smoke detectors.Where a fire alarm system is provided, duct smoke detectors shall be connected to the building's fire alarm control panel. Activation of a duct smoke detector shall initiate a visible and audible supervisory signal at a constantly attended location. Duct smoke detectors shall not be used as a substitute for required open-area detection.

Exceptions:

1. The supervisory signal at a constantly attended location is not required where duct smoke detectors activate the building's alarm notification appliances.

2. In occupancies not required to be equipped with a fire alarm system, actuation of a smoke detector shall activate a visible and audible signal in an approved location. Smoke detector trouble conditions shall activate a visible or audible signal in an approved location and shall be identified as air duct detector trouble.

907.12Access.Access shall be provided to each detector for periodic inspection, maintenance and testing.

907.13Fire-extinguishing systems.Where a fire alarm system is required by another section of this code or is otherwise installed, automatic fire-extinguishing systems shall be connected to the building fire alarm system.

907.14Monitoring.Where required by this chapter or the New York City Fire Code, an approved supervising station in accordance with NFPA 72 shall monitor fire alarm systems.

Exception: Supervisory service is not required for:

1. Single- and multiple-station smoke alarms required by Section 907.2.10.
2. Smoke detectors in Group I-3 occupancies.
3. Automatic sprinkler systems in one- and two-family dwellings.

907.15Automatic telephone-dialing devices.Automatic telephone-dialing devices used to transmit an emergency alarm shall not be connected to any Fire Department telephone number unless approved by the Fire Commissioner.

907.16Acceptance tests.Upon completion of the installation of the fire alarm system, alarm notification appliances

and circuits, alarm-initiating devices and circuits, supervisory-signal initiating devices and circuits, signaling line circuits, and primary and secondary power supplies shall be tested in accordance with NFPA 72.

907.17Record of completion.A record of completion in accordance with NFPA 72 verifying that the system has been installed in accordance with the approved construction documents and specifications shall be provided.

907.18Instructions.Operating, testing and maintenance instructions, and record drawings ("as built") and equipment specifications shall be provided at an approved location.

907.19Inspection, testing and maintenance.The maintenance and testing schedules and procedures for fire alarm and fire detection systems shall be in accordance with the New York City Fire Code.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

907.2.1 amended L.L. 8/2008 § 108, eff. July 1, 2008.

907.2.10.5 added L.L. 8/2008 § 108, eff. July 1, 2008.

907.2.13 amended L.L. 8/2008 § 108, eff. July 1, 2008.

907.9.1.3 amended L.L. 8/2008 § 108, eff. July 1, 2008.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 908: EMERGENCY ALARM SYSTEMS

NYC Administrative Code § 28-BC 908

908.1 Group H occupancies.

Emergency alarms for the detection and notification of an emergency condition in Group H occupancies shall be provided in accordance with Section 414.7.

908.2Group H-5 occupancy.Emergency alarms for notification of an emergency condition in an HPM facility shall be provided as required in Section 415.9.4.6. A continuous gas-detection system shall be provided for HPM gases in accordance with Section 415.9.7.

908.3Highly toxic and toxic materials.A gas detection system shall be provided for indoor storage and use of highly toxic and toxic gases to detect the presence of gas at or below the permissible exposure limit (PEL) or ceiling limit of the gas for which detection is provided. The system shall be capable of monitoring the discharge from the treatment system at or below one-half the immediately dangerous to life and health (IDLH) limit.

Exception: A gas detection system is not required for toxic gases when the physiological warning properties are at a level below the accepted PEL for the gas.

908.3.1Alarms.The gas detection system shall initiate a local alarm and transmit a signal to a constantly attended control station when a short-term hazard condition is detected. The alarm shall be both visible and audible and shall provide warning both inside and outside the area where gas is detected. The audible alarm shall be distinct from all other alarms.

Exception: Signal transmission to a constantly attended control station is not required when not more than one cylinder of highly toxic or toxic gas is stored.

908.3.2Shutoff of gas supply.The gas detection system shall automatically close the shutoff valve at the source on gas supply piping and tubing related to the system being monitored for whichever gas is detected.

Exception: Automatic shutdown is not required for reactors utilized for the production of highly toxic or toxic compressed gases where such reactors are:

1. Operated at pressures less than 15 pounds per square inch gauge (psig) (103.4 kPa).
2. Constantly attended.
3. Provided with readily accessible emergency shutoff valves.

908.3.3 Valve closure. The automatic closure of shutoff valves shall be in accordance with the following:

1. When the gas-detection sampling point initiating the gas detection system alarm is within a gas cabinet or exhausted enclosure, the shutoff valve in the gas cabinet or exhausted enclosure for the specific gas detected shall automatically close.
2. Where the gas-detection sampling point initiating the gas detection system alarm is within a gas room and compressed gas containers are not in gas cabinets or exhausted enclosures, the shutoff valves on all gas lines for the specific gas detected shall automatically close.
3. Where the gas-detection sampling point initiating the gas detection system alarm is within a piping distribution manifold enclosure, the shutoff valve for the compressed container of specific gas detected supplying the manifold shall automatically close.

Exception: When the gas-detection sampling point initiating the gas-detection system alarm is at a use location or within a gas valve enclosure of a branch line downstream of a piping distribution manifold, the shutoff valve in the gas valve enclosure for the branch line located in the piping distribution manifold enclosure shall automatically close.

908.4 Ozone gas-generator rooms. Ozone gas-generator rooms shall be equipped with a continuous gas-detection system that will shut off the generator and sound a local alarm when concentrations above the PEL occur.

908.5 Repair garages. A flammable-gas detection system shall be provided in repair garages for vehicles fueled by enumerated gases in accordance with Section 406.6.6.

908.6 Refrigerant detector. Machinery rooms shall contain a refrigerant detector with an audible and visual alarm. The detector, or a sampling tube that draws air to the detector, shall be located in an area where refrigerant from a leak will concentrate. The alarm shall be actuated at a value not greater than the corresponding TLV-TWA values for the refrigerant classification indicated in the New York City Mechanical Code. Detectors and alarms shall be placed in approved locations. Refrigerant detectors shall initiate all functions as required by the New York City Mechanical Code and New York City Fire Code.

Exception: Detectors are not required in ammonia system machinery rooms equipped with a vapor detector in accordance with the New York City Mechanical Code.

908.7 Carbon monoxide alarms and detectors. Carbon monoxide alarms and detectors shall be provided and installed in accordance with Sections 908.7.1 through 908.7.4.

908.7.1 Group I-1 and R occupancies. Listed carbon monoxide alarms or detectors shall be installed as follows:

1. Group R-1. Carbon monoxide detectors and audible notification appliances shall be installed in affected dwelling units as per Section 908.7.1.1 and shall be annunciated by dwelling unit at a constantly attended location from which the fire alarm system is capable of being manually activated.
2. Groups I-1, R-2 and R-3. Carbon monoxide alarms shall be installed in affected dwelling units as per Section

908.7.1.1.

908.7.1.1 Affected dwelling units. Carbon monoxide alarms or detectors shall be required within the following dwelling units:

1. Units on the same story where carbon monoxide producing equipment or enclosed parking is located.
2. Units on the stories above and below the floor where carbon monoxide producing equipment or enclosed parking is located.
3. Units in a building containing a carbon monoxide producing furnace, boiler, or water heater as part of a central system.
4. Units in a building served by a carbon monoxide producing furnace, boiler, or water heater as part of a central system that is located in an adjoining or attached building.

908.7.1.1.1 Required locations within dwelling units. Carbon monoxide alarms or detectors shall be located within dwelling units as follows:

1. Outside of any room used for sleeping purposes, within 15 feet (4572 mm) of the entrance to such room.
2. In any room used for sleeping purposes.
3. On any story within a dwelling unit, including below-grade stories and penthouses of any area, but not including crawl spaces and uninhabitable attics.

908.7.1.1.2 Installation requirements. Carbon monoxide alarms or detectors shall comply with the power source, interconnection, and acceptance testing requirements as required for smoke alarms in accordance with Sections 907.2.10.2 through 907.2.10.4.

908.7.2 Group E, I-2 and I-4 occupancies. Listed carbon monoxide alarms or detectors shall be installed as follows:

1. Carbon monoxide alarms shall be installed within any occupied space containing carbon monoxide producing equipment and in all occupied spaces above and below the story where carbon monoxide producing equipment or enclosed parking is located.
2. Carbon monoxide detectors and audible notification appliances shall be installed within any unoccupied space containing carbon monoxide producing equipment. Such detector shall activate an audible alarm at a constantly attended location.

908.7.3 Installation. Carbon monoxide alarms and detectors shall be listed in accordance with UL 2034 and UL 2075.

908.8 Medical gas. Medical gas pressure monitoring and alarm systems shall be provided in accordance with NFPA 99 and NFPA 99C.

908.9 Flammable gas. Areas within buildings containing flammable gas distribution piping operating at levels above 15 pounds per square inch gauge (psig) (103.4 kPa) shall be provided with an approved flammable gas detection-alarm system.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 909: SMOKE CONTROL SYSTEMS

NYC Administrative Code § 28-BC 909

909.1 Scope and purpose.

This section applies to mechanical or passive smoke control systems when they are required by other provisions of this code. The purpose of this section is to establish minimum requirements for the design, installation and acceptance testing of smoke control systems that are intended to provide a tenable environment for the evacuation or relocation of occupants. These provisions are not intended for the preservation of contents, the timely restoration of operations or for assistance in fire suppression. Smoke control systems regulated by this section serve a different purpose than the smoke- and heat-venting provisions found in Section 910. Mechanical smoke control systems shall not be considered exhaust systems under Chapter 5 of the New York City Mechanical Code.

909.1.1 Definitions. These definitions are added for the purposes of Section 909 only.

POST-FIRE SMOKE PURGE SYSTEM. A mechanical or natural ventilation system intended to move smoke from the smoke zone to the exterior of the building.

PRESSURIZATION. Creation and maintenance of pressure levels in zones of a building, including elevator shafts and stairwells, that are higher than the pressure level at the smoke source, such pressure levels being produced by positive pressures of a supply of uncontaminated air; by exhausting air and smoke at the smoke source; or by a combination of these methods.

SMOKE. Airborne solid and liquid particulates and gases evolved when a material undergoes pyrolysis or combustion, including the quality of air that is entrained or otherwise mixed into the mass.

SMOKE BARRIER. See Section 702.1

SMOKE-CONTROL MODE. A predefined operational configuration of a system or device for the purpose of smoke control.

SMOKE-CONTROL SYSTEM, MECHANICAL. An engineered system that uses mechanical fans to produce pressure differences across smoke barriers or that establishes air flows to limit and direct smoke movement.

SMOKE-CONTROL SYSTEM, PASSIVE. A system of smoke barriers arranged to limit the migration of smoke.

SMOKE-CONTROL ZONE. A space within a building enclosed by smoke barriers.

SMOKE DAMPER. See Section 702.1.

STACK EFFECT. Vertical air flow within buildings caused by temperature differences.

TENABLE ENVIRONMENT. An environment in which the quality and location of smoke is limited or otherwise restricted to allow for ready evacuation through the space.

909.2 General design requirements. Buildings, structures or parts thereof required by this code to have a smoke control system or systems shall have such systems designed in accordance with the applicable requirements of Section 909 and the generally accepted and well-established principles of engineering relevant to the design. The construction documents shall include sufficient information and detail to adequately describe the elements of the design necessary for the proper implementation of the smoke control systems. These documents shall be accompanied by sufficient information and analysis to demonstrate compliance with these provisions.

909.3 Special inspection and test requirements. In addition to the ordinary inspection and test requirements that buildings, structures and parts thereof are required to undergo, smoke control systems subject to the provisions of Section 909 shall undergo special inspections and tests sufficient to verify the proper commissioning of the smoke control design in its final installed condition. The design submission accompanying the construction documents shall clearly detail procedures and methods to be used and the items subject to such inspections and tests. Such commissioning shall be in accordance with generally accepted engineering practice and, where possible, based on published standards for the particular testing involved. The special inspections and tests required by this section shall be conducted under the same terms in Section 1704.

909.3.1 Periodic testing. Smoke control systems shall be periodically tested to ensure proper operation. A record of each inspection and test shall be maintained on the premises by the owner or lessee, and the records for at least the last two years of operation shall be made available for inspection by the department and the Fire Commissioner.

909.4 Analysis. A rational analysis supporting the types of smoke control systems to be employed, their methods of operation, the systems supporting them and the methods of construction to be utilized shall accompany the submitted construction documents and shall include, but not be limited to, the items indicated in Sections 909.4.1 through 909.4.6. The basis of design and design analysis of the smoke control system shall be submitted to the department.

909.4.1 Stack effect. The system shall be designed such that the maximum probable normal or reverse stack effect will not adversely interfere with the system's capabilities. In determining the maximum probable stack effect, altitude, elevation, weather history and interior temperatures shall be used.

909.4.2 Temperature effect of fire. Buoyancy and expansion caused by the design fire in accordance with Section 909.9 shall be analyzed. The system shall be designed such that these effects do not adversely interfere with the system's capabilities.

909.4.3 Wind effect. The design shall consider the adverse effects of wind. Such consideration shall be consistent with the wind-loading provisions of Chapter 16.

909.4.4 HVAC systems. The design shall consider the effects of the heating, ventilating and air-conditioning (HVAC) systems on both smoke and fire transport. The analysis shall include all permutations of systems status. The

design shall consider the effects of the fire on the HVAC systems.

909.4.5Climate. The design shall consider the effects of low temperatures on systems, property and occupants. Air inlets and exhausts shall be located so as to prevent snow or ice blockage.

909.4.6Duration of operation. All portions of active or passive smoke control systems shall be capable of continued operation after detection of the fire event for not less than 20 minutes.

909.5Smoke barrier construction. Smoke barriers shall comply with Section 709, and shall be constructed and sealed to limit leakage areas exclusive of protected openings. The maximum allowable leakage area shall be the aggregate area calculated using the following leakage area ratios:

1. Walls: $A/A_w = 0.00100$
2. Exit enclosures: $A/A_w = 0.00035$
3. All other shafts: $A/A_w = 0.00150$
4. Floors and roofs: $A/A_F = 0.00050$

where:

A = Total leakage area, square feet (m²).

A_F = Unit floor or roof area of barrier, square feet (m²).

A_w = Unit wall area of barrier, square feet (m²).

The leakage area ratios shown do not include openings due to doors, operable windows or similar gaps. These shall be included in calculating the total leakage area.

909.5.1Leakage area. The total leakage area of the barrier is the product of the smoke barrier gross area multiplied by the allowable leakage area ratio, plus the area of other openings such as gaps and operable windows. Compliance shall be determined by achieving the minimum air pressure difference across the barrier with the system in the smoke control mode for mechanical smoke control systems. Passive smoke control systems tested using other approved means such as door fan testing shall be approved by the department and the Fire Commissioner.

909.5.2Opening protection. Openings in smoke barriers shall be protected by automatic-closing devices actuated by the required controls for the mechanical smoke control system. Door openings shall be protected by door assemblies complying with Section 715.3.3.

Exceptions:

1. Passive smoke control systems with automatic-closing devices actuated by spot-type smoke detectors listed for releasing service installed in accordance with Section 907.10.

2. Fixed openings between smoke zones that are protected utilizing the airflow method.

3. In Group I-2, where such doors are installed across corridors, a pair of opposite-swinging doors without a center mullion shall be installed having vision panels with approved fire-rated glazing materials in approved fire-rated frames, the area of which shall not exceed that tested. The doors shall be close fitting within operational tolerances and shall not have undercuts, louvers or grilles. The doors shall have head and jamb stops, astragals or rabbets at meeting edges, and automatic-closing devices. Positive-latching devices are not required.

4. Group I-3.

5. Openings between smoke zones with clear ceiling heights of 14 feet (4267 mm) or greater and bank-down capacity of greater than 20 minutes as determined by the design fire size.

909.5.2.1 Ducts and air transfer openings. Ducts and air transfer openings are required to be protected with a minimum Class II, 250(degrees)F (121(degrees)C) smoke damper complying with Section 716.

909.6 Pressurization method. The primary mechanical means of controlling smoke shall be by pressure differences across smoke barriers. Maintenance of a tenable environment is not required in the smoke control zone of fire origin.

909.6.1 Minimum pressure difference. The minimum pressure difference across a smoke barrier shall be 0.05-inch water gage (0.0124 kPa) in fully sprinklered buildings. In buildings permitted to be other than fully sprinklered, the smoke control system shall be designed to achieve pressure differences at least two times the maximum calculated pressure difference produced by the design fire, but in no case less than the values indicated in Table 909.6.1: Table 909.6.1 Minimum Pressure Differences Across Smoke Barriers Ceiling Height Minimum Design Pressure Difference Less than 15 feet (4572 mm) 0.10-inch water gage (0.0259 kPa) Equal to or greater than 15 feet (4572 mm), but less than 21 feet (6401 mm) 0.14-inch water gage (0.0349 kPa) Equal to or greater than 21 feet (6401 mm) 0.18-inch water gage (0.0448 kPa)

909.6.2 Maximum pressure difference. The maximum air pressure difference across a smoke barrier shall be determined by required door-opening or closing forces. The actual force required to open exit doors when the system is in the smoke control mode shall be in accordance with Section 1008.1.2. Opening and closing forces for other doors shall be determined by standard engineering methods for the resolution of forces and reactions. The calculated force to set a side-hinged, swinging door in motion shall be determined by:

$$F = F_{dc} + K(WADP)/2(W-d) \text{ (Equation 9-1)}$$

where:

A=Door area, square feet (m²).

d=Distance from door handle to latch edge of door, feet (m).

F=Total door opening force, pounds (N).

F_{dc}=Force required to overcome closing device, pounds (N).

K=Coefficient 5.2 (1.0).

W=Door width, feet (m).

DP=Design pressure difference, inches of water (Pa).

909.7 Air flow design method. When approved by the department, smoke migration through openings fixed in a permanently open position, which are located between smoke control zones by the use of the airflow method, shall be permitted. The design air flow shall be in accordance with this section. Air flow shall be directed to limit smoke migration from the fire zone. The geometry of openings shall be considered to prevent flow reversal from turbulent effects.

909.7.1 Velocity. The minimum average velocity through a fixed opening shall not be less than:

$$v = 217.2 [h(T_f; m_s T_o)/(T_f; p_l 460)]^{1/2} \text{ (Equation 9-2)}$$

For SI: $v = 119.9 [h(T_f - T_o)/T_f]^{1/2}$

where:

h =Height of opening, feet (m).

T_f =Temperature of smoke, (degrees)F ((degrees)K).

T_o =Temperature of ambient air, (degrees)F ((degrees)K).

v =Air velocity, feet per minute (m/minute).

909.7.2 Prohibited conditions. This method shall not be employed where either the quantity of air or the velocity of the airflow will adversely affect other portions of the smoke control system, unduly intensify the fire, disrupt plume dynamics or interfere with exiting. In no case shall airflow toward the fire exceed 200 feet per minute (1.02 m/s). Where the formula in Section 909.7.1 requires airflow to exceed this limit, the airflow method shall not be used.

909.8 Exhaust method. When approved by the department, mechanical smoke control for large enclosed volumes, such as in atriums or malls, shall be permitted to utilize the exhaust method. The design exhaust volumes shall be in accordance with this section.

909.8.1 Exhaust rate. The height of the lowest horizontal surface of the accumulating smoke layer shall be maintained at least 6 feet (1829 mm) above any walking surface that forms a portion of a required egress system within the smoke zone. The required exhaust rate for the zone shall be the largest of the calculated plume mass flow rates for the possible plume configurations. Provisions shall be made for natural or mechanical supply of air from outside or adjacent smoke zones to make up for the air exhausted. Makeup airflow rates, when measured at the potential fire location, shall not increase the smoke production rate beyond the capacity of the smoke control system. The temperature of the makeup air shall be such that it does not expose temperature-sensitive fire protection systems beyond their limits.

909.8.2 Axisymmetric plumes. The plume mass flow rate ($\dot{m}_p$), in pounds per second (kg/s), shall be determined by placing the design fire center on the axis of the space being analyzed. The limiting flame height shall be determined by:

$$z_t = 0.533 Q_c^{2/5} \text{ (Equation 9-3)}$$

$$\text{For SI: } z_t = 0.166 Q_c^{2/5}$$

where:

$\dot{m}_p$ =Plume mass flow rate, pounds per second (kg/s).

Q =Total heat output.

Q_c =Convective heat output, British thermal units per second (kW). (The value of Q_c shall not be taken as less than 0.70Q).

z =Height from top of fuel surface to bottom of smoke layer, feet (m).

z_t =Limiting flame height, feet (m). The z_t value must be greater than the fuel equivalent diameter (see Section 909.9).

for $z \leq z_t$

$$\dot{m}_p = 0.022 Q_c^{1/3} z^{5/3} \text{ ;pl } 0.0042 Q_c$$

For SI: $m_p = 0.071 Q_c^{1/3} z^{5/3}$; pl $0.0018 Q_c$

for $z = z_t$

$m_p = 0.011 Q_c$

For SI: $m_p = 0.035 Q_c$

for z ; lt z_t

$m_p = 0.0208 Q_c^{3/5} z$

For SI: $m_p = 0.032 Q_c^{3/5} z$

To convert m_p from pounds per second of mass flow to a volumetric rate, the following equation shall be used:

$V = 60 m_p / \rho$ (Equation 9-4)

where:

V = Volumetric flow rate, cubic feet per minute (m^3/s).

ρ = Density of air at the temperature of the smoke layer, pounds per cubic feet (T: in (degrees)F) [kg/m^3 (T: in (degrees)C)].

909.8.3 Balcony spill plumes. The plume mass flow rate (m_p) for spill plumes shall be determined using the geometrically probable width based on architectural elements and projections in the following equation:

$m_p = 0.124 (QW^2)^{1/3} (z_b ; pl 0.25H)$ (Equation 9-5)

For SI: $m_p = 0.36 (QW^2)^{1/3} (z_b ; pl 0.25H)$

where:

H = Height above fire to underside of balcony, feet (m).

m_p = Plume mass flow rate, pounds per second (kg/s).

Q = Total heat output.

W = Plume width at point of spill, feet (m).

z_b = Height from balcony, feet (m).

909.8.4 Window plumes. The plume mass flow rate (m_p) shall be determined from:

$m_p = 0.077 (A_w H_w^{1/2})^{1/3} (z_w ; pl a)^{5/3} ; pl 0.18 A_w H_w^{1/2}$ (Equation 9-6)

For SI: $m_p = 0.68 (A_w H_w^{1/2})^{1/3} (z_w ; pl a)^{5/3} ; pl 1.5 A_w H_w^{1/2}$

where:

A_w = Area of the opening, square feet (m^2).

H_w = Height of the opening, feet (m).

$\dot{m}_p$ =plume mass flow rate, pounds per second (kg/s).

z_w =Height from the top of the window or opening to the bottom of the smoke layer, feet (m).

$a=2.4A_w^{2/5}H_w^{1/5}$; $m_s=2.1H_w$.

909.8.5 Plume contact with walls. When a plume contacts one or more of the surrounding walls, the mass flow rate shall be adjusted for the reduced entrainment resulting from the contact provided that the contact remains constant. Use of this provision requires calculation of the plume diameter, which shall be calculated by:

$$d = 0.48[(T_c - T_a)/(T_a + 460)]^{1/2} z \quad (\text{Equation 9-7})$$

For SI: $d = 0.48 (T_c/T_a)^{1/2} z$

where:

d =Plume diameter, feet (m).

T_a =Ambient air temperature, (degrees)F ((degrees)K).

T_c =Plume centerline temperature, (degrees)F ((degrees)K).

$T_c=0.60 (T_a + 460) Q_c^{2/3} z^{-5/3}$; $pl\ T_a$

z =Height at which T_c is determined, feet (m).

For SI: $T_c = 0.08 T_a Q_c^{2/3} z^{-5/3}$; $pl\ T_a$

909.9 Design fire. The design fire shall be based on a Q of not less than 5,000 Btu/s (5275 kW) unless a rational analysis is performed by the registered design professional and approved by the department. The design fire shall be based on the analysis in accordance with Section 909.4 and this section.

909.9.1 Factors considered. The engineering analysis shall include the characteristics of the fuel, fuel load, effects included by the fire and whether the fire is likely to be steady or unsteady.

909.9.2 Separation distance. Determination of the design fire shall include consideration of the type of fuel, fuel spacing and configuration. The ratio of the separation distance to the fuel equivalent radius shall not be less than 4. The fuel equivalent radius shall be the radius of a circle of equal area to floor area of the fuel package. The design fire shall be increased if other combustibles are within the separation distance as determined by:

$$R = [Q/(12pq'')]^{1/2} \quad (\text{Equation 9-8})$$

where:

q'' =Incident radiant heat flux required for nonpiloted ignition, Btu/ft²; $tb\ s(W/m^2)$.

Q =Heat release from fire, Btu/s (kW).

R =Separation distance from target to center of fuel package, feet (m).

909.9.3 Heat-release assumptions. The analysis shall make use of best available data from approved sources and shall not be based on excessively stringent limitations of combustible material.

909.9.4 Sprinkler effectiveness assumptions. A documented engineering analysis shall be provided for conditions

that assume fire growth is halted at the time of sprinkler activation.

909.10Equipment. Equipment such as, but not limited to, fans, ducts, automatic dampers and balance dampers, shall be suitable for its intended use, suitable for the probable exposure temperatures that the rational analysis indicates, and as approved by the department.

909.10.1Exhaust fans. Components of exhaust fans shall be rated and certified by the manufacturer for the probable temperature rise to which the components will be exposed. This temperature rise shall be computed by:

$$T_s = (Q_c/mc) ; pl (T_a) \text{ (Equation 9-9)}$$

where:

c=Specific heat of smoke at smoke layer temperature, Btu/lb(degrees)F (kJ/kg ;tb K).

m=Exhaust rate, pounds per second (kg/s).

Q_c=Convective heat output of fire, Btu/s (kW).

T_a=Ambient temperature, (degrees)F ((degrees)K).

T_s=Smoke temperature, (degrees)F ((degrees)K).

Exception: Reduced T_s as calculated based on the assurance of adequate dilution air.

909.10.2Ducts. Duct materials and joints shall be capable of withstanding the probable temperatures and pressures to which they are exposed as determined in accordance with Section 909.10.1. Ducts shall be constructed and supported in accordance with the York City Mechanical Code. Ducts shall be leak tested to 1.5 times the maximum design pressure in accordance with nationally accepted practices. Measured leakage shall not exceed 5 percent of design flow. Results of such testing shall be a part of the documentation procedure. Ducts shall be supported directly from fire-resistance-rated structural elements of the building by substantial, noncombustible supports.

Exception: Flexible connections (for the purpose of vibration isolation) complying with the New York City Mechanical Code, that are constructed of approved fire-resistance-rated materials.

909.10.3Equipment, inlets and outlets. Equipment shall be located so as not to expose uninvolved portions of the building to an additional fire hazard. Outside air inlets shall be located so as to minimize the potential for introducing smoke or flame into the building. Exhaust outlets shall be located so as to minimize reintroduction of smoke into the building and to limit exposure of the building or adjacent buildings to an additional fire hazard.

909.10.4Automatic dampers. Automatic dampers, regardless of the purpose for which they are installed within the smoke control system, shall be listed for their use.

909.10.5Fans. In addition to other requirements, belt-driven fans shall have 1.5 times the number of belts required for the design duty, but not less than two. Fans shall be selected for stable performance based on normal temperature and, where applicable, elevated temperature. Calculations and manufacturer's fan curves shall be part of the documentation procedures. Fans shall be supported and restrained by noncombustible devices in accordance with the requirements of Chapter 16. Motors driving fans shall not be operated beyond their nameplate horsepower (kilowatts), as determined from measurement of actual current draw, and shall have a minimum service factor of 1.15.

909.11Power systems. The smoke control system shall be supplied with two sources of power. Primary power shall be the normal building power systems. Secondary power shall be from an emergency source complying with the New York City Electrical Code. The emergency power source and its transfer switches shall be in a separate room from the

normal power transformers and switch gear and shall be enclosed in a room constructed of not less than 1-hour fire-resistance-rated fire barriers ventilated directly to and from the exterior. Power distribution from the two sources shall be by independent routes. Transfer to full emergency power shall be automatic and within 60 seconds of failure of the primary power. The systems shall comply with the New York City Electrical Code.

909.11.1Power sources and power surges.Elements of the smoke management system relying on volatile memories or similar systems shall be supplied with uninterruptable power sources of sufficient duration to span a 15-minute primary power interruption. Elements of the smoke management system susceptible to power surges shall be suitably protected by conditioners, suppressors or other approved means.

909.12Detection and control systems.Fire detection systems providing control input or output signals to mechanical smoke control systems or elements thereof shall comply with the requirements of Chapter 9 and NFPA 72. Such systems shall be equipped with a control unit complying with UL 864 and listed as smoke control equipment.

Control systems for mechanical smoke control systems shall include provisions for verification. Verification shall include positive confirmation of actuation, testing, manual override, the presence of power downstream of all disconnects and, through a preprogrammed weekly test sequence report, abnormal conditions audibly, visually and by printed report.

909.12.1Wiring.In addition to meeting requirements of the New York City Electrical Code, all wiring, regardless of voltage, shall be fully enclosed within continuous raceways.

909.12.2Activation.Smoke control systems shall be activated in accordance with this section.

909.12.2.1Pressurization, airflow or exhaust method.Mechanical smoke control systems using the pressurization, airflow or exhaust method shall have completely automatic control.

909.12.2.2Passive method.Passive smoke control systems actuated by spot-type detectors listed for releasing service shall be permitted.

909.12.3Automatic control.Where completely automatic control is required or used, the automatic-control sequences shall be initiated from an appropriately zoned automatic sprinkler system complying with Section 903.3.1.1, manual controls that are readily accessible to the Fire Department and any smoke detectors required by engineering analysis. See Section 909.16 for manual control requirements.

909.13Control air tubing.Control air tubing shall be of sufficient size to meet the required response times. Tubing shall be flushed clean and dry prior to final connections and shall be adequately supported and protected from damage. Tubing passing through concrete or masonry shall be sleeved and protected from abrasion and electrolytic action.

909.13.1Materials.Control air tubing shall be hard drawn copper, Type L, ACR in accordance with ASTM B 42, ASTM B 43, ASTM B 68, ASTM B 88, ASTM B 251 and ASTM B 280. Fittings shall be wrought copper or brass, solder type, in accordance with ASME B 16.18 or ASME B 16.22. Changes in direction shall be made with appropriate tool bends. Brass compression-type fittings shall be used at final connection to devices; other joints shall be brazed using a BCuP5 brazing alloy with solidus above 1,100(degrees)F (593(degrees)C) and liquids below 1,500(degrees)F (816(degrees)C). Brazing flux shall be used on copper-to-brass joints only.

Exception: Nonmetallic tubing used within control panels and at the final connection to devices, providing all of the following conditions are met:

1. Tubing shall be listed by an approved agency for flame and smoke characteristics.
2. Tubing and connected devices shall be completely enclosed within galvanized or paint-grade steel enclosure of

not less than 0.030 inch (0.76 mm) (No. 22 galvanized sheet gage) thickness. Entry to the enclosure shall be by copper tubing with a protective grommet of neoprene or teflon or by suitable brass compression to male-barbed adapter.

3. Tubing shall be identified by appropriately documented coding.

4. Tubing shall be neatly tied and supported within enclosure. Tubing bridging cabinet and door or moveable device shall be of sufficient length to avoid tension and excessive stress. Tubing shall be protected against abrasion. Tubing serving devices on doors shall be fastened along hinges.

909.13.2 Isolation from other functions. Control tubing serving other than smoke control functions shall be isolated by automatic isolation valves or shall be an independent system.

909.13.3 Testing. Control air tubing shall be tested at three times the operating pressure for not less than 30 minutes without any noticeable loss in gauge pressure prior to final connection to devices.

909.14 Marking and identification. The detection and control systems shall be clearly marked at all junctions, accesses and terminations. 909.15 Control diagrams. Identical control diagrams showing all devices in the system and identifying their location and function shall be maintained current and kept on file with the department, the Fire Department and in the fire command center in format and manner approved by the Fire Commissioner.

909.16 Fire-fighter's smoke control panel. A fire-fighter's smoke control panel for Fire Department emergency response purposes only shall be provided and shall include manual control or override of automatic control for mechanical smoke control systems. The panel shall be located in a fire command center complying with Section 911, and shall comply with Sections 909.16.1 through 909.16.3. Where required in Section 912, the post-fire smoke purge system shall be manually activated from the fire-fighter's control panel.

909.16.1 Panel indicators. Fans within the building shall be shown on the fire fighter's control panel. A clear indication of the direction of airflow and the relationship of components shall be displayed. Status indicators shall be provided for all smoke control equipment, annunciated by fan and zone, and by pilot-lamp-type indicators as follows:

1. Fans, dampers and other operating equipment in their normal status-WHITE.
2. Fans, dampers and other operating equipment in their off or closed status-RED.
3. Fans, dampers and other operating equipment in their on or open status-GREEN.
4. Fans, dampers and other operating equipment in a fault status-YELLOW/AMBER.

909.16.2 Panel controls. The fire fighter's control panel shall provide control capability over the complete smoke-control system equipment within the building as follows:

1. ON-AUTO-OFF control over each individual piece of operating smoke control equipment that can also be controlled from other sources within the building. This includes stairway pressurization fans; smoke exhaust fans; supply, return and exhaust fans; elevator shaft fans and other operating equipment used or intended for smoke control purposes.

2. OPEN-AUTO-CLOSE control over individual dampers relating to smoke control and that are also controlled from other sources within the building.

3. ON-OFF or OPEN-CLOSE control over smoke control and other critical equipment associated with a fire or smoke emergency and that can only be controlled from the fire-fighter's control panel. The fire fighter's control panel shall be configured as described in Section 911.

Exceptions:

1. Complex systems, where approved, where the controls and indicators are combined to control and indicate all elements of a single smoke zone as a unit.

2. Complex systems, where approved, where the control is accomplished by computer interface using approved, plain English commands.

909.16.3 Control action and priorities. The fire-fighter's control panel actions shall be as follows:

1. ON-OFF, OPEN-CLOSE control actions shall have the highest priority of any control point within the building. Once issued from the fire-fighter's control panel, no automatic or manual control from any other control point within the building shall contradict the control action. Where automatic means are provided to interrupt normal, nonemergency equipment operation or produce a specific result to safeguard the building or equipment (i.e., duct freeze stats, duct smoke detectors, high-temperature cutouts, temperature-actuated linkage and similar devices), such means shall be capable of being overridden by the fire-fighter's control panel. The last control action as indicated by each fire-fighter's control panel switch position shall prevail. In no case shall control actions require the smoke control system to assume more than one configuration at any one time.

Exception: Power disconnects required by the New York City Electrical Code.

2. Only the AUTO position of each three-position fire-fighter's control panel switch shall allow automatic or manual control action from other control points within the building. The AUTO position shall be the NORMAL, nonemergency, building control position. Where a fire-fighter's control panel is in the AUTO position, the actual status of the device (on, off, open, closed) shall continue to be indicated by the status indicator described above. When directed by an automatic signal to assume an emergency condition, the NORMAL position shall become the emergency condition for that device or group of devices within the zone. In no case shall control actions require the smoke control system to assume more than one configuration at any one time.

909.17 System response time. Smoke-control system activation shall be initiated immediately after receipt of an appropriate automatic or manual activation command. Smoke control systems shall activate individual components (such as dampers and fans) in the sequence necessary to prevent physical damage to the fans, dampers, ducts and other equipment. For purposes of smoke control, the fire-fighter's control panel response time shall be the same for automatic or manual smoke control action initiated from any other building control point. The total response time, including that necessary for detection, shutdown of operating equipment and smoke control system startup, shall allow for full operational mode to be achieved before the conditions in the space exceed the design smoke condition. The system response time for each component and their sequential relationships shall be detailed in the required rational analysis and verification of their installed condition reported in the required final report.

909.18 Acceptance testing. Devices, equipment, components and sequences shall be individually tested. These tests, in addition to those required by other provisions of this code, shall consist of determination of function, sequence and, where applicable, capacity of their installed condition.

909.18.1 Detection devices. Smoke or fire detectors that are a part of a smoke control system shall be tested in accordance with Chapter 9 in their installed condition. When applicable, this testing shall include verification of airflow in both minimum and maximum conditions.

909.18.2 Ducts. Ducts that are part of a smoke control system shall be traversed using generally accepted practices to determine actual air quantities.

909.18.3 Dampers. Dampers shall be tested for function in their installed condition.

909.18.4Inlets and outlets.Inlets and outlets shall be read using generally accepted practices to determine air quantities.

909.18.5Fans.Fans shall be examined for correct rotation. Measurements of voltage, amperage, revolutions per minute (rpm) and belt tension shall be made.

909.18.6Smoke barriers.Measurements using inclined manometers or other approved calibrated measuring devices shall be made of the pressure differences across smoke barriers. Such measurements shall be conducted for each possible smoke control condition.

909.18.7Controls.Each smoke zone, equipped with an automatic-initiation device, shall be put into operation by the actuation of one such device. Each additional device within the zone shall be verified to cause the same sequence without requiring the operation of fan motors in order to prevent damage. Control sequences shall be verified throughout the system, including verification of override from the fire-fighter's control panel and simulation of emergency power conditions.

909.18.8Special inspections for smoke control.Smoke control systems shall be tested by a special inspector in accordance with Chapter 17.

909.18.8.1Scope of testing.Special inspections shall be conducted in accordance with the following:

1. During erection of ductwork and prior to concealment for the purposes of leakage testing and recording of device location.

2. Prior to occupancy and after sufficient completion for the purposes of pressure-difference testing, flow measurements, and detection and control verification.

909.18.8.2Qualifications.Special inspectors for smoke control shall have a certification as air balancers and expertise in fire protection engineering or mechanical engineering.

909.18.8.3Reports.A complete report of testing shall be prepared by the special inspector or approved agency. The report shall include identification of all devices by manufacturer, nameplate data, design values, measured values and identification tag or mark. The report shall be reviewed by the responsible engineer and, when satisfied that the design intent has been achieved, the engineer shall seal, sign and date the report.

909.18.8.3.1Report filing.A copy of the final report and each inspection report shall be filed with the department and Fire Commissioner, and an identical copy shall be maintained in an approved location at the building.

909.18.9Identification and documentation.Charts, drawings and other documents identifying and locating each component of the smoke control system, and describing its proper function and maintenance requirements, shall be maintained on file at the building as an attachment to the report required by Section 909.18.8.3. Devices shall have an approved identifying tag or mark on them consistent with the other required documentation and shall be dated indicating the last time they were successfully tested and by whom.

909.18.10Re-acceptance testing.The smoke control system shall require a re-acceptance test after any modifications to the system or physical changes to the building that may affect system performance.

909.19System acceptance.Buildings, or portions thereof, required by this code to comply with this section shall not be issued a certificate of occupancy until such time that the department determines that the provisions of this section have been fully complied with, and that the Fire Department has received satisfactory instruction on the operation, both automatic and manual, of the system.

Exception: In buildings of phased construction, the department may issue a temporary certificate of occupancy

provided that those portions of the building to be occupied meet the requirements of this section and that the remainder does not pose a significant hazard to the safety of the proposed occupants or adjacent buildings.

909.20Smokeproof enclosures.Where required by Section 1019.1.8, a smoke proof enclosure shall be constructed in accordance with this section. Where access to the roof is required by the New York City Fire Code, such access shall be from the smoke proof enclosure where a smoke proof enclosure is required. Smokeproof enclosures shall consist of one of the following systems:

1. An enclosed interior exit stairway constructed in accordance with Section 1019.1 and accessed through an open exterior balcony.
2. An enclosed interior exit stairway constructed in accordance with Section 1019.1 and accessed through a naturally ventilated vestibule.
3. An enclosed interior exit stairway constructed in accordance with Section 1019.1 and accessed through a mechanically ventilated vestibule.
4. A pressurized interior exit stairway constructed in accordance with Section 1019.1

909.20.1Access.Access to the interior exit stairway shall be by way of a vestibule or an open exterior balcony, unless such stairway is pressurized in accordance with Section 909.20.5. The minimum dimension of the vestibule or open exterior balcony shall not be less than the required width of the corridor leading to the vestibule or open exterior balcony but shall not have a width of less than 44 inches (1118 mm) and shall not have a length of less than 72 inches (1829 mm) in the direction of egress travel.

909.20.2Construction.The smoke proof enclosure shall be separated from the remainder of the building by not less than a 2-hour fire-resistance-rated fire barrier without openings other than the required means of egress doors. The vestibule shall be separated from the stairway by not less than a 2-hour fire-resistance-rated fire barrier. The open exterior balcony shall be constructed in accordance with the fire-resistance-rating requirements for floor construction.

909.20.2.1Door closers.Doors in a smoke proof enclosure shall be self-closing or shall be automatic-closing by actuation of a smoke detector installed at the floor-side entrance to the smoke proof enclosure in accordance with Section 715.3.7. The actuation of the smoke detector on any door shall activate the closing devices on all doors in the smoke proof enclosure at all levels. Smoke detectors shall be installed in accordance with Section 907.10.

909.20.3Natural ventilation alternative.The provisions of Sections 909.20.3.1 through 909.20.3.3 shall apply to ventilation of smoke proof enclosures by natural means.

909.20.3.1Balcony doors.Where access to the stairway is by way of an open exterior balcony, the door assembly into the enclosure shall be a fire door in accordance with Section 715.3.

909.20.3.2Vestibule doors.Where access to the stairway is by way of a vestibule, the door assembly into the vestibule shall be a fire door complying with Section 715.3. The door assembly from the vestibule to the stairway shall have not less than a 90-minute fire protection rating complying with Section 715.3.

909.20.3.3Vestibule ventilation.Each vestibule shall have a minimum net area of 16 square feet (1.5 m²) of opening in a wall facing an outer court, yard or public way that is at least 20 feet (6096 mm) in width.

909.20.4Mechanical ventilation alternative.The provisions of Sections 909.20.4.1 through 909.20.4.4 shall apply to ventilation of smoke proof enclosures by mechanical means.

909.20.4.1Vestibule doors.The door assembly from the building into the vestibule shall be a fire door complying with Section 715.3. The door assembly from the vestibule to the stairway shall have not less than a 90-minute fire

protection rating in accordance with Section 715.3. The door from the building into the vestibule shall be provided with gaskets or other provisions to minimize air leakage.

909.20.4.2 Vestibule ventilation. The vestibule shall be supplied with not less than one air change per minute and the exhaust shall not be less than 150 percent of supply. Supply air shall enter and exhaust air shall discharge from the vestibule through separate, tightly constructed ducts used only for that purpose. Supply air shall enter the vestibule within 6 inches (152 mm) of the floor level. The top of the exhaust register shall be located at the top of the smoke trap but not more than 6 inches (152 mm) down from the top of the trap, and shall be entirely within the smoke trap area. Doors in the open position shall not obstruct duct openings. Duct openings with controlling dampers are permitted where necessary to meet the design requirements, but dampers are not otherwise required.

909.20.4.2.1 Engineered ventilation system. Where a specially engineered system is used, the system shall exhaust a quantity of air equal to not less than 90 air changes per hour from any vestibule in the emergency operation mode and shall be sized to handle three vestibules simultaneously. Smoke detectors shall be located at the floor-side entrance to each vestibule and shall activate the system for the affected vestibule. Smoke detectors shall be installed in accordance with Section 907.10.

909.20.4.3 Smoke trap. The vestibule ceiling shall be at least 20 inches (508 mm) higher than the door opening into the vestibule to serve as a smoke and heat trap and to provide an upward-moving air column. The height shall not be decreased unless approved and justified by design and test.

909.20.4.4 Stair shaft air movement system. The stair shaft shall be provided with a dampered relief opening and supplied with sufficient air to maintain a minimum positive pressure of 0.10 inch of water (25 Pa) in the shaft relative to the vestibule with all doors closed. The system shall maintain a maximum of 0.35 inch of water (87 Pa) in the shaft relative to the building measured with all stairway doors closed under maximum anticipated stack pressures.

909.20.4.5 Door Opening Force. Door opening force shall not exceed limits in Section 1008.1.2.

909.20.5 Stair pressurization alternative. Where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the vestibule is not required, provided that interior exit stairways are pressurized to a minimum of 0.15 inch of water (37 Pa) and a maximum of 0.35 inch of water (87 Pa) in the shaft relative to the building measured with all stairway doors closed under maximum anticipated stack pressures.

909.20.6 Ventilating equipment. The activation of ventilating equipment required by the alternatives in Sections 909.20.4 and 909.20.5 shall be by smoke detectors installed at each floor level at an approved location at the entrance to the smokeproof enclosure. When the closing device for the stair shaft and vestibule doors is activated by smoke detection or power failure, the mechanical equipment shall activate and operate at the required performance levels. Smoke detectors shall be installed in accordance with Section 907.10.

909.20.6.1 Ventilation systems. Smokeproof enclosure ventilation systems shall be independent of other building ventilation systems. The equipment and ductwork shall comply with one of the following:

1. Equipment and ductwork shall be located exterior to the building and directly connected to the smokeproof enclosure or connected to the smokeproof enclosure by ductwork enclosed by 2-hour fire-resistance-rated fire barriers.
2. Equipment and ductwork shall be located within the smokeproof enclosure with intake or exhaust directly from and to the outside or through ductwork enclosed by 2-hour fire-resistance-rated fire barriers.
3. Equipment and ductwork shall be located within the building if separated from the remainder of the building, including other mechanical equipment, by 2-hour fire-resistance-rated fire barriers.

909.20.6.2 Emergency power. Mechanical vestibule and stair shaft ventilation systems and automatic fire detection

systems shall be powered by an emergency power system conforming to Section 403.11 and Chapter 27.

909.20.6.3 Acceptance and testing. Before the mechanical equipment is approved, the system shall be tested in the presence of the department or approved agency to confirm that the system is operating in compliance with these requirements.

909.21 Underground building smoke exhaust system. Where required in accordance with Section 405.5 for underground buildings, a smoke exhaust system shall be provided in accordance with this section.

909.21.1 Exhaust capability. Where compartmentation is required, each compartment shall have an independent, automatically activated smoke exhaust system capable of manual operation. The system shall have an air supply and smoke exhaust capability that will provide a minimum of six air changes per hour.

909.21.2 Operation. The smoke exhaust system shall be operated in the compartment of origin by the following, independently of each other:

1. Two cross-zoned smoke detectors within a single protected area of a single smoke detector monitored by an alarm verification zone or an approved equivalent method.
2. The automatic sprinkler system.
3. Manual controls that are readily accessible to the Fire Department.

909.21.3 Alarm required. Activation of the smoke exhaust system shall activate an audible alarm at a constantly attended location.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

909.5.1 amended L.L. 8/2008 § 109, eff. July 1, 2008.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 910: SMOKE AND HEAT VENTS

NYC Administrative Code § 28-BC 910

910.1 General.

Where required by this code or otherwise installed, smoke and heat vents or mechanical smoke exhaust systems and draft curtains shall conform to the requirements of this section.

Exception: Frozen-food warehouses used solely for storage of Class I and II commodities where protected by an automatic sprinkler system in accordance with Section 903.3.1.1.

910.2 Where required. Smoke and heat vents designed in accordance with Section 910.3 shall be installed in the roofs of buildings or portions thereof occupied for the uses set forth in Sections 910.2.1 through 910.2.3. Vents shall be installed at the top of a closed shaft in accordance with Section 910.5.

910.2.1 Groups F-1 and S-1. Buildings and portions thereof used as a Group F-1 or S-1 occupancy having more than 50,000 square feet (4645 m²) in undivided area.

Exception: Group S-1 aircraft repair hangars.

910.2.2 Group H. Buildings and portions thereof used as a Group H occupancy as shown:

1. In occupancies classified as Group H-2 or H-3, any of which are over 15,000 square feet (1394 m²) in undivided area or area greater in depth than 100 feet (30 480 mm) from Fire Department apparatus access.

Exception: Buildings of noncombustible construction containing only noncombustible materials.

2. In areas of buildings in Group H used for storing Class 2, 3, and 4 liquid and solid oxidizers, Class 1 and unclassified detonable organic peroxides, Class 3 and 4 unstable (reactive) materials, or Class 2 or 3 water-reactive materials as required for a high-hazard commodity classification.

Exception: Buildings of noncombustible construction containing only noncombustible materials.

910.2.3 High-piled combustible storage. Buildings and portions thereof containing high-piled combustible stock or rack storage in any occupancy group in accordance with Section 413 and the New York City Fire Code.

910.3 Design and installation. The design and installation of smoke and heat vents and draft curtains shall be as specified in this section and Table 910.3.

910.3.1 Vent operation. Smoke and heat vents shall be listed and labeled and shall be capable of being operated by approved automatic and manual means. Automatic operation of smoke and heat vents shall conform to the provisions of this section.

910.3.1.1 Gravity-operated drop-out vents. Automatic smoke and heat vents containing heat-sensitive glazing designed to shrink and drop out of the vent opening when exposed to fire shall fully open within 5 minutes after the vent cavity is exposed to a simulated fire, represented by a time-temperature gradient that reaches an air temperature of 500(degrees)F (260(degrees)C) within 5 minutes.

910.3.1.2 Sprinklered buildings. Where installed in buildings provided with an automatic sprinkler system in accordance with Section 903.3.1.1, smoke and heat vents shall be designed to operate automatically.

910.3.1.3 Nonsprinklered buildings. Where installed in buildings not provided with an automatic sprinkler system, smoke and heat vents shall operate automatically by actuation of a heat-responsive device rated at between 100(degrees)F (38(degrees)C) and 220(degrees)F (104(degrees)C) above ambient.

Exception: Gravity-operated drop-out vents complying with Section 910.3.1.1

910.3.2 Vent dimensions. The effective venting area shall not be less than 16 square feet (1.5 m²) with no dimension less than 4 feet (1219 mm), excluding ribs or gutters having a total width not exceeding 6 inches (152 mm).

910.3.3 Vent locations. Smoke and heat vents shall be located 20 feet (6096 mm) or more from adjacent lot lines and fire walls and 10 feet (3048 mm) or more from fire barrier walls. Vents shall be uniformly located within the roof area above high-piled storage areas, with consideration given to roof pitch, draft curtain location, sprinkler location and structural members.

910.3.4 Draft curtains. Where required, draft curtains shall be provided in accordance with this section.

Exception: Where areas of buildings are equipped with early suppression fast-response (ESFR) sprinklers, draft curtains need not be provided within these areas. Draft curtains shall only be provided at the separation between the ESFR sprinklers and the conventional sprinklers.

910.3.4.1 Construction. Draft curtains shall be constructed of sheet metal, lath and plaster, gypsum board or other approved materials that provide equivalent performance to resist the passage of smoke. Joints and connections shall be smoke tight.

910.3.4.2 Location and depth. The location and minimum depth of draft curtains shall be in accordance with Table 910.3.

910.4 Mechanical smoke exhaust. Where approved by the department, engineered mechanical smoke exhaust shall be an acceptable alternate to smoke and heat vents.

910.4.1 Location. Exhaust fans shall be uniformly spaced within each draft-curtained area and the maximum distance between fans shall not be greater than 100 feet (30 480 mm).

910.4.2Size. Fans shall have a maximum individual capacity of 30,000 cfm (14.2 m³/s). The aggregate capacity of smoke exhaust fans shall be determined by the equation:

$$C = A \times 300 \text{ (Equation 9-10)}$$

where:

C=Capacity of mechanical ventilation required, in cubic feet per minute (m³/s).

A=Area of roof vents provided in square feet (m²) in accordance with Table 910.3.

910.4.3Operation. Mechanical smoke exhaust fans shall be automatically activated by the automatic sprinkler system or by heat detectors having operating characteristics equivalent to those described in Section 910.3.1. Individual manual controls of each fan unit shall also be provided.

910.4.4Wiring and control. Wiring for operation and control of smoke exhaust fans shall be connected ahead of the main disconnect and protected against exposure to temperatures in excess of 1,000(degrees)F (538(degrees)C) for a period of not less than 15 minutes. Controls shall be located so as to be immediately accessible to the fire service from the exterior of the building and protected against interior fire exposure by fire barriers having a fire-resistance rating not less than one hour. The location of manual controls is subject to the approval of the Fire Commissioner.

910.4.5Supply air. Supply air for exhaust fans shall be provided at or near the floor level and shall be sized to provide a minimum of 50 percent of required exhaust. Openings for supply air shall be uniformly distributed around the periphery of the area served.

910.4.6Interlocks. In combination comfort air-handling/smoke removal systems or independent comfort air-handling systems, fans shall be controlled to shut down in accordance with the approved smoke control sequence.

910.5Smoke venting of closed shafts. All closed shafts having a floor area exceeding four square feet (0.37 m²) shall be provided with a smoke vent in accordance with Section 910.5.1 through 910.5.3. Exception: Elevator and dumbwaiter shafts in accordance with Chapter 30.

910.5.1Smoke vent construction. Smoke vents may be constructed as windows, louvers, skylights, vent ducts, or similar devices. Where a vent duct is installed, such vent ducts shall be enclosed by construction having the same fire resistance rating as required for the shaft enclosure.

910.5.2Smoke vent dimensions. The effective venting area shall not be less than 3-1/2 percent of the maximum shaft area at any floor, but in no event less than 72 square inches (0.05 m²). Of the total required vent area, at least one-third shall be clear opening to the exterior in the form of fixed louvers, ridge vents, or hooded or goosenecked openings. The remaining portion of the required vent area may be a window or skylight glazed with plain glass not more than 1/8-inch (3.2 mm) thick or with plastic glazing.

Exception: The clear opening to the exterior may be constructed as a skylight or trapdoor arranged to open automatically by fusible link or other mechanical device when subjected to a temperature of 160(degrees)F (71(degrees)C) or to a rapid rise in temperature at a rate of 15(degrees)F (-9.4(degrees)C) to 20(degrees)F (-6.7(degrees)C) per minute.

910.5.3Smoke vent location. Smoke vents shall be located in accordance with 910.5.3.1 or 910.5.3.2 as applicable.

910.5.3.1Smoke vents located above the roof line. Where a closed shaft or smoke vent duct penetrates through the roof of the building, the vent shall be located as follows:

1. The vent shall be located at least 8 inches (203 mm) above a noncombustible roof assembly or at least 36 inches

(914 mm) above a combustible roof assembly.

2. The vent shall be located at least 10 feet (3048 mm) from any window, door, exterior stairway, or interior lot line. The vent may be located no less than 5 feet (1524 mm) from any window or door provided that the vent is located at a point higher than the top of such window or door.

3. Where the vent is constructed as a window or louver, the sill of the window or louver shall be located at least 36 inches (above the roof assembly).

910.5.3.2 Smoke vents located in an exterior wall. Where the exterior wall serves as part of a shaft enclosure or where a smoke vent duct penetrates the exterior wall of the building, the vent shall be located at least 30 feet above and 5 feet to the side of any other openings in the exterior wall.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION BC 911: FIRE COMMAND CENTER

NYC Administrative Code § 28-BC 911

911.1 Features.

Where required by other sections of this code, a fire command center for Fire Department operations shall be provided. The fire command center shall be located in the lobby of the building on the entrance floor as part of the fire alarm control panel, elevator control panel or immediately adjacent thereto. The fire command center shall comply with NFPA 72 and shall contain the following features as applicable:

1. The emergency voice/alarm communication system unit.
2. The Fire Department communications unit.
3. Fire detection and alarm system annunciator unit.
4. Annunciator visually indicating the location of the elevators and whether they are operational.
5. Status indicators and controls for air-handling systems.
6. The fire-fighter's control panel required by Section 909.16 for smoke control systems installed in the building.
7. Controls for unlocking stairway doors simultaneously.
8. Sprinkler valve and water-flow detector display panels.
9. Emergency power status indicators.
10. A telephone for Fire Department use with controlled access to the public telephone system.
11. Fire pump status indicators.

12. Generator supervision devices, manual start and transfer features.
13. Public address system, where specifically required by other sections of this code.
14. Manual controls of Post-Fire Smoke Purge system in accordance with Section 912.2.3.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION 912: POST-FIRE SMOKE PURGE SYSTEMS

NYC Administrative Code § 28-BC 912

912.1 Scope and purpose.

The purpose of this section is to establish minimum requirements for the design and installation of post-fire smoke purge systems, which are intended for the timely restoration of operations and overhaul activities once a fire is extinguished. Post-fire smoke purge systems are not intended or designed as life safety systems and are not required to meet the provisions of Section 909. Post-fire smoke purge systems shall be required in:

1. High-rise buildings subject to Section 403.
2. Buildings with any story exceeding 50,000 square feet (4645 m²) in floor area.
3. Building with spaces exceeding 100 feet (30 480 mm) from natural ventilation openings. Natural ventilation openings shall consist of operable windows and doors of at least five percent of the floor area or roof vents per Section 910.
4. High piled stock or rack storage in accordance with the New York City Fire Code.

Exceptions: A post-fire smoke purge system is not required in R-2 occupancies where either of the following conditions exists:

1. Openable windows. A post-fire smoke purge system is not required where every habitable room located in dwelling units is provided with windows complying with Chapter 12 and all of the following:

1.1. Minimum window area. Each required window shall provide at least 12 square feet (1.1 m²) of glazed area. The total area of all such windows shall not be less than 10 percent of the floor area of the room or space served.

1.2. Minimum openable area. Each required window shall provide a minimum of 6 square feet (0.56 m²) of openable area. The total area of all such openings shall not be less than five percent of the floor area of the room or

space served. In addition, each required openable area shall be:

1.2.1. Located wholly at least 30 inches (762 mm) above the finished floor; and

1.2.2. Fully openable to the minimum 6 square feet (0.56 m²), at all times and without limiting stops or devices. Such openings may be achieved through the use of double-hung, sliding, or similar types of windows. However, in the event of the use of casement-, hopper-, pivot-, or awning-type windows, such windows shall satisfy the requirements of this section only when they open to at least 75 degrees.

2. Smokeproof enclosures. A post-fire smoke purge system is not required where all exits are constructed as smokeproof enclosures in accordance with Section 1019.1.8.

912.2 Post-fire smoke purge systems in occupancy groups other than R-2.

912.2.1 General design requirements. Post-fire smoke purge systems are permitted to use dedicated equipment, the normal building HVAC system or other openings and shall have the capability to exhaust smoke from occupied spaces. Smoke removal may be by either mechanical or natural ventilation, but shall be capable of removing cold smoke. Smoke removed from a space must be discharged to a safe location outside the building and shall not be recirculated into the building in accordance with the New York City Mechanical Code.

912.2.2 Exhaust capability. The system shall have an air supply and smoke exhaust capability that will provide a minimum of 6 air changes per hour or 1 cubic foot per minute per square foot (cfm/ft²) [0.00508 3/(s m²)], whichever is greater. The system need not exhaust from all areas at the same time, but is permitted to be zoned based on the largest fire area served. For the purpose of calculating system size, the height of a compartment shall be considered to run from slab to slab and include the volume above suspended ceilings. Provisions shall be made for sufficient make-up air. The provisions may include operable windows, doors, building leakage, or mechanical systems. In buildings having occupied floors located less than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, breakable windows may be utilized.

912.2.3 Operation. The post-fire smoke purge system shall be operated by manual controls that are part of the fire command center, in accordance with Section 911, or fire alarm panel when a fire command center is not required. Such control center or panel shall display a graphic indicating the portions of the building served by each post-fire smoke purge system. When a system is zoned into areas of operation less than the entire building, each zone shall have an individual control. Fire Department manual controls of post-fire smoke purge systems shall not override the manual or automatic operation of the smoke control system. Such Fire Department manual controls shall override the fire shutdown signal from the fire alarm system.

912.3 Post-fire smoke purge systems in occupancy Group R-2. Post-fire smoke purge systems in R-2 occupancies shall comply with either Section 912.3.1 or 912.3.2. Smoke removed must be discharged to a safe location outside the building and shall not be recirculated into the building in accordance with the New York City Mechanical Code.

912.3.1 Stair ventilation. The top of all enclosed exit stairs shall be provided with a reversible fan system capable of introducing fresh air or exhausting air at a rate of 6 air changes per hour or 1 cubic foot per minute per square foot (cfm/ft²) [0.00508 m³/(s; t m²)], whichever is greater, based on the area of the largest floor. Such system shall be operated by manual controls that are part of the fire command center, as per Section 911, or fire alarm panel when a fire command center is not required. Such control center or panel shall display a graphic indicating the portions of the building served by each post-fire smoke purge system. The operation of such system shall be controlled by Fire Department personnel by manually opening stair doors at the appropriate story.

912.3.2 Corridor ventilation. The ducts and fans that provide fresh air supply to the public corridors in accordance with the New York City Mechanical Code shall be provided with reversible fans and duct sizes capable of introducing

fresh air to or exhausting air from the corridor at a rate of 6 air changes per hour or 1 cubic foot per minute per square foot (cfm/ft²) [0.00508 m³/(s;tm²)], whichever is greater, based on the area of the largest apartment plus the area of the public corridor. Such system shall be operated by manual controls that are part of the fire command center, as per Section 911, or fire alarm panel when a fire command center is not required. Each floor to be ventilated shall be by individual controls. Such control center or panel shall display a graphic indicating the portions of the building served by each post-fire smoke purge system.

912.4Maintenance. The building owner shall maintain post-fire smoke exhaust systems in good operational condition. Records of testing shall be maintained on the premises for inspection by the department and Fire Department personnel.



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CHAPTER 7: THE NEW YORK CITY BUILDING CODE
Appendix D Fire Districts
SECTION BC D101: GENERAL

NYC Administrative Code § 28-BC D101

D101.1 Scope.

The provisions of this appendix shall regulate the division of the city of New York into geographical territories known as fire districts and control the occupancy groups and construction classes permitted in the fire districts. Wherever reference is made to the Fire District, it shall be construed to mean the fire districts designated and referred to in this appendix.

D101.2 Establishment of fire district. The following city areas are hereby established as being inside the fire districts:

1. All of the borough of Manhattan.
2. All of the borough of Bronx.
3. All of the borough of Brooklyn.
4. Such portions of the boroughs of Staten Island and Queens as are indicated on the "fire district maps" as per Section D106.



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Appendix D Fire Districts
SECTION BC D102: BUILDING RESTRICTIONS

NYC Administrative Code § 28-BC D102

D102.1 Types of construction permitted.

Every building hereafter erected within the fire district, or located partially in the fire district pursuant to Section D104.1, shall be either Type I, II, III or IV.

D102.2 Other specific requirements.

D102.2.1 Group H-1 prohibited. Group H-1 occupancies shall be prohibited from location within the fire district.

D102.2.2 Construction type. Every building, room, or space hereafter altered or erected shall be constructed as required based on the type of construction indicated in Chapter 6 except as provided in Section D102.2.4.

D102.2.3 Roof covering. Roof covering in the fire district shall conform to the requirements of Class A or B roof coverings as defined in Section 1505.

D102.2.4 Structural fire rating. The fire-resistance rating of bearing walls, floors, roofs and their supporting structural members shall comply with Table 601 of Chapter 6, but in no event shall such rating be less than 1-hour.

Exceptions. The following buildings or building elements may be constructed with fire-resistance rating in accordance with Table 601:

1. Buildings of Type IV construction.
2. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
3. Automobile parking structures.
4. Buildings surrounded on all sides by a permanently open space of not less than 30 feet (9144 mm).

5. Partitions complying with Section 603.1 (8).

D102.2.5R-1 and R-2 Occupancies.No building or space classified in occupancy group R-1 or R-2 may be located on a lot containing a building classified in construction Type IIB, VA or VB.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

D102.2.4 amended L.L. 8/2008 § 172, eff. July 1, 2008.



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SECTION BC D103: CHANGES TO BUILDINGS

NYC Administrative Code § 28-BC D103

D103.1 Existing buildings within the fire district.

An existing building shall not hereafter be increased in height or area unless it is of a type of construction permitted for new buildings within the fire district or is altered to comply with the requirements for such type of construction. Nor shall any existing building be hereafter extended on any side, nor square footage or floors added within the existing building unless such modifications are of a type of construction permitted for new buildings within the fire district.

D103.2 Other alterations. Nothing in Section D103.1 shall prohibit other alterations within the fire district provided there is no change of occupancy that is otherwise prohibited and provided the fire hazard is not increased by such alteration.

D103.3 Moving buildings. Buildings shall not hereafter be moved into the fire district or to another lot in the fire district unless the building is of a type of construction permitted in the fire district.



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Appendix D Fire Districts

SECTION BC D104: BUILDINGS LOCATED PARTIALLY IN THE FIRE DISTRICT

NYC Administrative Code § 28-BC D104

D104.1 General.

Any building located partially in the fire district, so that it is both inside and outside the district, shall be of a type of construction required for the fire district if more than 25 percent of the total floor area of the building is located inside the fire district.



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Appendix D Fire Districts
SECTION BC D105: EXCEPTIONS TO RESTRICTIONS IN FIRE DISTRICT

NYC Administrative Code § 28-BC D105

D105.1 General.

The preceding provisions of this appendix shall not apply in the following instances:

1. Temporary platforms, reviewing stands, and similar miscellaneous structures used for a limited period of time, subject to the approval of the com-missioner.
2. Fences not over 6 feet (1829 mm) high.
3. Water towers, tank structures, and trestles may be constructed of wood planking and timbers of dimensions not less than as required for Type IV construction when not over 35 feet (10 668 mm) high and having an exterior separation of at least 30 feet (9144 mm).
4. Detached greenhouses accessory to a one- or two-family dwelling located on the same lot at least 6 feet (1829 mm) from any lot line or building walls and not exceeding 14 feet (4267 mm) in height.
5. Porches on dwellings not over one story in height, and not over 10 feet (3048 mm) wide from the face of the building, provided such porch does not come within 5 feet (1524 mm) of any property line.
6. Sheds open on a long side not over 15 feet (4572 mm) high and 500 square feet (46 m2) in area.
7. Existing one- and two-family dwellings of a type of construction not permitted in the fire district can be extended 25 percent of the floor area existing at the time of inclusion in the fire district by any type of construction permitted by this code.
8. Wood decks less than 600 square feet (56 m2) where constructed of 2-inch (51 mm) nominal wood, pressure treated for exterior use.

9. One- or two-family detached or semi-detached dwellings of two stories or less in height and 2,500 square feet (232 m²) or less in area located within zoning Districts R-2 through R-5 may be constructed or reconstructed of construction Type VA, or if damaged for any cause only the damaged portions shall be required to be reconstructed to conform to Type VA construction. In addition, one-family dwellings located within zoning District R-1 anywhere in the city, may be constructed of Type VB construction in conformance with the area and height limits established by Table 503 of Chapter 5.

10. An accessory building or structure used as an office or similar use for an open parking lot located on the same lot, may be constructed of Type VA or VB construction provided its area shall be limited to 150 square feet (14 m²) and height of 10 feet (3048 mm) maximum. Such structure shall be located not less than 6 feet (1829 mm) from any lot line or buildings on the same lot.



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APPENDIX D FIRE DISTRICTS
SECTION BC D106: FIRE DISTRICT MAPS FOR THE BOROUGH OF RICHMOND AND QUEENS

NYC Administrative Code § 28-BC D106

D106.1 Fire district maps.

Within the boroughs of Richmond and Queens, the fire districts shall comprise such areas indicated on the "fire district maps" as per Figures D106.1(1) and D106.1(2).

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Appendix E Supplementary Accessibility Requirements
SECTION BC E101: GENERAL

NYC Administrative Code § 28-BC E101

E101.1 Scope.

The provisions of this appendix shall control the supplementary requirements for the design and construction of facilities for accessibility to persons with physical disabilities.

E101.2Design. Technical requirements for items herein shall comply with this code and ICC A117.1.



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SECTION BC E102: DEFINITIONS

NYC Administrative Code § 28-BC E102

E102.1 General.

The following words and terms shall, for the purposes of this appendix, have the meanings shown herein.

CLOSED-CIRCUIT TELEPHONE. A telephone with a dedicated line such as a house phone, courtesy phone or phone that must be used to gain entrance to a facility.

MAILBOXES. Receptacles for the receipt of documents, packages or other deliverable matter. Mailboxes include, but are not limited to, post office boxes and receptacles provided by commercial mail-receiving agencies, apartment houses and schools.

TRANSIENT LODGING. A building, facility or portion thereof, excluding inpatient medical care facilities and long-term care facilities, that contains one or more dwelling units or sleeping units. Examples of transient lodging include, but are not limited to, resorts, group homes, hotels, motels, dormitories, homeless shelters, halfway houses and social service lodging.



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SECTION BC E103: ACCESSIBLE ROUTE

NYC Administrative Code § 28-BC E103

E103.1 Raised platforms.

In banquet rooms or spaces where a head table or speaker's lectern is located on a raised platform, an accessible route shall be provided to the platform.



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SECTION BC E104: SPECIAL OCCUPANCIES

NYC Administrative Code § 28-BC E104

E104.1 General.

Transient lodging facilities shall be provided with accessible features in accordance with Sections E104.2 and E104.3. Group I-3 occupancies shall be provided with accessible features in accordance with Sections E104.3 and E104.4.

E104.2 Accessible beds. In rooms or spaces having more than 25 beds, five percent of the beds shall have a clear floor space complying with Section 305 (Clear Floor Space) of ICC A117.1.

E104.2.1 Sleeping areas. A clear floor space complying with Section 305 (Clear Floor Space) of ICC A117.1 shall be provided on both sides of the accessible bed. The clear floor space shall be positioned for parallel approach to the side of the bed.

Exception: This requirement shall not apply where a single clear floor space complying with Section 305 (Clear Floor Space) of ICC A117.1 positioned for parallel approach is provided between two beds.

E104.3 Communication features. Communication features complying with Chapter 7 of ICC A117.1 shall be provided in accordance with Sections E104.3.1 through E104.3.3.

E104.3.1 Transient lodging. In transient lodging facilities, sleeping units with accessible communication features shall be provided in accordance with Table E104.3.1. Units required to comply with Table E104.3.1 shall be dispersed among the various classes of units.

E104.3.2 Group I-3. In Group I-3 occupancies at least 2 percent, but no fewer than one of the total number of general holding cells and general housing cells equipped with audible emergency alarm systems and permanently installed telephones within the cell, shall comply with Section E104.3.3.

E104.3.3 Notification devices. Visual notification devices shall be provided to alert room occupants of incoming telephone calls and a door knock or bell. Notification devices shall not be connected to visual alarm signal appliances.

Permanently installed telephones shall have volume controls and an electrical outlet complying with ICC A117.1, including Section 309 (Operable Parts), located within 48 inches (1219 mm) of the telephone to facilitate the use of a TTY.

E104.4Partitions.Solid partitions or security glazing that separates visitors from detainees in Group I-3 occupancies shall provide a method to facilitate voice communication. Such methods are permitted to include, but are not limited to, grilles, slats, talk-through baffles, intercoms or telephone handset devices. The method of communication shall be accessible to individuals who use wheelchairs and individuals who have difficulty bending or stooping. Hand-operable communication devices, if provided, shall comply with Section E106.3.

Table E104.3.1 Dwelling or Sleeping Units with Accessible Communication Features

Total Number of Dwelling or Sleeping Units	Provided	Minimum Required
1	1	2
2 to 25	2	26
50	4	51
75	7	76
100	9	101
150	12	151
200	14	201
300	17	301
400	20	401
500	22	501
1,000	5%	of total
1,001 and over	50	plus 3 for each 100 over 1,000



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SECTION BC E105: OTHER FEATURES AND FACILITIES

NYC Administrative Code § 28-BC E105

E105.1 Water coolers.

Where water coolers are provided, at least 50 percent, but not less than one, of such units provided on each floor shall comply with ICC A117.1.

E105.2 Portable toilets and bathing rooms. Where multiple single-user portable toilet or bathing units are clustered at a single location, at least 5 percent, but not less than one toilet unit or bathing unit at each cluster, shall comply with ICC A117.1, including Section 603 (Toilet and Bathing Rooms). Signs containing the International Symbol of Accessibility and complying with Section 703 (Signs) of ICC A117.1 shall identify accessible portable toilets and bathing units.

Exception: Portable toilet units provided for use exclusively by construction personnel on a construction site.

E105.3 Laundry equipment. Where provided in spaces required to be accessible, washing machines and clothes dryers shall comply with this section. Where laundry equipment is provided within a dwelling or sleeping unit, not for public use or common use, such equipment shall comply with Section 1107.2.8.

E105.3.1 Washing machines. Where three or fewer washing machines are provided, at least one shall comply with ICC A117.1, including Section 611 (Washing Machines and Clothes Dryers), and shall be front loading. Where more than three washing machines are provided, at least two shall comply with ICC A117.1, including Section 611 and shall be front loading.

E105.3.2 Clothes dryers. Where three or fewer clothes dryers are provided, at least one shall comply with ICC A117.1, including Section 611 (Washing Machines and Clothes Dryers), and shall be front loading. Where more than three clothes dryers are provided, at least two shall comply with ICC A117.1, including Section 611, and shall be front loading.

E105.4 Depositories, vending machines, change machines and similar equipment. Where provided, at least one of each type of depository, vending machine, change machine and similar equipment shall comply with ICC A117.1.

Exception: Drive-up-only depositories are not required to comply with this section.

E105.5 Mailboxes. Where mailboxes are provided in an interior location, at least five percent, but not less than one, of each type shall comply with ICC A117.1. In residential and institutional facilities, where mailboxes are provided for each dwelling unit or sleeping unit, mailboxes complying with ICC A117.1 shall be provided for each unit required to be an Accessible unit.

E105.6 Automatic teller machines and fare machines. Where automatic teller machines or self-service fare vending, collection or adjustment machines are provided, at least one machine of each type at each location where such machines are provided shall comply with ICC A117.1, including Section 707 (ATMs and Fare Machines). Where bins are provided for envelopes, wastepaper or other purposes, at least one of each type shall comply with ICC A117.1, including Section 905 (Storage Facilities).

E105.7 Two-way communication systems. Where two-way Communication systems are provided to gain admittance to a building or facility or to restricted areas within a building or facility, the system shall comply with ICC A117.1, including Section 708 (Two-Way Communication Systems).



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SECTION BC E106: TELEPHONES

NYC Administrative Code § 28-BC E106

E106.1 General.

Where coin-operated public pay telephones, coinless public pay telephones, public closed-circuit telephones, courtesy phones or other types of public telephones are provided, accessible public telephones shall be provided in accordance with Sections E106.2 through E106.5 for each type of public telephone provided. For purposes of this section, a bank of telephones shall be considered two or more adjacent telephones.

E106.2 Wheelchair-accessible telephones. Where public telephones are provided, wheelchair-accessible telephones complying with ICC A117.1, including Section 704 (Telephones) and shall be provided in accordance with Table E106.2. Table E106.2 Wheelchair-Accessible Telephones Number of Telephones Provided On a Floor, Level or Exterior Site Minimum Required Number of Wheelchair-Accessible Telephones 1 or more single unit 1 per floor, level and exterior site 1 bank 1 per floor, level and exterior site 2 or more banks 1 per bank

E106.3 Volume controls. All public telephones provided shall have volume control complying with Section 704.3 (Volume-Control Telephones) of ICC A117.1.

E106.4 TTYs. TTYs complying with ICC A117.1, including Section 704.4 through 704.7, shall be provided in accordance with Sections E106.4.1 through E106.4.9.

E106.4.1 Bank requirement. Where four or more public pay telephones are provided at a bank of telephones, at least one public TTY shall be provided at that bank.

Exception: TTYs are not required at banks of telephones located within 200 feet (60 960 mm) of, and on the same floor as, a bank containing a public TTY.

E106.4.2 Floor requirement. Where four or more public pay telephones are provided on a floor of a privately owned building, at least one public TTY shall be provided on that floor. Where at least one public pay telephone is provided on

a floor of a publicly owned building, at least one public TTY shall be provided on that floor.

E106.4.3Building requirement.Where four or more public pay telephones are provided in a privately owned building, at least one public TTY shall be provided in the building. Where at least one public pay telephone is provided in a publicly owned building, at least one public TTY shall be provided in the building.

E106.4.4Site requirement.Where four or more public pay telephones are provided on a site, at least one public TTY shall be provided on the site.

E106.4.5Rest stops, emergency road stops, and service plazas.Where a public pay telephone is provided at a public rest stop, emergency road stop or service plaza, at least one public TTY shall be provided.

E106.4.6Hospitals.Where a public pay telephone is provided in or adjacent to a hospital emergency room, hospital recovery room or hospital waiting room, at least one public TTY shall be provided at each such location.

E106.4.7Transportation facilities.Transportation facilities shall be provided with TTYs in accordance with Section E109.2.5 in addition to the TTYs required by Sections E106.4.1 through E106.4.4.

E106.4.8Detention and correctional facilities.In detention and correctional facilities, where a public pay telephone is provided in a secured area used only by detainees or inmates and security personnel, then at least one TTY shall be provided in at least one secured area.

E106.4.9Signs.Public TTYs shall be identified by the International Symbol of TTY complying with Section 703.6.3.2 (International Symbol of TTY) of ICC A117.1. Directional signs indicating the location of the nearest public TTY shall be provided at banks of public pay telephones not containing a public TTY. Additionally, where signs provide direction to public pay telephones, they shall also provide direction to public TTYs. Such signs shall comply with ICC A117.1, including Section 703.2 (Visual Characters) and shall include the International Symbol of TTY.

E106.5Shelves for portable TTYs.Where a bank of telephones in the interior of a building consists of three or more public pay telephones, at least one public pay telephone at the bank shall be provided with a shelf and an electrical outlet in accordance with Section 704.6 (TTY Shelf) of ICC A117.1.

Exceptions:

1. In secured areas of detention and correctional facilities, if shelves and outlets are prohibited for purposes of security or safety shelves and outlets for TTYs are not required to be provided.

2. The shelf and electrical outlet shall not be required at a bank of telephones with a TTY.



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SECTION BC E107: SIGNAGE

NYC Administrative Code § 28-BC E107

E107.1 Signs.

Required accessible portable toilets and bathing facilities shall be identified by the International Symbol of Accessibility.

E107.2 Designations. Interior and exterior signs identifying permanent rooms and spaces shall be tactile. Where pictograms are provided as designations of interior rooms and spaces, the pictograms shall have tactile text descriptors. Signs required to provide tactile characters and pictograms shall comply with Section 703.3 and 703.5 of ICC A117.1.

Exceptions:

1. Exterior signs that are not located at the door to the space they serve are not required to comply.
2. Building directories, menus, seat and row designations in assembly areas, occupant names, building addresses and company names and logos are not required to comply.
3. Signs in parking facilities are not required to comply.
4. Temporary (seven days or less) signs are not required to comply.

E107.3 Directional and informational signs. Signs that provide direction to, or information about, permanent interior spaces of the site and facilities shall contain visual characters complying with Section 703.2 (Visual Characters) of ICC A117.1.

Exception: Building directories, personnel names, company or occupant names and logos, menus and temporary (seven days or less) signs are not required to comply with ICC A117.1.

E107.4 Other signs. Signage indicating special accessibility provisions shall be provided at fixed facilities and

stations, signage must be provided in accordance with Sections E109.2.2 through E109.2.2.3.



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SECTION BC E109: TRANSPORTATION FACILITIES AND STATIONS

NYC Administrative Code § 28-BC E109

E109.1 General.

Fixed transportation facilities and stations shall comply with the applicable provisions of Section E109.2.

E109.2 New construction. New stations in rapid rail, light rail, commuter rail, intercity rail, high speed rail and other fixed guideway systems shall comply with Sections E109.2.1 through E109.2.8.

E109.2.1 Station entrances. Where different entrances to a station serve different transportation fixed routes or groups of fixed routes, all entrance serving each group or route shall comply with Section 1104 and ICC A117.1, including Section 404 (Doors and Doorways).

E109.2.2 Signs. Signage in fixed transportation facilities and stations shall comply with Sections E109.2.2.1 through E109.2.2.3.

E109.2.2.1 Tactile signs. Where signs are provided at entrances to stations identifying the station or the entrance, or both, at least one sign at each entrance shall be tactile. A minimum of one tactile sign identifying the specific station shall be provided on each platform or boarding area. Such signs shall be placed in uniform locations at entrances and on platforms or boarding areas within the transit system to the maximum extent practicable. Tactile signs shall comply with Section 703.3 (Tactile Characters) of ICC A117.1.

Exceptions:

1. Where the station has no defined entrance but signs are provided, the tactile signs shall be placed in a central location.

2. Signs are not required to be tactile where audible signs are remotely transmitted to hand-held receivers, or are user or proximity actuated.

E109.2.2.2 Identification signs. Stations covered by this section shall have identification signs containing visual characters complying with Section 703.2 (Visual Characters) of ICC A117.1. Signs shall be clearly visible and within the sightlines of a standing or sitting passenger from within the train on both sides when not obstructed by another train.

E109.2.2.3 Informational signs. Lists of stations, routes and destinations served by the station which are located on boarding areas, platforms or mezzanines shall provide visual characters complying with Section 703.2 (Visual Characters) of ICC A117.1. Signs covered by this provision shall, to the maximum extent practicable, be placed in uniform locations within the transit system.

E109.2.3 Fare machines. Self-service fare vending, collection and adjustment machines shall comply with Section 707 (ATMs and Fare Machines) of ICC A117.1. Where self-service fare vending, collection or adjustment machines are provided for the use of the general public, at least one accessible machine of each type provided shall be provided at each accessible point of entry and exit.

E109.2.4 Rail-to-platform height. Station platforms shall be positioned to coordinate with vehicles in accordance with the applicable provisions of 36 CFR, Part 1192. Low-level platforms shall be 8 inches (203 mm) minimum above top of rail.

Exception: Where vehicles are boarded from sidewalks or street level, low-level platforms shall be permitted to be less than 8 inches (203 mm).

E109.2.5 TTYs. Where a public pay telephone is provided in a transit facility (as defined by the Department of Transportation) at least one public TTY complying with Section 704.4 through 704.7 of ICC A117.1 shall be provided in the station. In addition, where one or more public pay telephones serve a particular entrance to a transportation facility, at least one TTY telephone complying with Section 704.4 through 704.7 of ICC A117.1 shall be provided to serve that entrance.

E109.2.6 Track crossings. Where a circulation path serving boarding platforms crosses tracks, an accessible route complying with ICC A117.1, including Section 402 (Accessible Routes) shall be provided.

Exception: Openings for wheel flanges shall be permitted to be 2 1/2 inches (64 mm) maximum.

E109.2.7 Public address systems. Where public address systems convey audible information to the public, the same or equivalent information shall be provided in a visual format.

E109.2.8 Clocks. Where clocks are provided for use by the general public, the clock face shall be uncluttered so that its elements are clearly visible. Hands, numerals and digits shall contrast with the background either light-on-dark or dark-on-light. Where clocks are mounted overhead, numerals and digits shall comply with Section 703.2 (Visual Characters) of ICC A117.1.

E109.3 Reserved.



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SECTION BC E112: REFERENCED STANDARDS

NYC Administrative Code § 28-BC E112

E112.1 General.

This section lists the standards that are referenced in various sections of this appendix. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title and the section or sections of this document that reference the standard. E112.2 Subsequent additions, modifications, or deletions. Refer to the rules of the department for any subsequent additions, modifications or deletions that may have been made to these standards in accordance with Section 28-103.19 of the Administrative Code.

E112.3 Applicability. The application of the referenced standards shall be as specified in Section 102.4.

E112.4 Standards. DOJ 36CFR Part 1192 Americans with Disabilities Act (ADA) Accessibility Guidelines for Transportation Vehicles (ADAAG). Washington, D.C.: Department of Justice, 1991 E109.2.4, ICC A117.1-2003 Accessible and Usable Buildings and Facilities E101.2, et al.



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Appendix F Rodent Proofing
SECTION BC F101: GENERAL

NYC Administrative Code § 28-BC F101

F101.1 Scope.

The provisions of this appendix provide rodent-proofing design and construction requirements for the resistance of rodent ingress and infestation. For rodent extermination provisions related to demolition operations, see Section 3306.9.13. The New York City Health Code, The New York City Housing Maintenance Code, and The New York City Sanitation Code may contain additional provisions, as enforced by the New York City Department of Health and Mental Hygiene, the New York City Department of Housing Preservation and Development, and the New York City Sanitation Department.

F101.2General. Every structure, room, or space hereafter altered or erected in which persons live, sleep or work, or in which feed, food or foodstuffs are stored, prepared, processed, served or sold, shall be constructed in accordance with the provisions of this section. All metal or wire protection materials specified herein shall be noncorrosive.

F101.3Reserved.

F101.4Reserved.

F101.5Reserved.

F101.6Reserved.



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SECTION BC F102: PROTECTION

NYC Administrative Code § 28-BC F102

F102.1 Exterior walls and underground walls.

For walls or portions thereof within 2 feet (610 mm) of the outside ground level, and for walls below the outside ground level, all openings, including but not limited to annular spaces around pipes, electric cables, and conduits, shall be protected by closing such openings with cement mortar, concrete masonry, metal plates or screening designed to prevent the passage of rodents. Openings for doors, windows and vents shall be as provided for in Sections F102.3, F102.4 and F102.5, respectively.

F102.2 Floors on grade. Unless otherwise specified in this code, floors on grade, including but not limited to cellar floors and crawl space floors, shall be constructed of a minimum 2 inches (51 mm) thick continuous concrete slab. Gaps shall not be permitted between the slab and the abutting foundation walls or columns, except where expansion joints, thermal breaks, and control joints are located. All openings including but not limited to annular spaces around pipes, electric cables, and conduits in the slab shall be protected by closing such openings with cement mortar, concrete masonry, metal plates or screening designed to prevent the passage of rodents.

F102.3 Exterior doors. Where an exterior door is nonmetal or nonmetal-clad, such door shall be covered with a kick plate of a minimum thickness of 0.033 inch (0.84 mm), extending at least 8 inches (203 mm) from the bottom of the door, and covering the entire width of the door. When closed, the maximum clearance between any door, door jambs and sills shall not be greater than 3/8 inch (9.5 mm).

F102.4 Windows and other openings. Windows and other openings shall comply with Sections F102.4.1 and F102.4.2.

F102.4.1 Openings within two feet of ground level. Operable windows and other openings providing required or voluntary natural ventilation located with any portion within 2 feet (610 mm) above outside ground level immediately below such opening shall be covered for their entire height and width of the operable portion with hardware cloth of at least 0.035 inch (0.89 mm) wire or heavier. The openings in the hardware cloth shall not exceed 1/4 inch (6.4 mm).

F102.4.2 Rodent-accessible openings. Operable windows and other openings providing required or voluntary natural ventilation in the exterior located within 2 feet (610 mm) of exposed pipes, wires, conduits and other appurtenances, shall be covered with wire cloth of at least 0.035 inch (0.89 mm) wire. The openings in the hardware cloth shall not exceed 1/4 inch (6.4 mm).

Exception: In lieu of wire cloth covering, said pipes, wires, conduits and other appurtenances shall be blocked from rodent usage in accordance with one of the following:

1. Installation of solid sheet metal collars 0.024 inch (0.61 mm) thick or heavier. Such collars shall be fastened around the pipes, wires, conduits or other appurtenances, projecting a minimum distance of 12 inches (305 mm) beyond and on either side of the pipes, wires, conduits or appurtenances.

2. Installation of solid sheet metal guards fastened securely to the exterior wall, projecting 12 inches (305 mm) perpendicularly from the exterior wall for the length of the opening plus 2 feet (610 mm) beyond each end of the opening.

F102.5 Exterior wall ventilation openings. Exterior wall ventilator openings located with any portion within 2 feet (610 mm) of outside ground level shall be covered for their height and width with perforated sheet metal plates no less than 0.070 inch (1.8 mm) thick, expanded sheet metal plates not less than 0.047 inch (1.2 mm) thick, cast iron grills or grating, extruded aluminum load-bearing vents or with hardware cloth of 0.035 inch (0.89 mm) wire or heavier. The openings therein shall not exceed 1/4 inch (6.4 mm).



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Appendix G Flood-Resistant Construction
Chapter G1 General provisions
SECTION BC G101: PURPOSE AND OBJECTIVES

NYC Administrative Code § 28-BC G101

G101.1 Purpose.

The purpose of this appendix is to promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific flood hazard areas through the establishment of comprehensive regulations for management of flood hazard areas designed to:

1. Prevent unnecessary disruption of commerce, access and public service during times of flooding;
2. Manage the alteration of natural flood plains, stream channels and shorelines;
3. Manage filling, grading, dredging and other development which may increase flood damage or erosion potential;
4. Prevent or regulate the construction of flood barriers which will divert floodwaters or which can increase flood hazards;
5. Contribute to improved construction techniques in the flood plain; and
6. Comply with and exceed the minimum standards of the National Flood Insurance Program as administered by the Federal Emergency Management Agency (FEMA).

G101.2 Objectives. The objectives of this appendix are to:

1. Protect human life;
2. Minimize the expenditure of public money for flood control projects;
3. Minimize the need for rescue and relief efforts associated with flooding;

4. Minimize prolonged business interruption;
5. Minimize damage to structures located in areas of special flood hazard;
6. Minimize damage to public facilities and utilities such as water, electricity, telephone and sewer lines, and streets and bridges located in areas of special flood hazard;
7. Help maintain a stable tax base by providing for the sound use and development of flood prone areas; and
8. Ensure that potential owners and occupants are notified that property is within areas of special flood hazard.

G101.3Reserved.

G101.4Reserved.



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Appendix G Flood-Resistant Construction
Chapter G1 General provisions
SECTION BC G102: APPLICABILITY

NYC Administrative Code § 28-BC G102

G102.1 General.

This appendix, in conjunction with the New York City Construction Codes, provides minimum requirements for development located in areas of special flood hazard within the jurisdiction of New York City, including:

1. Subdivisions. This appendix shall apply to the subdivision of land;
2. Utilities. This appendix shall apply to the installation of utilities;
3. Site improvements. This appendix shall apply to site improvements, including but not limited to, temporary or permanent storage of materials, mining, dredging, filling, grading, paving, excavations, operations and other land disturbing activities;
4. Prefabricated buildings and manufactured homes. This appendix shall apply to placement and replacement of prefabricated buildings and manufactured homes;
5. Post-FIRM construction. This appendix shall apply to post-FIRM construction.;
6. Alterations to Post-FIRM construction. This appendix shall apply to repair, reconstruction, rehabilitation, or additions to post-FIRM construction;
7. Substantial improvement of Pre-FIRM construction. This appendix shall apply to substantial improvement of pre-FIRM buildings and structures, including restoration after damage, as if hereafter erected;
8. Horizontal enlargements of pre-FIRM construction. This appendix shall apply to horizontal enlargements of pre-FIRM buildings and structures to the extent of such horizontal enlargement, including but not limited to additions, decks, carports, or similar appendages. The existing portions of the structure shall not be required to comply, unless

otherwise required because the alteration is deemed a substantial improvement; and

9. Other alterations to pre-FIRM construction. This appendix shall apply to alterations or repairs to pre-FIRM buildings and structures, including installation of new components, materials, finishes and equipment, that increase the degree of noncompliance with this appendix. The following alterations or repairs, other than substantial improvements, shall not be deemed as an increase in the degree of noncompliance:

9.1. Where the alteration or repair comprises the replacement of pre-FIRM components, materials, finishes or equipment;

9.2. Where the alteration or repair comprises the installation of new components, materials, finishes or equipment in a space within the structure where similar pre-FIRM components, materials, finishes or equipment already exist; and

9.3. Where such alteration is a change in use, occupancy or how such space is used, provided that such change would not increase the degree of noncompliance with requirements of this appendix. The conversion of any space below the design flood elevation from non-habitable space into habitable space shall be deemed an increase in the degree of noncompliance.

G102.2 Establishment of areas of special flood hazard. The following flood hazard map and supporting data are adopted as referenced standards and declared to be a part of this appendix:

1. FEMA FIS 360497.
2. FEMA FIRMs 360497.

G102.3 Letters of map change. Map changes to FEMA FIRMs 360497 shall be administered in compliance with Sections G102.3.1 and G102.3.2.

G102.3.1 Letters of map amendment (LOMA). Where FEMA FIRMs 360497 indicates that a structure or tax lot is within a delineated area of special flood hazard, but the pre-FIRM ground elevations adjacent to the structure or throughout the tax lot are at or above the base flood elevation, the commissioner shall deem such structure or tax lot as being within the area of special flood hazard and shall not approve plans except in compliance with this appendix, unless a letter of map amendment (LOMA) is issued by FEMA removing such structure or tax lot from the area of special flood hazard.

G102.3.2 Letter of map revision based on fill (LOMR-F). Where FEMA FIRMs 360497 indicates that a structure or tax lot is within a delineated area of special flood hazard, but post-FIRM compacted fill is proposed to be added adjacent to the structure or throughout the tax lot to an elevation at or above the base flood elevation, the commissioner shall deem such structure or tax lot as being within the area of special flood hazard and shall not approve plans except in compliance with this appendix, unless a conditional or final letter of map revision based on fill (LOMR-F) is issued by FEMA removing such structure or tax lot from the area of special flood hazard. The commissioner shall promulgate rules establishing procedures for processing letters of map revision based on fill (LOMR-F).

G102.3.3 Certificates of occupancy. Certificates of occupancy shall indicate that the structure or tax lot is subject to a letter of map amendment (LOMA) or letter of map revision based on fill (LOMR-F) as per Section G106.3.



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SECTION BC G103: ADMINISTRATION

NYC Administrative Code § 28-BC G103

G103.1 Permit applications.

The commissioner is hereby designated as the floodplain administrator for the City of New York and shall review permit applications to determine that:

1. Proposed development sites will be reasonably safe from flooding;
2. All site development activities, including grading, filling, utility installation and drainage modification, and all new construction and substantial improvements (including the placement of prefabricated buildings and manufactured homes) are designed and constructed with methods, practices and materials that minimize flood damage and that are in accordance with this code and ASCE 24; and
3. All other required state and federal permits have been obtained.

G103.2 Reserved.

G103.3 Determination of base flood elevations. Where the proposed development is within an area of special flood hazard but the base flood elevations are not specified in the FEMA FIRMs 360497, the commissioner shall require the applicant to request base flood elevation data from the New York State Department of Environmental Conservation (DEC); and

1. Submit to the commissioner either:
 - 1.1. A letter from DEC making such a determination of base flood elevation; or
 - 1.2. A letter from the DEC indicating that the data are not available. When such a letter from DEC indicates that the data are not available, the base flood elevation shall be equal to 3 feet (914 mm) above the highest adjacent pre-FIRM

grade.

Exception: Large lots. Where the base flood elevation is not specified, the applicant shall submit a detailed engineering study establishing the base flood elevation, performed by an engineer in accordance with accepted hydrologic and hydraulic engineering techniques, in sufficient detail to allow review by the commissioner for any of the following conditions:

1. For a development which is located on a tax lot greater than 5 acres (2.02 hectares), or is located on property that was part of a tax lot that was greater than 5 acres (2.02 hectares) at the time of the adoption of the FIRM (October 1, 1984), or at any subsequent applicable map change thereto; or

2. For subdivisions resulting in 50 or more tax lots, including all tax lots previously subdivided from the same tax lot since the adoption of the FIRM (October 1, 1984), or since any subsequent applicable map changes thereto.

G103.4Reserved.

G103.5Floodway encroachment.Prior to issuing a permit for any floodway encroachment, including fill, new construction, substantial improvements and other development or land-disturbing activity, the commissioner shall require submission of a certification, along with supporting technical data, demonstrating that such development will not cause any increase of the level of the base flood. However, a floodway encroachment that increases the level of the base flood may be authorized if the applicant has:

1. Applied for a conditional Letter of Map Revision; and
2. Received the approval of the Federal Emergency Management Agency (FEMA).

G103.6Watercourse alteration.Prior to issuing a permit for any alteration or relocation of any watercourse within an area of special flood hazard, the commissioner shall require the applicant to:

1. Notify any affected adjacent municipalities or government jurisdictions;
2. Notify the DEC;
3. Submit evidence of such notifications to the commissioner and the Regional Director, Region II, the Federal Emergency Management Agency (FEMA);
4. Submit to the commissioner evidence of all such notifications;
5. Submit an engineering analysis demonstrating that the flood-carrying capacity of the altered or relocated portion of the watercourse will not be decreased; and
6. Submit evidence that such watercourses will be maintained in a manner which preserves the channel's flood-carrying capacity.

G103.7Sand dune alterations in V-Zones.Prior to issuing a permit for any alteration of sand dunes in a V-Zone, the commissioner shall require submission of an engineering analysis demonstrating that the proposed alteration will not increase the potential for flood damage.

G103.8Records.The commissioner shall maintain records of the following:

1. Applications and supporting documents for development in areas of special flood hazard;
2. Permits issued in areas of special flood hazard;

3. Inspection reports;
4. Certifications required in this appendix; and
5. Certificate of occupancy where applicable.

G103.9Violations.See Chapter 2 of Title 28 of the Administrative Code.



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SECTION BC G104: PERMITS

NYC Administrative Code § 28-BC G104

G104.1 Permit required.

Any person, owner or authorized agent who intends to conduct any development, as applicable pursuant to Section G102.1, within an area of special flood hazard, shall first apply to the commissioner and shall obtain the required permit.

G104.2 Permit application requirements. The applicant shall file an application in writing on a form furnished by the commissioner. The commissioner shall not approve such application unless the applicant submits all plans, details, data and documents demonstrating that the development complies with Section G104 and all other provisions of this appendix.

G104.3 Site plan. The permit application shall include a site plan. The site plan shall include plans and drawings, shall be sealed by a registered design professional and shall include the following information and any other data as may be required by the department:

1. A delineation of the flood hazard areas, including identification of the base and design flood and elevations;
2. If applicable, the location of the regulatory floodway;
3. For all proposed structures, spot ground elevations at building corners and in 20-foot (6096 mm) or smaller intervals along the foundation footprint, or 1 foot (305 mm) contour elevations throughout the building site;
4. Proposed locations of water supply, sanitary sewer, and utilities;
5. Drainage patterns and facilities; and
6. Foundation design details, including but not limited to:

6.1. Proposed elevation of the lowest floor including basement (for flood zone purposes) of all structures;

6.2. For a crawl-space, parking, storage, building access and other wet floodproofed enclosures below the design flood elevation, location and total net area of foundation openings in accordance with ASCE 24;

6.3. For dry floodproofed enclosures in buildings or structures that are nonresidential (for flood zone purposes), the proposed elevation to which the enclosure will be dry floodproofed in accordance with ASCE 24; and

6.4. Any proposed fill and excavation details.

Exception: Applications for subdivisions shall comply with Section G302.

G104.4 Water course alteration. The permit application shall include, if applicable, a description of the extent to which any watercourse will be altered or relocated as a result of proposed development, and any documentation required by Section G103.6.

G104.5 Certifications. The permit application shall include the applicable certifications in accordance with Section G104.5.1 through G104.5.3.

G104.5.1 A-Zones. For construction in A-Zones, the permit application shall include the following certifications, as applicable:

1. Wet floodproofing certification. For wet floodproofed enclosures below the design flood elevation, construction documents shall include a certification by the applicant that the design provides for the automatic entry and exit of floodwaters for equalization of hydrostatic flood forces in accordance with Section 2.6.1.2, ASCE 24.

2. Dry floodproofing certification for nonresidential buildings. For dry floodproofed buildings and structures that are nonresidential (for flood zone purposes), construction documents shall include a certification by the applicant that the dry floodproofing is designed in accordance with ASCE 24.

3. Utility certifications. For all applications involving utility or mechanical work, including applications where such work is to be filed in a separate, related application, construction documents shall include a certification by the applicant that "all heating, ventilation, air conditioning, plumbing, electrical and other services facilities and equipment within the structure or site will be located or constructed so as to prevent water from entering or accumulating within the components during conditions of flooding in accordance with ASCE 24."

G104.5.2 V-Zones. For construction in V-Zones the permit application shall include the following certifications, as applicable:

1. Structural design certification. Construction documents shall include a certification by the applicant that the "entire structure is designed in accordance with ASCE 24, including that the pile or column foundation and building or structure to be attached thereto is designed to be anchored to resist flotation, collapse and lateral movement due to the effects of wind and flood loads acting simultaneously on all building components, and other load requirements of Chapter 16 of the New York City Building Code."

2. Breakaway wall certification. Where breakaway walls are provided, construction documents shall include a certification by applicant that "the breakaway walls meet the load requirements of Section 5.3.2.3 of ASCE 7, are designed in accordance with ASCE 24, and are of an open lattice type construction only."

3. Utility certifications. For all applications involving utility or mechanical work, including applications where such work it to be filed in a separate, related application, construction documents shall include a certification by the applicant that "all heating, ventilation, air conditioning, plumbing, electrical and other services facilities and equipment within the structure or site will be located or constructed so as to prevent water from entering or accumulating within the

components during conditions of flooding, in accordance with ASCE 24."

G104.5.3 Floodway encroachment certification. For any floodway encroachment, including fill, new construction, substantial improvements and other development or land-disturbing activity, the applicant shall submit a certification, along with supporting technical data, demonstrating that such development will not cause any increase of the level of the base flood in accordance with the requirements of Section G103.5.

G104.6 Validity of permit. The issuance of a permit under this appendix shall not be construed to be a permit for, or approval of, any violation of this appendix or any other provision of this code. The issuance of a permit based on submitted documents and information shall not prevent the commissioner from requiring the correction of errors. The commissioner is authorized to prevent occupancy or use of a structure or site which is in violation of this appendix or other provisions of this code.

G104.7 Permit expiration. A permit shall become invalid if the proposed development:

1. Is not commenced within 180 days after its issuance; or
2. If the work authorized is suspended or abandoned for a period of 180 days after the work commences.

G104.8 Permit reinstatement. Permit reinstatements shall be requested in writing. The commissioner is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each subject to the limitations of Section 28-105.

G104.9 Permit suspension or revocation. The commissioner is authorized to suspend or revoke a permit issued under this appendix wherever the permit is issued in error or on the basis of incorrect, inaccurate or incomplete information, or in violation of this code, in accordance with Section 28-105.



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SECTION BC G105: SPECIAL INSPECTIONS REQUIREMENTS

NYC Administrative Code § 28-BC G105

G105.1 General.

Special inspections shall be performed in accordance with this section.

G105.2 All work applications. All work applications, regardless of the extent of the scope of work, shall be subject to the following special inspection:

1. Flood zone compliance inspection. Prior to sign off of work, a registered design professional shall certify that: "the structure was constructed" or "alterations were performed," "with methods and practices that minimize flood damage and that are in accordance with approved plans, and with any applicable provisions of Appendix G of the New York City Building Code and ASCE 24."

2. Reserved.

G105.3 New buildings and substantial improvements. In addition to the flood zone compliance inspection required by Section G105.2, all applications for new buildings or substantial improvements shall be subject to the following special inspections:

1. Elevation progress inspection. Upon placement of the lowest floor, including the basement (for flood zone purposes), an engineer or licensed professional surveyor shall inspect the site and verify the elevation of such lowest floor. The inspection report verifying the elevation shall be submitted to the commissioner prior to further vertical construction. The commissioner shall be permitted to issue a stop work order if such inspection report is not submitted.

2. Final elevation inspection. The final elevations shall comprise either of the following, as applicable:

2.1. Elevation certificate. Prior to sign off of work, an engineer or licensed professional surveyor shall submit to the commissioner a certification of the elevation of the lowest floor, including the basement (for flood zone purposes). Such

certification shall be made utilizing FEMA Form 81-31 entitled, "Elevation Certificate."

2.2. Dry floodproofing certificate. Prior to sign off of work, an engineer or licensed professional surveyor shall submit to the commissioner a dry floodproofing certificate. Such certification shall be made utilizing FEMA Form 81-65 entitled, "Floodproofing Certification."

G105.3.1Flood shield inspection.Where floodshields or other flood control devices are installed as part of a dry floodproofing system in buildings and structures that are nonresidential (for flood zone purposes), a registered design professional shall inspect the shields or devices in their stored positions or locations, witness their activation or transportation to their installed positions, and witness their deactivation or transportation back to their stored locations. The registered design professional shall also confirm the installation of signage required by ASCE 24, Section 6.2.3, Item 3.

G105.4Reserved.

G105.5Reserved.

G105.6Reserved.

G105.7Reserved.



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SECTION BC G106: CERTIFICATES OF OCCUPANCY

NYC Administrative Code § 28-BC G106

G106.1 Applicability.

This section shall apply to post-FIRM construction and substantial improvements where the work results in the issuance of a new or amended certificate of occupancy.

G106.2 Spaces subject to flooding in A-Zones. The certificate of occupancy shall describe all non-dry-floodproofed spaces below the design flood elevation as "subject to flooding," including but not limited to wet floodproofed spaces usable solely for parking, storage, building access or crawl spaces.

G106.3 Spaces subject to flooding in V-Zones. The certificate of occupancy shall describe all spaces below the design flood elevation as "subject to flooding," including but not limited to spaces usable solely for parking, storage, building access or crawl spaces.

G106.4 Dry floodproofed spaces. The certificate of occupancy shall describe any dry floodproofed spaces as "dry floodproofed". For such buildings containing dwelling units, the certificate of occupancy shall also provide notations as required by Section G304.1.2, Item 2.2.5. Where flood shields or other flood control devices are installed, the certificate of occupancy shall also provide notations describing these features.

G106.5 Letters of map change. Where applicable, the certificate of occupancy shall indicate that "the structure is exempted from the area of special flood hazard pursuant to FEMA Letter of Map Amendment (LOMA); ns ()," or that "the structure is exempted from the area of special flood hazard pursuant to FEMA Letter of Map Revision Based on Fill (LOMR-F); ns ()."



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SECTION BC G107: VARIANCES

NYC Administrative Code § 28-BC G107

G107.1 General.

The Board of Standards and Appeals shall hear and decide requests for variances from the requirements of this appendix. The Board of Standards and Appeals shall base its determination on technical justifications, and has the right to attach such conditions to variances as it deems necessary to further the purposes and objectives of this appendix.

G107.2 Conditions for variance.

G107.2.1 Historic structures. The Board of Standards and Appeals is authorized to issue a variance for the repair or rehabilitation of a historic structure provided that:

1. The application has received approval from the Landmark Preservation Committee and/or the New York State Historical Preservation Office, as applicable;
2. The proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure; and
3. The variance is the minimum necessary to preserve the historic character and design of the structure.

G107.2.2 Floodway restrictions. The Board of Standards and Appeals shall not issue a variance for any proposed development in a floodway if any increase in flood levels would result during the base flood discharge.

G107.2.3 General conditions for variance. Except for historic structures as provided for in Section G107.2.1, the Board of Standards and Appeals is authorized to issue a variance only upon:

1. A determination that the new construction, substantial improvement, or other proposed development is located on a tax lot that, on November 18, 1983, was no more than 1/2 acre (0.2 hectare) in size. However, where the tax lot has

been determined to be larger than 1/2 acre (0.2 hectare), the technical justification required for issuing the variance increases with the lot size;

2. Showing of good and sufficient cause;
3. Determination that failure to grant the variance would result in exceptional hardship to the applicant;
4. Determination that the granting of a variance will not result in:
 - a. Increased flood heights;
 - b. Additional threats to public safety, provided, however, that the variance is permitted to increase risks to life and property for the subject structure;
 - c. Extraordinary public expense;
 - d. Nuisances;
 - e. Fraud on or victimization of the public; or
 - f. Conflict with existing local laws or ordinances; and
5. Determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

G107.2.4Functionally dependent facilities.The Board of Standards and Appeals is authorized to issue a variance for the construction or substantial improvement of a functionally dependent facility provided that:

1. The criteria for Sections G107.2.1 through G107.2.3 are met; and
2. All methods and materials utilized minimize flood damage during the base flood and create no additional threats to public safety.

G107.3Standards for variance.In reviewing applications for variances, the Board of Standards and Appeals shall consider all technical evaluations, all relevant factors, all other portions of this appendix and the following:

1. The danger that materials and debris may be swept onto other lands resulting in injury or damage;
2. The danger to life and property due to flooding or erosion damage;
3. The susceptibility of the proposed development, including contents, to flood damage and the effect of such damage on current and future owners;
4. The importance of the services provided by the proposed development to the community;
5. The availability of alternate locations for the proposed development that are not subject to flooding or erosion;
6. The relationship of the proposed development to the comprehensive plan and flood plain management program for that area;
7. The safety of access to the property in times of flood for ordinary and emergency vehicles;
8. The expected heights, velocity, duration, rate of rise and debris and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site; and

9. The costs of providing governmental services during and after flood conditions including maintenance and repair of public utilities and facilities such as sewer, gas, electrical and water systems, streets and bridges.

G107.4 Notification of risks. Upon issuance of a variance, the Executive Director of the Boards of Standards and Appeals shall provide written notice to the owner and the applicant that:

1. The issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance; and
2. That such construction below the base flood level increases risks to life and property.

G107.5 Records. The Board of Standards and Appeals shall:

1. Maintain a record of all variance actions, including justification for their issuance; and
2. Report such variances issued in its biennial report submitted to the Federal Emergency Management Agency.

CHAPTER G2 DEFINITIONS Section BC G201 Definitions



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SECTION BC G201: DEFINITIONS

NYC Administrative Code § 28-BC G201

G201.1 General.

The following words and terms shall, for the purposes of this appendix, have the meanings shown herein.

G201.2 Definitions.

A-ZONE. An area of special flood hazard without high velocity wave action. When not shown on the FIRMs, the water surface elevation may be determined from available data by the registered design professional of record in accordance with Section G103.3. See also "Area of special flood hazard."

AREA OF SPECIAL FLOOD HAZARD. The land in the flood plain delineated as subject to a one percent or greater chance of flooding in any given year. Such areas are designated on the Flood Insurance Rate Map (FIRM) as A-Zones or V-Zones. Such areas are also known as the base flood plain or one hundred year flood plain. Areas designated as X-Zones shall not be deemed areas of special flood hazard for the purposes of this Appendix.

BASE FLOOD. The flood having a 1-percent chance of being equaled or exceeded in any given year.

BASE FLOOD ELEVATION. The elevation of the base flood, including wave height, as specified on FEMA FIRMs 360497 or as determined in accordance with Section G103.3, relative to the National Geodetic Vertical Datum (NGVD).

BASEMENT (FOR FLOOD ZONE PURPOSES). The portion of a building having its floor subgrade (below ground level) on all sides.

BREAKAWAY WALL. An open lattice wall that is not part of the structural support of the building to which it is attached and that is intended through its design and construction to collapse under specific later loading forces without causing damage to the elevated portion of the building or the supporting foundation system.

DESIGN FLOOD ELEVATION. The applicable elevation specified in ASCE 24, Tables 2-1, 4-1, 5-1, 6-1, or 7-1, depending on the structural occupancy category designated in ASCE 24, Table 1-1

DEVELOPMENT. Any man-made change to improved or unimproved real estate, including but not limited to, buildings or other structures, temporary or permanent storage of materials, mining, dredging, filling, grading, paving, excavations, operations and other land disturbing activities.

EXISTING CONSTRUCTION. See "PRE-FIRM DEVELOPMENT."

EXISTING STRUCTURE. See "PRE-FIRM DEVELOPMENT".

FLOOD or FLOODING. A general and temporary condition of partial or complete inundation of normally dry land from:

1. The overflow of inland or tidal waters.
2. The unusual and rapid accumulation or runoff of surface waters from any source.

FLOOD-DAMAGE-RESISTANT MATERIALS. Any construction material, including finishes, capable of withstanding direct and prolonged contact with floodwaters without sustaining any damage that requires more than cosmetic repair.

FLOOD INSURANCE RATE MAP (FIRM). The official map on which the Federal Emergency Management Agency (FEMA) has delineated areas of special flood hazard, base flood elevations, and the flood boundary and floodways.

FLOOD INSURANCE STUDY (FIS). The official report provided by the Federal Emergency Management Agency (FEMA) containing the Flood Insurance Rate Map (FIRM), the water surface elevation of the base flood and supporting technical data.

FLOODPROOFING, DRY. For buildings and structures that are nonresidential (for flood zone purposes), a combination of design modifications that results in the building's or structure's being water tight to the design flood elevation, including the attendant utility and sanitary facilities, with walls substantially impermeable to the passage of water and with structural components having the capacity to resist loads as identified in ASCE 7.

FLOODPROOFING, WET. A floodproofing method designed to permit parts of the structure below the design flood elevation that are used for parking, storage, building access, or crawl space to intentionally flood, by equalizing hydrostatic pressures and by relying on the use of flood-damage-resistant materials and construction techniques.

FLOODWAY. The channel of the river, creek or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Floodways are mapped only in the Boroughs of the Bronx and Staten Island.

FUNCTIONALLY DEPENDENT FACILITY. A facility that cannot be used for its intended purpose unless it is located or carried out in close proximity to water, such as a docking or port facility necessary for the loading or unloading of cargo or passengers, shipbuilding or ship repair. The term does not include long-term storage, manufacture, sales or service facilities.

HISTORIC STRUCTURE. A pre-FIRM building or structure:

1. Designated as a landmark or located within an historic district designated by the New York City Landmarks Preservation Commission; or

2. Listed or preliminarily determined to be eligible for listing in the National or State Register of Historic Places; or

3. Determined by the Secretary of the U.S. Department of the Interior or the New York State Department of Parks and Recreation as contributing to the historical significance of a registered historic district or a district preliminarily determined to qualify as an historic district.

LETTER OF MAP AMENDMENT (LOMA). An official amendment to the FIRM, issued and approved by the Federal Emergency Management Agency (FEMA), removing structures or tax lots from areas of special flood hazard, resulting from a demonstration that the Pre-FIRM ground elevations are at or above the base flood elevation.

LETTER OF MAP REVISION BASED ON FILL (LOMR-F). An official amendment to the FIRM, issued and approved by the Federal Emergency Management Agency (FEMA), removing structures or tax lots from areas of special flood hazard, resulting from the Post-FIRM placement of compacted fill, such that the new ground elevation is at or above the base flood elevation.

LOWEST FLOOR. The floor of the lowest enclosed area, including crawl spaces and basements (for flood zone purposes).

Exception: The lowest floor shall not include any wet floodproofed spaces usable solely for vehicle parking, building access, storage or crawl space, provided that such enclosure is not built so as to render the structure in violation of this appendix, including that:

1. Such enclosure shall allow for the automatic entry and exit of floodwaters;
2. Such enclosure shall be constructed solely of flood resistant materials and finishes;
3. Such enclosure shall have a floor elevation equal to or higher than the outside adjacent grade on at least one side; and
4. Such outside adjacent grade shall slope down, towards the source of flooding, providing positive drainage by gravity, thus preventing accumulations of water under or in the structure after the floodwaters recede without the use of pumps, pipes or drains.

MANUFACTURED HOME. A structure that is transportable in one or more sections, built on a permanent chassis, designed for use with or without a permanent foundation when attached to the required utilities, and constructed to the Federal Mobile Home Construction and Safety Standards and rules and regulations promulgated by the U.S. Department of Housing and Urban Development. The term also includes mobile homes, park trailers, travel trailers and similar transportable structures that are placed on a site for 180 consecutive days or longer.

MANUFACTURED HOME PARK OR SUBDIVISION. A parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

MARKET VALUE OF STRUCTURE. The price that a buyer is willing, but is not under any duty, to pay for a particular structure to an owner who is willing, but not obligated, to sell, exclusive of the value of the land, or of other buildings or structures on the same tax lot. The market value of a structure shall be determined in accordance with rules promulgated by the commissioner.

NATIONAL GEODETIC VERTICAL DATUM (NGVD). The national vertical datum standard established in 1929, used as a reference for establishing elevations within a flood plain.

NEW CONSTRUCTION. See "POST-FIRM DEVELOPMENT."

NONRESIDENTIAL (FOR FLOOD ZONE PURPOSES). A building or structure that either:

1. Contains no space classified in Groups I-1, R-1, R-2, or R-3, and contains no space that is accessory, as such term is defined in the New York City Zoning Resolution, to any I-1, R-1, R-2, or R-3 occupancy; or

2. Contains such space(s), but also contains space on the lowest floor that is not accessory, as such term is defined in the New York City Zoning Resolution, to an I-1, R-1, R-2, or R-3 occupancy.

PRE-FIRM DEVELOPMENT. Any development:

1. Completed prior to November 13, 1983;

2. Under construction on November 13, 1983 provided that the start of construction was prior to said date; or

3. Completed on or after November 13, 1983 but that:

3.1. Was not located within an area of special flood hazard at the start of construction; and

3.2. Is now located within an area of special flood hazard as a result of a subsequent change to the FIRM.

PRE-FIRM STRUCTURE. See "PRE-FIRM DEVELOPMENT."

POST-FIRM DEVELOPMENT. Any development that is not pre-FIRM development.

POST-FIRM STRUCTURE. See "POST-FIRM DEVELOPMENT."

RECREATIONAL VEHICLE. A vehicle that is built on a single chassis, 400 square feet (37.16 m²) or less when measured at the largest horizontal projection, designed to be self-propelled or permanently towable by a light-duty truck, and designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel or seasonal use. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect-type utilities and security devices and has no permanently attached additions.

RESIDENTIAL (FOR FLOOD ZONE PURPOSES). A building or structure containing any space that is either:

1. Classified in Groups I-1, R-1, R-2, or R-3; or

2. Accessory, as such term is defined in the New York City Zoning Resolution, to any I-1, R-1, R-2, or R-3 occupancy.

Exception: Such a building or structure shall be considered nonresidential (for flood zone purposes) when also containing space on the lowest floor that is not accessory, as such term is defined in the New York City Zoning Resolution, to an I-1, R-1, R-2, or R-3 occupancy.

SAND DUNES. Naturally occurring accumulations of sand in ridges or mounds landward of a beach.

SPECIAL FLOOD HAZARD AREA. See "Area of Special Flood Hazard."

START OF CONSTRUCTION. The date of permit issuance for: (i) post-FIRM developments; (ii) substantial improvements to pre-FIRM structures; and (iii) those pre-FIRM developments that, at the time of permit issuance, were not within an area of special flood hazard but that, prior to completion, were within an area of special flood hazard as a result of map change; provided the actual commencement of construction, repair, reconstruction, rehabilitation, addition, placement or other improvement is within 180 days after the date of permit issuance and such construction activity is not thereafter suspended or abandoned for 180 days or more. For the purposes of this definition:

1. The actual commencement of construction means the first placement of permanent construction of a building

(including a manufactured home or prefabricated building) on a site, such as the pouring of a slab or footings, installation of pilings or construction of columns.

2. Permanent construction does not include land preparation (such as clearing, excavation, grading or filling), the installation of streets or walkways, excavation for a basement (for flood zone purposes), footings, piers or foundations, the erection of temporary forms or the installation of accessory buildings such as garages or sheds not occupied as dwelling units or not part of the main building.

3. For a substantial improvement, the actual commencement of construction means the first alteration of any wall, ceiling, floor or other structural part of a building, regardless of whether that alteration affects the external dimensions of the building.

SUBSTANTIAL DAMAGE. Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

SUBSTANTIAL IMPROVEMENT. Any repair, reconstruction, rehabilitation, addition or improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or repair is started. If the structure has sustained substantial damage, any repairs are considered substantial improvement regardless of the actual repair work performed. The term does not, however, include either:

1. Any project for improvement of a building required to correct pre-FIRM health, sanitary or safety code violations identified by the commissioner, the Fire Commissioner, the Commissioner of Housing Preservation and Development, or the Commissioner of Health and Mental Hygiene, and that are the minimum necessary to assure safe living conditions; or

2. Any alteration of a historic structure provided that the alteration will not preclude the structure's continued designation as a historic structure.

V-ZONE. An area of special flood hazard subject to high velocity wave action.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 16, eff. July 1, 2008.

Design Flood Elevation amended L.L. 8/2008 § 173, eff. July 1, 2008.

CHAPTER G3 CONSTRUCTION STANDARDS Section BC G301 GeneralBC G302 SubdivisionsBC G303 Site improvementBC G304 Post-firm construction and substantial improvementsBC G305 Manufactured homesBC G306 Recreational vehiclesBC G307 Tanks



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SECTION BC G301: GENERAL

NYC Administrative Code § 28-BC G301

G301.1 All Developments.

To the extent required by Section G102.1, all developments, including but not limited to utility installation, site improvements, placement of prefabricated buildings and manufactured homes, new building construction, alterations and repairs, shall be designed and constructed to resist the effects of flood hazards and flood loads in accordance with this appendix and ASCE 24.

G301.1.1 Multiple flood zones. For a structure that is located in more than one zone (for instance both an A-Zone and an X-Zone, or both an A-Zone and a V-Zone), the provisions associated with the most restrictive area of special flood hazard shall apply to the entire structure.

G301.2 Reserved.



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SECTION BC G302: SUBDIVISIONS

NYC Administrative Code § 28-BC G302

G302.1 General.

Any subdivision proposal, including proposals for manufactured home parks and subdivisions, or other proposed new development within an area of special flood hazard shall demonstrate that:

1. All such proposals are consistent with the need to minimize flood damage;
2. All public utilities and facilities, such as sewer, gas, electric and water systems are located and constructed to minimize or eliminate flood damage; and
3. Adequate drainage is provided to reduce exposure to flood hazards.

G302.2 Subdivision requirements. The following requirements shall apply to any proposed subdivision, including proposals for manufactured home parks and subdivisions, any portion of which lies within an area of special flood hazard:

1. The area of special flood hazard, including floodways and V-Zones, as appropriate, shall be delineated on tentative and final subdivision plats;
2. Base flood elevations shall be shown on tentative and final subdivision plats;
3. Building lots shall be provided with adequate buildable area, in accordance with the New York City Zoning Resolution, outside the floodway; and
4. The design criteria for any utilities and facilities, as set forth in this appendix and appropriate New York City Construction Codes, shall be met.



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SECTION BC G303: SITE IMPROVEMENT

NYC Administrative Code § 28-BC G303

G303.1 Development in floodways.

Development or land disturbing activity is prohibited in floodways unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment will not result in any increase in the level of the base flood, in accordance with Section G103.5.

G303.2Sewer facilities.All new and replaced sanitary sewer facilities, private sewage treatment plants (including all pumping stations and collector systems) and on-site waste disposal systems shall be designed in accordance with Chapter 8, ASCE 24, to minimize or eliminate infiltration of floodwaters into the facilities and discharge from the facilities into floodwaters, or impairment of the facilities and systems.

G303.3Water facilities.All new and replacement water facilities shall be designed in accordance with the provisions of Chapter 8, ASCE 24, to minimize or eliminate infiltration of floodwaters into the systems.

G303.4Storm drainage.Storm drainage shall be designed to convey the flow of surface waters to minimize or eliminate damage to persons or property and shall meet the requirements of ASCE 24.

G303.5Streets and sidewalks.Streets and sidewalks shall be designed to minimize potential for increasing or aggravating flood levels and shall meet the requirements of Section G303.7.

G303.6Retaining walls and driveways.Retaining walls and driveways shall meet the requirements of Section G303.7.

G303.7Grading and fill.In areas of special flood hazard grading and/or fill shall not be approved:

1. Unless such fill is placed, compacted and sloped to minimize shifting, slumping and erosion during the rise and fall of flood water and, as applicable, wave action, in accordance with ASCE 24.

2. In floodways, unless it has been demonstrated through hydrologic and hydraulic analyses performed by an engineer in accordance with standard engineering practice that the proposed grading or fill, or both will not result in any increase in the flood levels during the occurrence of the design flood, in accordance with Section G103.5.

3. In V-Zones, unless such fill is conducted and or placed to avoid diversion of water and waves towards any building or structure.



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SECTION BC G304: POST-FIRM CONSTRUCTION AND SUBSTANTIAL IMPROVEMENTS

NYC Administrative Code § 28-BC G304

G304.1 A-Zone construction standards.

The following standards shall apply to post-FIRM construction and substantial improvements located within A-Zones.

G304.1.1 Residential. For buildings or structures that are residential (for flood zone purposes), all post-FIRM new buildings and substantial improvements shall comply with the applicable requirements in Chapter G3 and ASCE 24, and shall be elevated as follows:

1. Lowest floor. The lowest floor, including the basement (for flood zone purposes), shall be elevated to at or above the design flood elevation specified in ASCE 24, Table 2-1;
2. Enclosures below the design flood elevation. Enclosed spaces below the design flood elevation specified in ASCE 24, Table 2-1 shall be useable solely for parking of vehicles, building access, storage, or crawlspace, and shall be wet floodproofed in accordance with ASCE 24. Breakaway walls are not required in A-Zones.
3. Materials. Only flood-damage-resistant materials and finishes shall be utilized below the design flood elevation specified in ASCE 24, Table 5-1;
4. Utilities and equipment. Utilities and attendant equipment shall be located at or above the design flood elevation specified in ASCE 24, Table 7-1, or shall be constructed so as to prevent water from entering or accumulating within the components during conditions of flooding in accordance with ASCE 24;
5. Certifications. Applications shall contain applicable certifications in accordance with Section G104.5; and
6. Special inspections. Special inspections shall be as required by Section G105.

G304.1.2 Nonresidential. For buildings or structures that are nonresidential (for flood zone purposes), all post-FIRM

new buildings and substantial improvements shall comply with the applicable requirements in Chapter G3 and ASCE 24, and shall comply with either of the following:

1. Elevation option. The structure shall comply with Items 1 through 6 of Section G304.1.1; or

2. Dry floodproofing option. The structure shall comply with the following:

2.1. Elevation of dry floodproofing. The structure shall be dry floodproofed to at or above the design flood elevation specified in ASCE 24, Table 6-1;

2.2. Dwelling units. Where dwelling units are located in a building utilizing the dry floodproofing option, the following additional requirements shall be met:

2.2.1. All rooms and spaces within dwelling units shall be located at or above the design flood elevation;

2.2.2. No more than one toilet and one sink shall be located below the design flood elevation. Any such toilet room shall not be located within a dwelling unit and shall be no larger than required by Chapter 11; and no roughing therein shall be permitted to accommodate additional fixtures;

2.2.3. No more than one two-compartment laundry tray shall be permitted below the design flood elevation;

2.2.4. No kitchens or kitchenettes shall be permitted below the design flood elevation;

2.2.5. A restrictive declaration noting the above restrictions shall be filed with the City Register or County Clerk, and the page number and liber number shall be identified in the permit application and on the certificate of occupancy.

2.3. Utilities and equipment. Utilities and attendant equipment shall be located within the dry floodproofed enclosure, or may be located outside the dry floodproofed enclosure provided that they are located at or above the design flood elevation specified in ASCE 24, Table 7-1 or are constructed so as to prevent water from entering or accumulating within the components during conditions of flooding in accordance with ASCE 24.

2.4. Certifications. Applications shall contain applicable certifications in accordance with Section G104.5; and

2.5. Special inspections. Special inspections shall be as required by Section G105.

G304.2V-Zone construction standards. In addition to the requirements of ASCE 24, the following standards shall apply to post-FIRM construction and substantial improvements located within V-Zones.

1. Foundation. The lowest floor shall be elevated on adequately anchored pilings or columns and securely anchored to such piles or columns to prevent floatation, collapse and lateral movement resulting from wind and flood loads acting simultaneously on all building components, and other load requirements of Chapter 16 and this appendix.

2. Lowest horizontal member. The lowest portion of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) shall be at or above the design flood elevation specified in ASCE 24, Table 4-1.

3. Below the lowest horizontal member. Spaces below the lowest horizontal member shall be either:

3.1. Free of obstructions; or

3.2. Enclosed with breakaway walls providing unconditioned space useable solely for parking of vehicles, building access, storage or crawl space. Such breakaway walls shall:

3.2.1. Be of an open lattice type construction only;

3.1.1. Meet the load requirements of Section 5.3.2.3 of ASCE 7; and

3.2.3. Meet the additional requirements of ASCE 24.

4. Materials. Only flood-damage-resistant materials and finishes shall be utilized below the design flood elevation specified in ASCE 24, Table 5-1;

5. Utilities and equipment. Utilities and attendant equipment shall be located at or above the design flood elevation specified in ASCE 24, Table 7-1, or shall be constructed so as to both resist the wave action and prevent water from entering or accumulating within the components during conditions of flooding in accordance with ASCE 24;

6. Prohibitions. The following shall be prohibited in V-Zones:

6.1. Development, including land disturbing activities, seaward of the reach of mean high tide;

6.2. Use of fill for structural support of buildings; and

6.3. Man-made alterations of sand dunes that would increase potential damage to buildings.

7. Certifications. Applications shall contain applicable certifications in accordance with Section G104.5; and

8. Special inspections. Special inspections shall be as required by Section G105.



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SECTION BC G305: MANUFACTURED HOMES.

NYC Administrative Code § 28-BC G305

G305.1 General.

Manufactured homes shall be prohibited in V-Zones. Within A-Zones, all new, replaced or substantially improved manufactured homes shall be:

1. Installed using methods and practices that minimize flood damage;
2. Elevated to or above the design flood elevation specified in ASCE 24, Table 2-1;
3. Placed on a permanent, reinforced foundation that is designed in accordance with ASCE 24;
4. Securely anchored to a foundation system designed to resist floatation, collapse and lateral movement. Methods of anchoring are authorized to include, but are not limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable state and local anchoring requirements for resisting wind forces.



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SECTION BC G306: RECREATIONAL VEHICLES

NYC Administrative Code § 28-BC G306

G306.1 General.

The following shall apply to placement of all recreational vehicles within areas of special flood hazard:

1. Placement in V-Zones and floodways prohibited. The placement of recreational vehicles is prohibited in V-Zones and floodways.
2. Temporary placement in A-Zones. Within A-Zones, recreational vehicles shall be fully licensed and ready for highway use, and shall be placed on a site for less than 180 consecutive days.
3. Permanent placement in A-Zones. Within A-Zones, recreational vehicles that are not fully licensed and ready for highway use, or that are to be placed on a site for 180 or more consecutive days, shall meet the requirements of Section G305 for manufactured homes.



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SECTION BC G307: TANKS

NYC Administrative Code § 28-BC G307

G307.1 Underground tanks.

Underground tanks in areas of special flood hazard shall be designed, constructed, installed, and anchored to prevent flotation, collapse and lateral movement resulting from hydrostatic loads, including the effects of buoyancy, during conditions of flooding to the design flood elevation, in accordance with ASCE 24.

G307.2 Above-ground tanks. Above-ground tanks in areas of special flood hazard shall be:

1. Elevated to or above the design flood elevation specified in ASCE 24, Table 7-1; or
2. Designed, constructed, installed, and anchored to prevent flotation, collapse and lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of flooding to the design flood elevation, in accordance with ASCE 24.

G307.3 Tank inlets and vents. In areas of special flood hazard, tank inlets, fill openings, outlets and vents shall be:

1. Installed at or above the design flood elevation specified in ASCE 24, Table 7-1, or fitted with covers designed to prevent the inflow of floodwater and outflow of the contents of the tanks during conditions of flooding to the design flood elevation, in accordance with ASCE 24; and
2. Anchored to prevent lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of flooding to the design flood elevation, in accordance with ASCE 24.



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SECTION BC G308: OTHER DEVELOPMENT

NYC Administrative Code § 28-BC G308

G308.1 Accessory structures.

Accessory structures shall be anchored to prevent flotation, collapse and lateral movement resulting from hydrostatic loads, including the effects of buoyancy, during conditions of flooding to the design flood elevation. Enclosed accessory structures usable solely for parking or storage shall be wet floodproofed and shall have flood openings to allow for the automatic entry and exit of flood waters designed in accordance with ASCE 24.

G308.2 Fences in floodways. Fences in floodways that may block the passage of floodwaters, such as stockade fences and wire mesh fences, shall meet the requirement of Section G103.5.

G308.3 Oil derricks. Oil derricks located in areas of special flood hazard shall be designed in conformance with ASCE 24.

G308.4 Prefabricated swimming pools in floodways. Prefabricated swimming pools in floodways shall meet the requirements of Section G103.5. CHAPTER G4 REFERENCED STANDARDS Section BC G401 General BC G402 Standards



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SECTION BC G401: GENERAL

NYC Administrative Code § 28-BC G401

G401.1 General.

This chapter lists the standards that are referenced in various sections of this appendix. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title and the section or sections of this document that reference the standard.

G401.2 Subsequent additions, modifications, or deletions. Refer to the rules of the department for any subsequent additions, modifications or deletions that may have been made to these standards in accordance with Section 28-103.19 of the Administrative Code.

G401.3 Applicability. The application of the referenced standards shall be as specified in Section 102.4.

G401.4 Reserved.

G401.5 Reserved.

G401.6 Reserved.



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A17.1-2000, Safety Code for Elevators and Escalators Part 1 GENERAL
SECTION 1.3: DEFINITIONS

NYC Administrative Code § 28-BC H1.3

1.3 Add or revise the following definitions to section 1.3 as follows:

Delete and revise the definition "Designated Level" to read as follows:

Designated Level: For the purpose of applying Section 2.27.3, designated level shall mean the street floor or other level that best serves the needs of emergency personnel for fire fighting or rescue purposes.

Add new definition "Elevator Classification" to read as follows:

Elevator Classification: Elevator is classified as freight or passenger.

Add new definition "Elevator, Service Car" to read as follows:

Elevator, Service Car: A passenger or freight elevator, located in an Interim Multiple Dwelling registered with the New York City Loft Board, in accordance with Article 7-C of the Multiple Dwelling Law.

Delete and revise the definition "Hospital Emergency Service" to read as follows:

Hospital Emergency Service: A special operating control function that may be provided for elevators in occupancy group I-2 (Hospital) or other applicable medical facility used to transport a patient in a life or death situation.

Delete and revise the definition "Installation Placed Out of Service" to read as follows:

Installation Placed Out of Service (Dismantled): An installation whose power feed lines have been disconnected from the main line disconnect switch and:

(a) An electric elevator, dumbwaiter, sidewalk elevator or material lift whose suspension ropes have been removed, whose car and counterweight rest at the bottom of the hoistway, and whose hoistway doors have been permanently barricaded or sealed in the closed position on the hoistway side.

(b) A hydraulic elevator, dumbwaiter, sidewalk elevator or material lift whose car rests at the bottom of the hoistway; whose pressure piping has been disassembled and a removed from the premises; whose hoistway doors have been permanently barricaded or sealed in the closed position.

(c) An escalator or moving walk whose entrances have been permanently barricaded.

Add new definition "Patient Elevator" to read as follows:

Patient Elevator: An elevator located in a building classified in occupancy group I-2 (Hospital) reserved for the "sole" use of vertical transportation of non-ambulatory patients who are incapable of self-preservation because of age, physical or mental disability. Hospital staff or other passengers transporting a patient are permitted to ride with the patient. Such elevators must be operated by a designated attendant and shall meet the requirements of § 2.27.4 and § 2.27.5.3.

Add new definition "Sky Lobby" to read as follows:

Sky Lobby: The lowest landing of an elevator or a group of elevators located above the street level.

Add new definition "Smoke Hole" to read as follows:

Smoke Hole: An opening for an elevator hoistway venting at the top of the elevator hoistway(s).

Add new definition "Zero Clearance Vestibule" to read as follows:

Zero Clearance Vestibule. A space on the elevator lobby between the exterior of the hoistway door and the security door attached to the elevator hoistway.



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SECTION 6.1: ESCALATORS

NYC Administrative Code § 28-BC H6.1

6.1.1 Protection of Floor Openings.

Delete and revise section 6.1.3.3.5 it to read as follows:

6.1.3.3.5 Clearance Between Skirt and Step. The clearance on either side of the steps between the step and the adjacent skirt panel shall not be more than 4 mm (0.16 in.), and the sum of the clearances on both sides shall be not more than 7 mm (0.28 in.).

Add new text to sub-section (c) of 6.1.3.3.6 to read as follows:

6.1.3.3.6 Skirt Panels:

(c) The exposed surfaces of the skirt panels adjacent to the steps shall be smooth and made from a low friction material, or permanently treated with a friction-reducing material. Untreated surfaces, such as porcelain, enameled steel bronze, or stainless steel, are not acceptable.

Delete section 6.1.3.3.7 in its entirety:

6.1.3.3.7 Reserved.

Delete and revise section 6.1.3.3.8 to read as follows:

6.1.3.3.8 Skirt Deflector Devices. Deflector Devices shall be required. Deflector Devices shall extend from skirt panels parallel to the escalator path of travel. Means to secure such deflector devices are required to be on the exposed surface of the skirt. Any exposed fastener heads shall be of the tamper resistant type and flush to within 1 mm (0.04 in.).

Revise section 6.1.3.5.4 to read as follows:

6.1.3.5.4 Clearance Between Step Threads. The maximum clearance between step treads on the horizontal run shall be 6 mm (0.25 in.). (See Appendix I, Fig. I7 [I6]).

Delete and revise section 6.1.6.3.3 to read as follows:

6.1.6.3.6 Skirt Obstruction Device. Means shall be provided to cause the electric power to be removed from the escalator driving machine motor and brake, if an object becomes caught between the step and the skirt as the step approaches the upper combplate, intermediate device or lower comb plate. On units having a run of 6096 mm (20 ft.) or more, intermediate devices shall be provided on both sides of the escalator with devices located at intervals of 3048 mm (10 ft.) or less. The activation of an intermediate device shall stop the escalator at a rate not greater than 914 mm (3 ft.) per second square in the direction of travel. The upper and lower comb plate devices shall be located so that the escalator will stop before that object reaches the comb plate. The activation of any skirt device shall stop the escalator when a load equal to the brake rated load is applied while the escalator is running.

Revise section 6.1.6.3.13 to read as follows:

6.1.6.3.13 Comb-Step Impact Devices. Devices shall be provided that will cause the opening of the power circuit to the escalator driving machine motor and brake if either:

(a) A horizontal force not greater than 1 780 N (400 lbf) in the direction of travel is applied at either side, or not greater than 3 560 N (800 lbf) applied at the center of the front edge of the comb plate; or

(b) A resultant vertical force not greater than [670 N (150 lbf)] 268 N (60 lbf) in the upward direction is applied at the center of the front of the comb plate.

Revise section 6.2.6.3.11 to read as follows:

6.2.6.3.11 Comb-Pallet Impact Devices. Devices shall be provided that will cause the opening of the power circuit to the moving walk driving-machine motor and brake if either:

(a) A horizontal force not greater than 1 780 N (400 lbf) in the direction of travel is applied at either side, or not greater than 3 560 N (800 lbf) applied at the center of the front edge of the combplate; or

(b) A resultant vertical force not greater than [670 N (150 lbf)] 268 N (60 lbf) in the upward direction is applied at the center of the front of the combplate. These devices shall be of the manual-reset type.



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SECTION 8.1: SECURITY

NYC Administrative Code § 28-BC H8.1

8.1.2 Group 1: Restricted.

Add new Note (p) to 8.1.2 to read as follows:

(p) The requirements of § 2.14.1.10 and § 5.1.11.1.2(d), side emergency exit doors apply.

8.1.4 Group 3: Emergency Operation.

Delete and revise section 8.1.4 to read as follows:

8.1.4 Group 3: Emergency Operation. Group 3 covers access or operation of equipment by firefighters and emergency personnel. This key shall be a citywide standard key 2642 as defined by the New York City Fire Department.



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SECTION 8.6: MAINTENANCE, REPAIR, AND REPLACEMENT

NYC Administrative Code § 28-BC H8.6

8.6.4.10 Refastening or Resocketing of Car Hoisting Ropes on Winding-Drum Machines.

Delete and revise section 8.6.4.10.1 to read as follows:

8.6.4.10.1

(1) The hoisting ropes of elevators having winding-drum driving-machines with 1:1 roping, if of the babbitted rope socket type, shall be resocketed at intervals no longer than:

- (a) 1 year, for machines located over the hoistway;
- (b) 2 years, for machines located below or at the side of the hoistway;
- (c) 4 years, for all counterweight cable ends of drum machines;

(2) In addition to the foregoing requirements, rope fastenings shall be resocketed when an inspection reveals any evidence of failure at the shackle regardless of the period of time since last re-shackling.

(3) Where auxiliary rope-fastening devices conforming to the requirements of § 2.20.10 or where car hoist ropes with an additional approved type emergency clamping devices are installed, refastening at the period specified is not required provided that, where such devices are installed, all hoisting ropes shall be refastened on the failure or indication of failure of any rope fastening. Wedge clamp shackles shall not be used on drum machines.

(4) Where the elevator is equipped with a drum counterweight, the fastenings shall be examined for fatigue or damage at the socket. Where fatigue or damage is detected, the ropes shall be refastened in conformance with § 8.6.4.10.2.

Delete and revise section 8.6.4.10.3 to read as follows:

8.6.4.10.3 Tags. A legible metal tag shall be securely attached through one of the tapered rope sockets during each resocketing, (as shown in the diagram below) and shall bear the following information:

(a) The name of the person or firm who performed the resocketing and;

(b) The date on which the rope was resocketed. The material and marking of the tags shall conform to § 2.16.3.3, except that the height of the letters and figures shall be not less than 1.5 mm (0.0625 in.).
[SEE graphical material in printed version]

8.6.8.3Step/Skirt Performance Index.

Delete section 8.6.8.3 in its entirety.

Section 8.6.8.3 Reserved.



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A17.1-2000, Safety Code for Elevators and Escalators Part 1 GENERAL
SECTION 8.7: ALTERATIONS

NYC Administrative Code § 28-BC H8.7

8.7.2 Alterations to Electric Elevators.

Delete and revise section 8.7.2.13, sub-section (c) to read as follows:

8.7.2.13 Door Reopening Device.

(c) When firefighters' emergency operation is provided, door reopening devices and door closing during Phase I and Phase II shall comply with the requirements applicable at the time of installation or alteration.

8.7.2.14 Car Enclosures, Car Doors, and Gates, and Car Illumination.

Revise section 8.7.2.14.1 to read as follows:

8.7.2.14.1 Where an alteration consists of the installation of a new car, the installation shall conform to § 2.12.6, § 2.14, § 2.15, and § 2.17 (see also § 8.7.2.15.1).

Delete and revise sub-section (e) of 8.7.2.14.2 to read as follows:

8.7.2.14.2

(e) Side emergency exits may be permanently fixed in the closed position provided that the corresponding side emergency exit on an adjacent car shall also be fixed in the closed position. The installation shall conform to § 2.12.6.

Revise section 8.7.2.14.3, sub-section (b)(2) to read as follows:

8.7.2.14.3

(b)(2) Smoke development of 0 to 100 [450].

8.7.2.17 Change in Travel or Rated Speed.

Add new sub-section (4) to 8.7.2.17.1(c) to read as follows:

8.7.2.17.1 Increase or Decrease in Travel.

(4) Where the only hoistway alteration is the decrease in travel at the upper end of the travel, the installation shall be modified as follows:

(i) Terminal stopping devices shall be provided based on the new top terminal landing location and the final limit switch shall be of the manual reset type.

(ii) A key controlled switch shall be provided in accordance with § 8.1.5 (i.e. Group 4) requirements to by-pass the new top terminal stopping devices, when the elevator transfer switch is placed in the Top-of-Car Inspection Operation position, for access to the hoistway above the terminal landing.

The switch shall be manually operated, be labeled "Terminal By-Pass", and shall have two positions; By-Pass and Normal.

The switch shall be located in the hoistway, in the vicinity of the terminal limits and shall be accessible to a person standing on the car top. The car transfer switch shall not be removed from the Top-of-Car Inspection Operation position until the terminal limit By-Pass switch is placed in the Normal position.

(iii) Existing terminal stopping devices shall remain functional. The hoistway door electro-mechanical safety interlocks shall remain in the safety circuit and locked with door panel(s) separately secured in closed position on the hoistway side.

(iv) The car operating panel shall be removed with associated labeling and signaling.

8.7.2.25 Driving Machines and Sheaves.

Delete and revise sub-section (a) of 8.7.2.25.1 to read as follows:

8.7.2.25.1 Alterations to Driving Machines and Sheaves

(a) Where a driving machine is installed as part of an alteration, the installation shall conform to § 2.7.2.2, § 2.9, § 2.10.1, § 2.19, § 2.20, § 2.24, and § 2.26.8. The requirements of § 2.7.2.2 and § 2.19 shall apply only to the extent that the existing installation permits.

8.7.2.27 Operating Devices and Control Equipment.

Revise sub-section (a) of 8.7.2.27.4 to read as follows:

8.7.2.27.4 Controllers.

(a) Where a controller is installed as part of an alteration, it shall conform to § 2.22, § 2.25, § 2.26.1.4, § 2.26.1.5, 2§ 2.26.4 through § 2.26.9, and § 2.27.2 through § 2.27.8.

Revise subsection 8.7.2.27.5(e) to read as follows:

8.7.2.27.5 Change in Type of Motion Control.

(e) Car overspeed protection and unintended movement protection shall conform to § 2.19 to the extent that the existing installation permits. Where hoisting machinery is retained or altered in such a way that makes the installation of an emergency braking system per 2.19.3 impossible, conformance with § 2.19 is not required.



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SECTION 8.8: WELDING8

NYC Administrative Code § 28-BC H8.8

8.8.1 Qualification of Welders.

Revise section 8.8.1 read as follows:

8.8.1 Qualification of Welders. Where required elsewhere in this code, welding of parts, except for tack welds later incorporated into finished welds, shall be undertaken:

(a) by welders qualified in accordance with the requirements of Section 5 of ANSI/AWS D1.1, whereby the welders shall be qualified by the manufacturer or contractor; a professional consulting engineer; or a recognized testing laboratory; or

(b) by a fabricator qualified to the requirements of CSA W47.1, whichever is applicable (see Part 9), and

(c) as per department rules.



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SECTION 8.11: PERIODIC INSPECTIONS AND TESTS

NYC Administrative Code § 28-BC H8.11

K201.1 General.

As referenced in section 3001.2 of the New York City Building Code, the provisions of ASME B20.1-03 shall be modified in accordance with this chapter. The section numbers correlate to those in the referenced ASME standard. Refer to the rules of the department for any subsequent additions, modifications or deletions that may have been made to this standard in accordance with Section 28-103.19 of the Administrative Code.

1

SCOPE

Revise the text of section 1 to read as follows:

This Standard applies to the design, construction, installation, maintenance, inspection, and operation of conveyors and conveying systems in relation to hazards. The conveyors may be of the bulk material, package, or unit handling types where the installation is designed for permanent, temporary, or portable operation.

This standard shall apply, with the exceptions noted below, to all conveyor installations.

This standard specifically excludes any conveyor designed for, installed for, or used [primarily] for the movement of human beings. This standard does, however, apply to certain conveying devices that incorporate within their supporting structure, work stations or operator's stations specifically designed for authorized personnel.

This standard does not apply to conveyors such as underground mine conveyors for which specific standards are already in effect, or to equipment such as industrial trucks, tractors, trailers, automatic guided vehicles, tiering machines (except pallet load tierers), cranes, hoists, power shovels, power scoops, bucket drag lines, trenchers, platform elevators designed to carry passengers or operator, manlifts, moving walks, moving stairways (escalators), highway or railroad

vehicles, cableways, tramways, dumbwaiters, pneumatic conveyors, robots or integral machine transfer devices. Some of the foregoing have specific standards.

The provisions of this Standard shall apply to equipment installed one year after the standard's date of issuance.

4

DEFINITIONS

Revise the definition Vertical Reciprocating Conveyor in section 4 to read as follows:

Conveyor, vertical reciprocating: a permanent reciprocating power or gravity actuated unit (not designed to carry passengers or an operator) that receives objects on a carrier and transmits these objects vertically between two or more levels.

6

SPECIFIC SAFETY STANDARDS

6.21 Vertical Reciprocating Conveyors.

6.21.1 Add new sub-sections d, e, f, g, h, i, j and k to section 6.21.1 to read as follows:

6.21.1 Safety Considerations

(d) Travel distance shall be limited to less than 22 860 mm (75 ft.) with a maximum of four (4) landings served.

(e) Conveyor(s) shall be enclosed in a two- (2) hour fire rated hoistway, equipped with a minimum 1 1/2 hour fire rated entrance at each landing served.

(f) Access at landings shall be a restricted area for authorized personnel with no public access.

(g) Where there is an occupied space or an unoccupied space not secured against unauthorized access under the hoistway, the conveyor shall be equipped with a safety designed to stop and hold the conveyor with the rated full load capacity independent of the hoisting or driving mechanism.

(h) The operating device shall not be located inside the conveyor enclosure and must be external to the hoistway at each landing served.

(i) The system shall incorporate a position indicator at each floor landing to register the location of the conveyor.

(j) The rated load capacity shall not be less than 239 kg/m² (49 lbs. per sq. ft.) with a maximum capacity of 9072 kg (20,000 lbs.).

(k) The rated speed shall not exceed 406 mm/sec. (80 FPM).

(l) VRCs are permitted only in commercial and industrial occupancies.

6.21.2 Revise sub-sections (c) and (d) of 6.21.2 to read as follows:

6.21.2 Guarding.

(c) Vertical reciprocating conveyors designed to automatically receive and discharge material [may] shall have interlocked doors as in (b) above or, as an alternative, may be guarded by a suitable enclosure extending from the path

of the moving carrier.

(d) Where the application requires that personnel walk onto the carrier to load or unload material, the carriers shall be provided with a conveyor enclosure securely fastened to the conveyor platform. The enclosure walls shall be of solid, grille or perforated construction; and shall be of such strength and support that when subjected to a leaning or falling rated load on the conveyor, the enclosure walls will not deflect or deform in a way that reduces running clearances to less than 13mm (0.5 in.). Enclosure entrance(s) shall be provided with solid doors or gates; and shall guard the full width opening with a minimum height of 2030mm (80 in.). Grille or perforated portions of conveyor enclosures and entrance gates shall reject a ball 38mm (1.5 in.) in diameter. [with standard railings, snap chains, or equivalent across the loading/unloading side(s). Snap chains shall be at least 39 in. at their lowest point.]



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SECTION BC H101: GENERAL

NYC Administrative Code § 28-BC H101

H101.1 General.

An outdoor sign shall not be erected in a manner that would confuse or obstruct the view of or interfere with exit signs required by Chapter 10 or with official traffic signs, signals or devices. Signs and sign support structures, together with their supports, braces, guys and anchors, shall be kept in repair and in proper state of preservation. The display surfaces of signs shall be kept neatly painted or posted at all times. No sign shall project beyond the street line except as permitted by Chapter 32.

H101.2 Signs exempt from permits. The signs specified in Section 28-105.4.5 are exempt from the requirements to obtain a permit before erection. The changing of moveable parts of an approved sign that is designed for such changes, or the repainting or repositioning of display matter shall not be deemed an alteration requiring a separate permit.



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SECTION BC H102: DEFINITIONS

NYC Administrative Code § 28-BC H102

H102.1 General.

Unless otherwise expressly stated, the following words and terms shall, for the purposes of this appendix, have the meanings shown herein. Refer to Chapter 2 of this code for general definitions.

COMBINATION SIGN. A sign incorporating any combination of the features of pole, projecting and roof signs.

DISPLAY SIGN. The area made available by the sign structure for the purpose of displaying the sign.

GROUND SIGN. A billboard or similar type of sign which is supported by one or more uprights, poles or braces in or upon the ground other than a combination sign or pole sign, as defined by this code.

POLE SIGN. A sign wholly supported by a sign structure in the ground.

PROJECTING SIGN. A sign other than a wall sign, which projects from and is supported by a wall of a building or structure.

ROOF SIGN. A sign erected upon or above a roof or parapet of a building or structure.

SIGN. Any letter, figure, character, mark, plane, point, marquee sign, design, poster, pictorial, picture, stroke, stripe, line, trademark, reading matter or illuminated service, which shall be constructed, placed, attached, painted, erected, fastened or manufactured in any manner whatsoever, so that the same shall be used for the attraction of the public to any place, subject, person, firm, corporation, public performance, article, machine or merchandise, whatsoever, which is displayed in any manner outdoors. Every sign shall be classified and conform to the requirements of that classification as set forth in this chapter.

SIGN STRUCTURE. Any structure which supports or is capable of supporting a sign as defined in this code. A sign structure is permitted to be a single pole and is not required to be an integral part of the building.

TEMPORARY SIGN. A sign, with display area 500 square feet (46.5 m²) or less, erected for a period of 30 days or less.

WALL SIGN. Any sign attached to or erected against the wall of a building or structure, projecting no more than 15 inches (381 mm) from the face of the wall, with the exposed face of the sign in a plane parallel to the plane of said wall.



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SECTION BC H103: LOCATION

NYC Administrative Code § 28-BC H103

H103.1 Location restrictions.

Signs shall not be erected, constructed or maintained so as to obstruct any fire escape or any window or door or opening used as a means of egress or so as to prevent free passage from one part of a roof to any other part thereof. A sign shall not be attached in any form, shape or manner to a fire escape or exterior stair, nor be placed in such manner as to interfere with any opening required for natural light or natural ventilation.

H103.2 Fire Department access. Signs erected to cover doors or windows required by Section 501.3.2 for Fire Department access to existing buildings shall be provided with access panels to such openings.



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SECTION BC H104: IDENTIFICATION

NYC Administrative Code § 28-BC H104

H104.1 Identification.

Every outdoor advertising display sign hereafter erected, constructed or maintained, for which a permit is required, shall be marked in accordance with Section 28-502.4.



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SECTION BC H105: DESIGN AND CONSTRUCTION

NYC Administrative Code § 28-BC H105

H105.1 General requirements.

Signs shall be designed and constructed to comply with the provisions of this code for use of materials, loads and stresses.

H105.2 Permits, drawings and specifications. Where a permit is required, as provided in Chapter 1, construction documents shall be required. These documents shall show the dimensions, material and required details of construction, including loads, stresses and anchors. Every sign for which a permit is required shall be inspected at least once every calendar year.

H105.3 Wind load. Signs shall be designed and constructed to withstand wind pressure as provided for in Chapter 16.

H105.4 Seismic load. Signs designed to withstand wind pressures shall be considered capable of withstanding earthquake loads, except as provided for in Chapter 16.

H105.5 Working stresses. In outdoor advertising display signs, the allowable working stresses shall conform to the requirements of Chapter 16. The working stresses of wire rope and its fastenings shall not exceed 25 percent of the ultimate strength of the rope or fasteners.

Exceptions:

1. The allowable working stresses for steel and wood shall be in accordance with the provisions of Chapters 22 and 23.
2. The working strength of chains, cables, guys or steel rods shall not exceed one-fifth of the ultimate strength of such chains, cables, guys or steel.

H105.6Attachment. Signs attached to masonry, concrete or steel shall be safely and securely fastened by means of metal anchors, bolts or approved expansion screws of sufficient size and anchorage to safely support the loads applied.



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SECTION BC H106: ELECTRICAL

NYC Administrative Code § 28-BC H106

H106.1 Illumination.

A sign shall not be illuminated by other than electrical means, and electrical devices and wiring shall be installed in accordance with the requirements of the New York City Electrical Code. Any open spark or flame shall not be used for display purposes unless specifically approved.

H106.1.1 Internally illuminated signs. Wiring for electric lighting shall be entirely enclosed in the sign cabinet with a clearance of not less than 2 inches (51 mm) from the facing material.

H106.2 Electrical service. Signs that require electrical service shall comply with the New York City Electrical Code.

H106.3 Material limitations. All sign structures for signs requiring electric service shall be constructed of noncombustible materials, except as permitted by Section H107.

H106.4 Projecting reflectors. Lighting reflectors may project beyond the top or face of all signs provided that every part of such reflector is at least 10 feet (3048 mm) above the ground or sidewalk level. Reflectors shall be constructed, attached, and maintained so that they shall not be, or become, a hazard to the public.



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SECTION BC H107:

MATERIAL LIMITATIONS

NYC Administrative Code § 28-BC H107

H107.1 Use of combustibles.

In all signs required to be constructed of noncombustible materials pursuant to the provisions of Sections H109 through H116, the following materials may be used for moldings, cappings, nailing blocks, letters and latticing, or other purely ornamental features of signs, unless otherwise directed by the commissioner: wood, approved plastic or plastic veneer panels as provided for in Chapter 26, or other materials of combustible characteristics similar to wood. In all signs permitted to be constructed of combustible materials pursuant to the provisions of Sections H107 through H116, wood and other materials of combustible characteristics similar to wood shall be permitted, pursuant to the provisions of Sections H109 through H116, on the display surface without limit, except that approved plastic shall be limited in area by the provisions of Section H107.1.3.

H107.1.1 Approved plastic materials. Plastic materials which burn at a rate no faster than 2.5 inches per minute (64 mm/s) when tested in accordance with ASTM D 635 shall be deemed approved plastics and can be used as the display surface material and for the letters, decorations and facings on signs, subject to the area limitations of Sections H107.1.2 through H107.1.3.

Exception: Flexible vinyl signs shall comply with the requirements of Section H114.

H107.1.2 Plastic area limitations for internally illuminated signs. Except as provided for in Sections 402.14 and 2611 of this code, approved plastic used on the display surface of internally illuminated signs shall be permitted up to 200 square feet (18.6 m²) in area on signs required to be of noncombustible construction and on signs permitted to be of combustible construction.

H107.1.3 Plastic area limitations for all other signs. Approved plastic used on the display surface of ground signs, walls signs, roof signs, projecting signs, and marquee signs shall be limited in area as provided by Sections H107.1.3.1

through H107.1.3.4.

H107.1.3.1 Plastic area limitations on noncombustible ground signs and wall signs. On ground signs and wall signs required to be constructed of noncombustible materials, if the display surface does not exceed 150 square feet (13.9 m²), the entire display surface shall be permitted to be covered by approved plastic. If the area of a display surface exceeds 150 square feet (13.9 m²), the area occupied or covered by approved plastics shall be limited to 150 square feet (13.9 m²) plus 50 percent of the difference between 150 square feet (13.9 m²) and the total area of display surface. The area of plastic on a display surface shall not in any case exceed 1,050 square feet (97.5 m²), unless approved by the commissioner.

H107.1.3.2 Plastic area limitations on combustible ground signs and wall signs. On ground signs and wall signs permitted to be constructed of combustible materials, if the display surface does not exceed 300 square feet (27.9 m²), 50 percent of the display surface shall be permitted to be covered by approved plastic. If the area of a display surface exceeds 300 square feet (27.9 m²), the area occupied or covered by approved plastics shall be limited to 150 square feet (13.9 m²) plus 25 percent of the difference between 150 square feet (13.9 m²) and the total area of display surface. The area of plastic on a display surface shall not in any case exceed 575 square feet (53.4 m²), unless approved by the commissioner.

H107.1.3.3 Plastic area limitations on noncombustible roof signs, projecting signs, and marquee signs. On roof signs, projecting signs, and marquee signs required to be constructed of noncombustible materials, if the display surface does not exceed 150 square feet (13.9 m²), the entire display surface shall be permitted to be covered by approved plastic. If the area of a display surface exceeds 150 square feet (13.9 m²), the area occupied or covered by approved plastics shall be limited to 150 square feet (13.9 m²) plus 25 percent of the difference between 150 square feet (13.9 m²) and the total area of display surface. The area of plastic on a display surface shall not in any case exceed 575 square feet (53.4 m²), unless approved by the commissioner.

H107.1.3.4 Plastic area limitations on combustible roof signs. On roof signs permitted to be constructed of combustible materials, if the display surface does not exceed 1,000 square feet (92.9 m²), 25 percent of the display surface shall be permitted to be covered by approved plastic. If the area of a display surface exceeds 1,000 square feet (92.9 m²), the area occupied or covered by approved plastics shall be limited to 250 square feet (23.2 m²) plus 10 percent of the difference between 250 square feet (23.2 m²) and the total area of display surface. The area of plastic on a display surface shall not in any case exceed 350 square feet (32.5 m²), unless approved by the commissioner.

H107.2 Glass panels. Glass panels used in display areas of signs shall be limited in size, thickness and type of glass as provided by Table H107.2. Table H107.2 Size, Thickness and Type of Glass Panels in Signs

Maximum Size of Exposed Panel	Any dimension (inches)	Area (square inches)	Minimum Thickness of Glass (inches)	Type of Glass
30	500	1/8	Plain, plate or wired	45
700	3/16	Plain, plate or wired	144	3,600
1/4	Plain, plate or wired	mt144	mt3,600	1/4

Wired glass For SI: 1 inch = 25.4 mm, 1 square inch = 645 mm².



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Chapter 5: EXHAUST SYSTEMS
SECTION MC 505: DOMESTIC KITCHEN EQUIPMENT EXHAUST

NYC Administrative Code § 28-MC 505

505.1 Domestic systems.

Where domestic range hoods and domestic appliances equipped with downdraft exhaust are located within dwelling units, such hoods and appliances shall discharge to the outdoors through ducts constructed of galvanized steel, stainless steel, aluminum or copper. Such ducts shall have smooth inner walls and shall be air tight and equipped with a backdraft damper. Such exhaust system shall be installed in strict compliance with the manufacturer's recommendations as well as the requirements of the listing.

Exceptions:

1. Where installed in accordance with the manufacturer's installation instructions and where mechanical or natural ventilation is otherwise provided in accordance with Chapter 4, listed and labeled ductless range hoods shall not be required to discharge to the outdoors.

2. Ducts for domestic kitchen cooking appliances equipped with downdraft exhaust systems shall be permitted to be constructed of Schedule 40 PVC pipe provided that the installation complies with all of the following:

- 2.1. The duct shall be installed under a concrete slab poured on grade.
- 2.2. The underfloor trench in which the duct is installed shall be completely backfilled with sand or gravel.
- 2.3. The PVC duct shall extend not greater than 1 inch (25 mm) above the indoor concrete floor surface.
- 2.4. The PVC duct shall extend not greater than 1 inch (25 mm) above grade outside of the building.
- 2.5. The PVC ducts shall be solvent cemented.



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Chapter 5: EXHAUST SYSTEMS
SECTION MC 506: COMMERCIAL KITCHEN HOOD VENTILATION SYSTEM DUCTS AND EXHAUST
EQUIPMENT

NYC Administrative Code § 28-MC 506

506.1 General.

Commercial kitchen hood ventilation ducts and exhaust equipment shall comply with the requirements of this section. Commercial kitchen grease ducts shall be designed for the type of cooking appliance and hood served. All ducts shall lead directly to the exterior of the building and terminate as required by 506.3.12.

506.2 Corrosion protection. Ducts exposed to the outside atmosphere or subject to a corrosive environment shall be protected against corrosion in an approved manner.

1. The exterior portion of the ductwork shall be vertical wherever possible and shall be installed and adequately supported on the exterior of a building. Bolts, screws, rivets, and other mechanical fasteners shall not penetrate duct walls. Clearance of any vertical or horizontal ducts to any other material or construction shall comply with Section 506.3.6. and to any additional clearance requirements as may be applicable in accordance with Section 506.5.4.

2. All exterior ducts shall be constructed of stainless steel not less than 0.043 inch (1.09 mm) (No. 18 Gage) in thickness. At the base of each duct and at its termination point a clearly identifiable permanent sign shall be installed identifying the facility from which the duct originates.

1. No portion of an exterior metal duct shall be nearer than 24 inches (610 mm) to any door or window or to any exit, or located where it would be readily accessible to the public, unless it is insulated or shielded to avoid injury to any person coming in contact with the duct.

Exception: Listed and labeled factory-built commercial kitchen grease ducts may be used when installed in accordance with Section 304.1.

506.3 Ducts serving Type I hoods. Type I exhaust ducts shall be independent of all other exhaust systems except as

provided in Section 506.3.5. Commercial kitchen duct systems serving Type I hoods shall be designed, constructed and installed in accordance with Sections 506.3.1 through 506.3.12.3.

506.3.1 Duct materials. Ducts serving Type I hoods shall be constructed of materials in accordance with Sections 506.3.1.1 and 506.3.1.2.

506.3.1.1 Grease duct materials. Grease ducts serving Type I hoods, and located within buildings, shall be constructed as follows:

1. Ducts with a cross-sectional area up to and including 155 square inches (100 000 mm²) shall be constructed of 0.0598 inch (1.52 mm) No. 16 Gage steel;
2. Ducts with a cross-sectional area over 155 square inches (100 000 mm²), but not more than 200 square inches (0.129 m²) shall be constructed of 0.074 inch (1.9 mm) No. 14 Gage steel; and
3. Ducts with a cross-sectional area equal to or more than 200 square inches (0.129 m²) shall be constructed of 0.1046 inch (2.66 mm) No. 12 Gage steel.

If stainless steel is used for ducts of any of the cross-sectional areas shown above, the Gage steel may be increased upwards (resulting in a smaller thickness) by 1 Gage.

Exception: Listed and labeled factory-built commercial kitchen grease ducts shall be installed in accordance with Section 304.1, and as approved by the commissioner.

506.3.1.2 Makeup air ducts. Makeup air ducts connecting to or within 18 inches (457 mm) of a Type I hood shall be constructed and installed in accordance with Sections 603.1, 603.3, 603.4, 603.9, 603.10, and 603.12. Duct insulation installed within 18 inches (457 mm) of a Type I hood shall be noncombustible or shall be listed for the application.

506.3.2 Joints, seams and penetrations of grease ducts. Joints, seams and penetrations of grease ducts shall be made with a continuous liquid-tight weld or braze made on the external surface of the duct system.

Exceptions:

1. Penetrations shall not be required to be welded or brazed where sealed by devices that are listed for the application.
2. Internal welding or brazing shall not be prohibited provided that the joint is formed or ground smooth and is provided with ready access for inspection.
3. Listed and labeled factory-built commercial kitchen grease ducts installed in accordance with Section 304.1.

506.3.2.1 Duct joint types. Duct joints shall be butt joints or overlapping duct joints of either the telescoping or bell type. Overlapping joints shall be installed to prevent ledges and obstructions from collecting grease or interfering with gravity drainage to the intended collection point. The difference between the inside cross-sectional dimensions of overlapping sections of duct shall not exceed 0.25 inch (6 mm). The length of overlap for overlapping duct joints shall not exceed 2 inches (51 mm).

506.3.2.2 Duct-to-hood joints. Duct-to-hood joints shall be made with continuous internal or external liquid-tight welded or brazed joints. Such joints shall be smooth, accessible for inspection, and without grease traps.

Exceptions: This section shall not apply to:

1. A vertical duct-to-hood collar connection made in the top plane of the hood in accordance with all of the

following:

1.1. The hood duct opening shall have a 1-inch-deep (25 mm), full perimeter, welded flange turned down into the hood interior at an angle of 90 degrees from the plane of the opening.

1.2. The duct shall have a 1-inch-deep (25 mm) flange made by a 1-inch by 1-inch (25 mm by 25 mm) angle iron welded to the full perimeter of the duct not less than 1 inch (25 mm) above the bottom end of the duct.

1.3. A gasket rated for use at not less than 1,500(degrees)F (815(degrees)C) is installed between the duct flange and the top of the hood.

1.4. The duct-to-hood joint shall be secured by stud bolts not less than 0.25 inch (6.4 mm) in diameter welded to the hood with a spacing not greater than 4 inches (102 mm) on center for the full perimeter of the opening. All bolts and nuts are to be secured with lockwashers.

2. Listed and labeled duct-to-hood collar connections installed in accordance with Section 304.1.

506.3.2.3 Duct-to-exhaust fan connections. Duct-to-exhaust fan connections shall be flanged and gasketed at the base of the fan for vertical discharge fans; shall be flanged, gasketed and bolted to the inlet of the fan for side-inlet utility fans; and shall be flanged, gasketed and bolted to the inlet and outlet of the fan for in-line fans. Approved flexible connectors may be provided.

506.3.2.4 Vibration isolation. A vibration isolation connector for connecting a duct to a fan shall consist of noncombustible packing in a metal sleeve joint of approved design or shall be a coated-fabric flexible duct connector listed and labeled for the application. Vibration isolation connectors shall be installed only at the connection of a duct to a fan inlet or outlet.

506.3.3 Grease duct supports. Grease duct bracing and supports shall be of noncombustible material securely attached to the structure and designed to carry gravity and seismic loads within the stress limitations of the New York City Building Code. Bolts, screws, rivets and other mechanical fasteners shall not penetrate duct walls.

506.3.4 Air velocity. Grease duct systems serving a Type I hood shall be designed and installed to provide an air velocity within the duct system of not less than 500 feet per minute (2.54 m/s).

Exception: The velocity limitations shall not apply within duct transitions utilized to connect ducts to differently sized or shaped openings in hoods and fans, provided that such transitions do not exceed 3 feet (914 mm) in length and are designed to prevent the trapping of grease.

506.3.5 Separation of grease duct system. A separate grease duct system shall be provided for each Type I hood.

Exceptions:

1. A separate grease duct system is not required where all of the following conditions are met:

1.1. All interconnected hoods are located within the same story, provided that they are part of the same facility and under the control of one owner or tenant.

1.2. All interconnected hoods are located within the same room or in adjoining rooms, provided that they are part of the same facility and under the control of one owner or tenant.

1.3. Interconnecting ducts do not penetrate assemblies required to be fire-resistance rated.

1.4. The grease duct system does not serve solid fuel-fired appliances.

2. Branch ducts from other equipment in the same kitchen area, for which hoods and filters are not required or from registers exhausting the kitchen space in general, may be connected to the main hood exhaust duct if the following requirements are complied with:

2.1. A fusible link fire damper of the same gage as the hood exhaust duct shall be added at the point of connection of the branch duct to the exhaust duct.

2.2. If the branch connection is made to the portion of the ductwork that will contain the fire extinguishing medium, then the fire dampers required in Exception Item 2.1 shall be arranged to close automatically upon the operation of the fire extinguishing system.

2.3. The branch connection shall be made in either the top or sides of the main duct in a manner to prevent grease from flowing into the branch duct.

2.4. The branch ducts shall be constructed of steel, aluminum, or copper of the gages and weights required in Chapter 6, and they shall be insulated with 2 inches (51 mm) of magnesia or other material having equivalent insulative and fire resistance qualities.

2.5. All registers in these branches shall have fusible link actuated dampers.

2.6. Where branch ductwork is to be used to exhaust vapors from dishwashers, pot sinks, or other similar equipment of a commercial type from which moisture is emitted, copper or aluminum of the minimum gage and weights required in Chapter 6 shall be used. Such ductwork shall be installed so that condensate cannot leak from it.

506.3.6 Grease duct clearances. Grease duct systems and exhaust equipment serving a Type I hood shall have a clearance to combustible construction of not less than 18 inches (457 mm), and shall have a clearance to noncombustible construction and gypsum wallboard attached to noncombustible structures of not less than 3 inches (76 mm).

Exceptions:

1. Listed and labeled factory-built commercial kitchen grease ducts and exhaust equipment installed in accordance with Section 304.1 and the manufacturer's instructions, and as approved by the commissioner.

2. Protected with a minimum insulation covering of 2 inches (51 mm) of magnesium or calcium silicate block, with staggered joints, attached with galvanized steel wire or material assembly equivalent in insulating and fire resistant qualities which can not be penetrated by grease, shall be applied to all ducts inside of the building as approved by the commissioner.

506.3.7 Prevention of grease accumulation in grease ducts. Duct systems serving a Type I hood shall be constructed and installed so that grease cannot collect in any portion thereof, and the system shall slope not less than one-fourth unit vertical in 12 units horizontal (2-percent slope) toward the hood or toward an approved grease reservoir. Where horizontal ducts exceed 75 feet (22 860 mm) in length, the slope shall not be less than one unit vertical in 12 units horizontal (8.3-percent slope). Dampers shall not be installed in the grease duct systems, except as required by Section 506.3.5 Exception Item 2.

506.3.7.1 Residue trap. A residue trap shall be provided at the base of each vertical riser with provision for cleanout in accordance with NFPA 96.

506.3.8 Grease duct cleanouts and other openings. Grease duct systems shall not have openings therein other than those required for proper operation and maintenance of the system. Any portion of such system having sections not provided with access from the duct entry or discharge shall be provided with cleanout openings. Cleanout openings

shall be provided at every change in direction, within 3 feet (914 mm) of the exhaust fan, and as required under Section 506.3.9. Cleanout openings shall be equipped with tight-fitting doors constructed of steel having a thickness not less than that required for the duct. Doors shall be equipped with a substantial method of latching, sufficient to hold the door tightly closed. Doors shall be designed so that they are operable without the use of a tool. Door assemblies shall have a gasket or sealant that is noncombustible and liquid tight, and shall not have fasteners that penetrate the duct. Listed and labeled access door assemblies shall be installed in accordance with the terms of the listing. Signage shall be provided at all required access doors and openings in accordance with Section 506.3.11.

506.3.8.1 Personnel entry. Where ductwork is large enough to allow entry of personnel, not less than one approved or listed opening having dimensions not less than 20 inches by 20 inches (508 mm by 508 mm) shall be provided in the horizontal sections, and in the top of vertical risers. Where such entry is provided, the duct and its supports shall be capable of supporting the additional load and the cleanouts specified in Section 506.3.8 are not required. Where personnel entry is not possible, access for cleaning interior vertical ducts shall be provided on each floor, and for cleaning the base of the vertical riser.

506.3.9 Grease duct horizontal cleanouts. Cleanouts located on horizontal sections of ducts shall be spaced not more than 20 feet (6096 mm) apart, unless the opening prescribed by Section 506.3.8.1 is not possible, in which case openings large enough to permit thorough cleaning shall be provided at 12 feet (3658 mm) intervals. The cleanouts shall be located on the side of the duct with the opening not less than 1.5 inches (38 mm) above the bottom of the duct, and not less than 1 inch (25 mm) below the top of the duct. The opening minimum dimensions shall be 12 inches (305 mm) on each side. Where the dimensions of the side of the duct prohibit the cleanout installation prescribed herein, the openings shall be on the top of the duct or the bottom of the duct. Where located on the top of the duct, the opening edges shall be a minimum of 1 inch (25 mm) from the edges of the duct. Where located in the bottom of the duct, cleanout openings shall be designed to provide internal damming around the opening, shall be provided with gasketing to preclude grease leakage, shall provide for drainage of grease down the duct around the dam, and shall be approved for the application. Where the dimensions of the sides, top or bottom of the duct preclude the installation of the prescribed minimum-size cleanout opening, the cleanout shall be located on the duct face that affords the largest opening dimension and shall be installed with the opening edges at the prescribed distances from the duct edges as previously set forth in this section.

506.3.10 Grease duct enclosure. A grease duct serving a Type I hood that penetrates a ceiling, wall or floor shall be enclosed from the first point of penetration to the outlet terminal. A duct shall penetrate exterior walls only at locations where unprotected openings are permitted by the New York City Building Code. Ducts shall be enclosed in accordance with the New York City Building Code requirements for shaft construction. The duct enclosure shall be sealed around the duct at the point of penetration and vented to the outside of the building through the use of weather-protected openings. Clearance from the duct to the interior surface of enclosures of combustible construction shall be not less than 18 inches (457 mm). Clearance from the duct to the interior surface of enclosures of noncombustible construction or gypsum wallboard attached to noncombustible structures shall be not less than 6 inches (152 mm). The duct enclosure shall serve a single grease exhaust duct system and shall not contain any other ducts, piping, wiring or systems.

Exceptions:

1. The shaft enclosure provisions of this section shall not be required where a duct penetration is protected with a through-penetration firestop system classified in accordance with ASTM E 814 and having an .F. and .T. rating equal to the fire-resistance rating of the assembly being penetrated and where the surface of the duct is continuously covered on all sides from the point at which the duct penetrates a ceiling, wall or floor to the outlet terminal with a classified and labeled material, system, method of construction or product specifically evaluated for such purpose, which material, system, method of construction or product is approved by the commissioner and installed according to the manufacturer's instructions. Exposed duct wrap systems shall be protected where subject to physical damage.

2. As an alternative to Exception Item 1 of this section, a minimum insulation covering of 2 inches (51 mm) of

magnesium or calcium silicate block, with staggered joints, attached with galvanized steel wire or material assembly equivalent in insulating and fire resistant qualities which can not be penetrated by grease, and as approved by the commissioner, shall be applied to all ducts inside of the building.

3. A duct enclosure shall not be required for a grease duct that penetrates only a nonfire-resistance-rated roof/ceiling assembly.

4. A listed and labeled factory-built commercial kitchen grease duct system, evaluated as an enclosure system for reduced clearances to combustibles, and approved by the commissioner and installed according to manufacturer's instructions.

506.3.11 Grease duct fire-resistive access opening. Where cleanout openings are located in ducts within a fire-resistance-rated enclosure, access openings shall be provided in the enclosure at each cleanout point. Access openings shall be equipped with tight-fitting sliding or hinged doors that are equal in fire-resistive protection to that of the shaft or enclosure. An approved sign shall be placed on access opening panels with wording as follows: "ACCESS PANEL. DO NOT OBSTRUCT." Cleanout openings provided in ducts that are not located within a fire resistance-rated enclosure shall be provided with signage at the required opening that contains the same wording.

506.3.12 Exhaust outlets serving Type I hoods. Exhaust outlets for grease ducts serving Type I hoods shall conform to the requirements of Sections 506.3.12.1 through 506.3.12.3.

506.3.12.1 Termination above the roof. Exhaust outlets that terminate above the roof shall have the discharge opening located not less than 40 inches (1016 mm) above the roof surface. The exhaust flow shall be directed away from the surface of the roof.

506.3.12.2 Termination through an exterior wall. Exhaust outlets shall be permitted to terminate through exterior walls where the smoke, grease, gases, vapors, and odors in the discharge from such terminations do not create a public nuisance or a fire hazard. Such terminations shall not be located where protected openings are required by the New York City Building Code. Other exterior openings shall not be located within 3 feet (914 mm) of such terminations.

506.3.12.3 Termination location. Exhaust outlets shall be located not less than 10 feet (3048 mm) horizontally from parts of the same or contiguous buildings, adjacent property lines and air intake openings into any building and shall be located not less than 10 feet (3048 mm) above the adjoining grade level.

Exception: Exhaust outlets shall terminate not less than 5 feet (1524mm) from an adjacent building, adjacent property line and air intake openings into a building where air from the exhaust outlet discharges away from such locations.

506.4 Ducts serving Type II hoods. Single or combined Type II exhaust systems for food-processing operations shall be independent of all other exhaust systems. Commercial kitchen exhaust systems serving Type II hoods shall comply with Sections 506.4.1 and 506.4.2.

506.4.1 Type II exhaust outlets. Exhaust outlets for ducts serving Type II hoods shall comply with Sections 401.5 and 401.5.2. Such outlets shall be protected against local weather conditions and shall meet the provisions for exterior wall opening protectives in accordance with the New York City Building Code.

506.4.2 Ducts. Ducts and plenums serving Type II hoods shall be constructed of rigid metallic materials. Duct construction, installation, bracing and supports shall comply with Chapter 6. Ducts subject to positive pressure and ducts conveying moisture-laden or waste-heat-laden air shall be constructed, joined and sealed in an approved manner.

506.4.2.1 Cooking spaces. For all buildings other than those classified as residential occupancy, a minimum of No. 16 Gage for galvanized sheet duct shall be used for nongrease duct exhaust applications.

506.5 Exhaust equipment. Exhaust equipment, including fans and grease reservoirs, shall comply with Section 506.5.1 through 506.5.5 and shall be of an approved design or shall be listed for the application.

506.5.1 Exhaust fans. Exhaust fan housings serving a Type I hood shall be constructed as required for grease ducts in accordance with Section 506.3.1.1.

Exception: Fans listed and labeled in accordance with UL 762.

506.5.1.1 Fan motor. Exhaust fan motors shall be located outside of the exhaust airstream.

506.5.2 Exhaust fan discharge. Exhaust fans shall be positioned so that the discharge will not impinge on the roof, other equipment or appliances or parts of the structure. A vertical discharge fan serving a Type 1 hood shall be manufactured with an approved drain outlet at the lowest point of the housing to permit drainage of grease to an approved grease reservoir.

506.5.3 Exhaust fan mounting. An upblast fan shall be hinged and supplied with a flexible weatherproof electrical cable to permit inspection and cleaning. The ductwork shall extend a minimum of 18 inches (457 mm) above the roof surface.

506.5.4 Clearances. Exhaust equipment serving a Type I hood shall have a clearance to combustible construction of not less than 18 inches (457 mm).

Exception: Factory-built exhaust equipment installed in accordance with Section 304.1 and listed for a lesser clearance.

506.5.5 Termination location. The outlet of exhaust equipment serving Type I hoods, shall be in accordance with Section 506.3.12.3.

Exception: The minimum horizontal distance between vertical discharge fans and parapet-type building structures shall be 2 feet (610 mm) provided that such structures are not higher than the top of the fan discharge opening.

506.5.6 Exhaust fan operation. The operation of the exhaust fan shall be in accordance with the following requirements:

1. The hood exhaust fan(s) shall continue to operate after the exhausting system has been activated unless fan shutdown is required by a listed component of the ventilation system or by the design of the extinguishing system.
2. The hood exhaust fan shall not be required to start automatically upon activation of the extinguishing system if the exhaust fan and all cooking equipment served by the fan have previously been shut down.
3. The cooking appliances shall be interlocked with the exhaust hood system to prevent appliance operation when the exhaust hood system is not operating.

506.6 Exterior duct installations. The installation of exterior ducts shall comply with the following requirements:

1. The exterior portion of the ductwork shall be vertical wherever possible and shall be installed and supported on the exterior of a building.
2. Bolts, screws, rivets, and other mechanical fasteners shall not penetrate duct walls.
3. Clearance of any ducts shall comply with Section 506.3.6.
4. All ducts shall be protected on the exterior by paint or other suitable weather-protective coating.

5. Ducts constructed of stainless steel shall not be required to have additional paint or weather-protective coatings.
6. Ductwork subject to corrosion shall have minimal contact with the building surface.

506.7 Identification of ducts. All duct systems serving Type I and Type II exhaust equipment shall be permanently labeled: "CAUTION: KITCHEN EXHAUST SYSTEM".

506.8 Types I and II hoods. All exhaust ducts serving Type I or Type II hoods shall have a minimum insulation covering of 2 inches (51 mm) of magnesium or calcium silicate block, attached with galvanized steel wire or construction equivalent in insulating and fire resistance qualities, and shall be applied to all ducts inside of the building. The insulation shall be applied up to the outer face of the discharge from the building and shall also be applied to the housing of the exhaust fan when it is located inside of the building. Care shall be taken to insure that the insulation extends through the walls and roofs to separate the ducts from the building construction. Masonry or concrete ducts shall not require insulation.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 8: THE NEW YORK CITY MECHANICAL CODES
Chapter 5: EXHAUST SYSTEMS
SECTION MC 507: COMMERCIAL KITCHEN HOODS

NYC Administrative Code § 28-MC 507

507.1 General.

Commercial kitchen exhaust hoods shall comply with the requirements of this section. Hoods shall be Type I or Type II and shall be designed to capture and confine cooking vapors and residues.

Exceptions:

1. Factory-built commercial exhaust hoods which are tested in accordance with UL 710, listed, labeled and installed in accordance with Section 304.1 shall not be required to comply with Sections 507.4, 507.7, 507.11, 507.12, 507.13, 507.14 and 507.15.

2. Net exhaust volumes for hoods shall be permitted to be reduced during no-load cooking conditions, where engineered or listed multispeed or variable-speed controls automatically operate the exhaust system to maintain capture and removal of cooking effluents as required by this section.

507.2 Where required. A Type I or Type II hood shall be installed at or above all commercial cooking appliances in accordance with Sections 507.2.1 and 507.2.2. Where any cooking appliance under a single hood requires a Type I hood, a Type I hood shall be installed. Where a Type II hood is required, a Type I or Type II hood shall be installed.

507.2.1 Type I hoods. Type I hoods shall be installed where cooking appliances produce grease or smoke, such as occurs with griddles, fryers, broilers, ovens, ranges and wok ranges.

507.2.2 Type II hoods. Type II hoods shall be installed where cooking or dishwashing appliances produce heat or steam and do not produce grease or smoke, such as steamers, kettles, pasta cookers and dishwashing machines.

Exceptions:

1. Under-counter-type commercial dishwashing machines.

2. A Type II hood is not required for dishwashers and potwashers that are provided with heat and water vapor exhaust systems that are supplied by the appliance manufacturer and are installed in accordance with the manufacturer's instructions.

507.2.3 Domestic cooking appliances used for commercial purposes. Domestic cooking appliances utilized for commercial purposes shall be provided with Type I or Type II hoods as required for the type of appliances and processes in accordance with Sections 507.2, 507.2.1 and 507.2.2.

507.2.4 Solid fuel. Type I hoods for use over solid fuel-burning cooking appliances shall discharge to an exhaust system that is independent of other exhaust systems.

507.3 Fuel-burning appliances. Where vented fuel-burning appliances are located in the same room or space as the hood, provisions shall be made to prevent the hood system from interfering with normal operation of the appliance vents.

507.4 Type I materials. Type I hoods shall be constructed of steel not less than 0.043 inch (1.09 mm) (No. 18 MSG) in thickness, or stainless steel not less than 0.037 inch (0.94 mm) (No. 20 MSG) in thickness.

507.5 Type II hood materials. Type II hoods shall be constructed of steel not less than 0.030 inch (0.76 mm) (No. 22 Gage) in thickness, stainless steel not less than 0.024 inch (0.61 mm) (No. 24 Gage) in thickness, copper sheets weighing not less than 24 ounces per square foot (7.3 kg/m²), or of other approved material and gage.

507.6 Supports. Type I hoods shall be secured in place by noncombustible supports. All Type I and Type II hood supports shall be adequate for the applied load of the hood, the unsupported ductwork, the effluent loading, and the possible weight of personnel working in or on the hood.

507.7 Hood joints, seams and penetrations. Hood joints, seams and penetrations shall comply with Sections 507.7.1 and 507.7.2.

507.7.1 Type I hoods. External hood joints, seams and penetrations for Type I hoods shall be made with a continuous external liquid-tight weld or braze to the lowest outermost perimeter of the hood. Internal hood joints, seams, penetrations, filter support frames, and other appendages attached inside the hood shall not be required to be welded or brazed but shall be otherwise sealed to be grease tight.

Exceptions:

1. Penetrations shall not be required to be welded or brazed where sealed by devices that are listed for the application.

2. Internal welding or brazing of seams, joints, and penetrations of the hood shall not be prohibited provided that the joint is formed smooth or ground so as to not trap grease, and is readily cleanable.

507.7.2 Type II hoods. Joints, seams and penetrations for Type II hoods shall be constructed as set forth in Chapter 6, shall be sealed on the interior of the hood and shall provide a smooth surface that is readily cleanable and water tight.

507.8 Cleaning and grease gutters. A hood shall be designed to provide for thorough cleaning of the entire hood. Grease gutters shall drain to an approved collection receptacle that is fabricated, designed and installed to allow access for cleaning.

507.9 Clearances for Type I hood. A Type I hood shall be installed with a clearance to combustibles of not less than 18 inches (457 mm).

Exception: Clearance shall not be required from gypsum wallboard attached to noncombustible structures provided

that a smooth, cleanable, nonabsorbent and noncombustible material is installed between the hood and the gypsum wallboard over an area extending not less than 18 inches (457 mm) in all directions from the hood.

507.10Hoods penetrating a ceiling.Type I hoods or portions thereof penetrating a ceiling, wall or furred space shall comply with all the requirements of Section 506.3.10.

507.11Grease filters.Type I hoods shall be equipped with

UL 1046 listed grease filters designed for the specific purpose. Grease-collecting equipment shall be provided with access for cleaning. The lowest edge of a grease filter located above the cooking surface shall be not less than the height specified in Table 507.11. Table 507.11 Minimum Distance Between the Lowest Edge of a Grease Filter and the Cooking Surface or the Heating Surface Type of Cooking Appliance Height Above Cooking Surface (feet) Without exposed flame0.5 Exposed flame and burners2 Exposed charcoal and charbroil type4 For SI: 1 foot = 304.8 mm.

507.11.1Criteria.Filters shall be of such size, type and arrangement as will permit the required quantity of air to pass through such units at rates not exceeding those for which the filter or unit was designed or approved. Filter units shall be installed in frames or holders so as to be readily removable without the use of separate tools, unless designed and installed to be cleaned in place and the system is equipped for such cleaning in place. Removable filter units shall be of a size that will allow them to be cleaned in a dishwashing machine or pot sink. Filter units shall be arranged in place or provided with drip-intercepting devices to prevent grease or other condensate from dripping into food or on food preparation surfaces.

507.11.2Mounting position.Filters shall be installed at an angle of not less than 45 degrees (0.79 rad) from the horizontal and shall be equipped with a drip tray beneath the lower edge of the filters.

507.11.3Filter servicing.Filters shall be serviced and replaced regularly by qualified employees of the owner or by a cleaning agency. A record indicating the name of the person or firm doing the servicing and the dates when filters were cleaned or replaced shall be available for inspection by the commissioner. They shall be cleaned or replaced as frequently as necessary, but at least every three months, and no exhaust system shall be operated while cooking is being carried on without the filters installed in place.

507.12Canopy size and location.The inside lower edge of canopy-type commercial cooking hoods shall overhang or extend a horizontal distance of not less than 6 inches (152 mm) beyond the edge of the cooking surface, on all open sides. The vertical distance between the front lower lip of the hood and the cooking surface shall not exceed 4 feet (1219 mm).

Exception: The hood shall be permitted to be flush with the outer edge of the cooking surface where the hood is closed to the appliance side by a noncombustible wall or panel.

507.13Capacity of hoods.Commercial food service hoods shall exhaust a minimum net quantity of air determined in accordance with this section and Sections 507.13.1 through 507.13.4. The net quantity of exhaust air shall be calculated by subtracting any airflow supplied directly to a hood cavity from the total exhaust flow rate of a hood. Where any combination of extra-heavy-duty, heavy-duty, medium-duty, and light-duty cooking appliances are utilized under a single hood, the highest exhaust rate required by this section shall be used for the entire hood.

507.13.1Extra-heavy-duty cooking appliances.The minimum net airflow for Type I hoods used for extra-heavy-duty cooking appliances shall be determined as follows:Type of HoodCFM per linear foot of hoodWall-mounted canopy550 Single island canopy700 Double island canopy (per side)550 Backshelf/pass-overNot allowed EyebrowNot allowed For SI: 1 cfm per linear foot = 1.55 L/s per linear meter.

507.13.2Heavy-duty cooking appliances.The minimum net airflow for Type I hoods used for heavy-duty cooking appliances shall be determined as follows:Type of HoodCFM per linear foot of hoodWall-mounted canopy400 Single

island canopy600 Double island canopy (per side)400 Backshelf/pass-over400 EyebrowNot allowed For SI: 1 cfm per linear foot = 1.55 L/s per linear meter.

507.13.3Medium-duty cooking appliances.The minimum net airflow for Type I hoods used for medium-duty cooking appliances shall be determined as follows:Type of HoodCFM per linear foot of hoodWall-mounted canopy300 Single island canopy500 Double island canopy (per side)300 Backshelf/pass-over300 Eyebrow250 For SI: 1 cfm per linear foot = 1.55 L/s per linear meter.

507.13.4Light-duty cooking appliances.The minimum net airflow for Type I hoods used for light duty cooking appliances and food service preparation and cooking operations approved for use under a Type II hood shall be determined as follows:Type of HoodCFM per linear foot of hoodWall-mounted canopy200 Single island canopy400 Double island canopy (per side)250 Backshelf/pass-over250 Eyebrow250 For SI: 1 cfm per linear foot = 1.55 L/s per linear meter.

507.14Noncanopy size and location.Noncanopy-type hoods shall be located a maximum of 3 feet (914 mm) above the cooking surface. The edge of the hood shall be set back a maximum of 1 foot (305 mm) from the edge of the cooking surface.

507.15Exhaust outlets.Exhaust outlets located within the hood shall be located so as to optimize the capture of particulate matter. Each outlet shall serve not more than a 12-foot (3658 mm) section of hood.

507.16Performance test.A performance test shall be conducted upon completion and witnessed by a representative of the Fire Department before final approval of the installation of a ventilation system serving commercial cooking appliances. The test shall verify the rate of exhaust airflow required by Section 507.13, makeup airflow required by Section 508, and proper operation as specified in this chapter. The permit holder shall furnish the necessary test equipment and devices required to perform the tests.



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Chapter 5: EXHAUST SYSTEMS
SECTION MC 508: COMMERCIAL KITCHEN MAKEUP AIR

NYC Administrative Code § 28-MC 508

508.1 Makeup air.

Makeup air shall be supplied during the operation of commercial kitchen exhaust systems that are provided for commercial cooking appliances. The amount of makeup air supplied shall be approximately equal to the amount of exhaust air. The makeup air shall not reduce the effectiveness of the exhaust system. Makeup air shall be provided by gravity or mechanical means or both. For mechanical makeup air systems, the exhaust and makeup air systems shall be electrically interlocked to insure that makeup air is provided whenever the exhaust system is in operation. Makeup air intake opening locations shall comply with Sections 401.5 and 401.5.1.

508.1.1 Makeup air temperature. The temperature differential between makeup air and the air in the conditioned space shall not exceed 10(degrees)F (6(degrees)C).

Exceptions:

1. Makeup air that is part of the air-conditioning system.
2. Makeup air that does not decrease the comfort conditions of the occupied space.

508.2 Compensating hoods. Manufacturers of compensating hoods shall provide a label indicating minimum exhaust flow and/or maximum makeup airflow that provides capture and containment of the exhaust effluent.



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CHAPTER 8: THE NEW YORK CITY MECHANICAL CODES
Chapter 5: EXHAUST SYSTEMS
SECTION MC 509: FIRE SUPPRESSION SYSTEMS

NYC Administrative Code § 28-MC 509

509.1 Where required.

Commercial cooking appliances required by Section 507.2.1 to have a Type I hood shall be provided with an approved automatic fire suppression system complying with the New York City Building Code and the New York City Fire Code.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 17, eff. July 1, 2008.
509.1 amended L.L. 8/2008 § 181, eff. July 1, 2008.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 8: THE NEW YORK CITY MECHANICAL CODES
Chapter 5: EXHAUST SYSTEMS
SECTION MC 510: HAZARDOUS EXHAUST SYSTEMS

NYC Administrative Code § 28-MC 510

510.1 General.

This section shall govern the design and construction of duct systems for hazardous exhaust and shall determine where such systems are required. Hazardous exhaust systems are systems designed to capture and control hazardous emissions generated from product handling or processes, and convey those emissions to the outdoors. Hazardous emissions include flammable vapors, gases, fumes, mists or dusts, and volatile or air-borne materials, including but not limited to perchloroethylene, posing a health hazard, such as toxic or corrosive materials. For the purposes of this section, the health-hazard rating of materials shall be as specified in NFPA 704.

510.2 Where required. A hazardous exhaust system shall be required wherever operations involving the handling or processing of hazardous materials, in the absence of such exhaust systems and under normal operating conditions, have the potential to create one of the following conditions:

1. A flammable vapor, gas, fume, mist or dust is present in concentrations exceeding 25 percent of the lower flammability limit of the substance for the expected room temperature.
2. A vapor, gas, fume, mist or dust with a health-hazard rating of 4 is present in any concentration.
3. A vapor, gas, fume, mist or dust with a health-hazard rating of 1, 2 or 3 is present in concentrations exceeding 1 percent of the median lethal concentration of the substance for acute inhalation toxicity.

510.2.1 Lumber yards and woodworking facilities. Equipment or machinery located inside buildings at lumber yards and woodworking facilities which generates or emits combustible dust shall be provided with an approved dust-collection and exhaust system installed in conformance with this section and the New York City Fire Code. Equipment and systems that are used to collect, process or convey combustible dusts shall be provided with an approved explosion-control system.

510.2.2 Combustible fibers. Equipment or machinery within a building which generates or emits combustible fibers shall be provided with an approved dust-collecting and exhaust system. Such systems shall comply with this code and the New York City Fire Code.

510.3 Design and operation. The design and operation of the exhaust system shall be such that flammable contaminants are diluted in noncontaminated air to maintain concentrations in the exhaust flow below 25 percent of the contaminant's lower flammability limit.

510.4 Independent system. Hazardous exhaust systems shall be independent of other types of exhaust systems. Incompatible materials, as defined in the New York City Fire Code, shall not be exhausted through the same hazardous exhaust system. Hazardous exhaust systems shall not share common shafts with other duct systems, except where such systems are hazardous exhaust systems originating in the same fire area.

Contaminated air shall not be recirculated to occupied areas unless the contaminants have been removed. Air contaminated with explosive or flammable vapors, fumes or dusts; flammable or toxic gases; or radioactive material shall not be recirculated.

510.5 Design. Systems for removal of vapors, gases and smoke shall be designed by the constant velocity or equal friction methods. Systems conveying particulate matter shall be designed employing the constant velocity method.

510.5.1 Balancing. Systems conveying explosive or radioactive materials shall be prebalanced by duct sizing. Other systems shall be balanced by duct sizing with balancing devices, such as dampers. Dampers provided to balance air-flow shall be provided with securely fixed minimum-position blocking devices to prevent restricting flow below the required volume or velocity.

510.5.2 Emission control. The design of the system shall be such that the emissions are confined to the area in which they are generated by air currents, hoods or enclosures and shall be exhausted by a duct system to a safe location or treated by removing contaminants.

510.5.3 Hoods required. Hoods or enclosures shall be used where contaminants originate in a limited area of a space. The design of the hood or enclosure shall be such that air currents created by the exhaust systems will capture the contaminants and transport them directly to the exhaust duct.

510.5.4 Contaminant capture and dilution. The velocity and circulation of air in work areas shall be such that contaminants are captured by an airstream at the area where the emissions are generated and conveyed into a product-conveying duct system. Contaminated air from work areas where hazardous contaminants are generated shall be diluted below the thresholds specified in Section 510.2 with air that does not contain other hazardous contaminants.

510.5.5 Makeup air. Makeup air shall be provided at a rate approximately equal to the rate that air is exhausted by the hazardous exhaust system. Makeup-air intakes shall be located so as to avoid recirculation of contaminated air.

510.5.6 Clearances. The minimum clearance between hoods and combustible construction shall be the clearance required by the duct system.

510.5.7 Ducts. Hazardous exhaust duct systems shall extend directly to the exterior of the building and shall not extend into or through ducts and plenums.

510.6 Penetrations. Penetrations of structural elements by a hazardous exhaust system shall conform to Sections 510.6.1 through 510.6.3.

Exception: Duct penetrations within H-5 occupancies as allowed by the New York City Building Code.

510.6.1 Floors. Hazardous exhaust systems that penetrate a floor /ceiling assembly shall be enclosed in a

fire-resistance-rated shaft constructed in accordance with the New York City Building Code.

510.6.2 Wall assemblies. Hazardous exhaust duct systems that penetrate fire-resistance-rated wall assemblies shall be enclosed in fire-resistance-rated construction from the first point of penetration to the outlet terminal, except where the interior of the duct is equipped with an approved automatic fire suppression system. Ducts shall be enclosed in accordance with the New York City Building Code requirements for shaft construction and such enclosure shall have a minimum fire-resistance-rating of not less than the highest fire-resistance-rated wall assembly penetrated.

510.6.3 Fire walls. Ducts shall not penetrate a fire wall.

510.7 Suppression required. Ducts shall be protected with an approved automatic fire suppression system installed in accordance with the New York City Building Code.

Exceptions:

1. An approved automatic fire suppression system shall not be required in ducts conveying materials, fumes, mists and vapors that are nonflammable and noncombustible under all conditions and at any concentrations.

2. An approved automatic fire suppression system shall not be required in ducts where the largest cross-sectional diameter of the duct is less than 10 inches (254 mm).

510.8 Duct construction. Ducts utilized to convey hazardous exhaust shall be constructed of approved G90 galvanized sheet steel, with a minimum nominal thickness as specified in Table 510.8.

Nonmetallic ducts utilized in systems exhausting nonflammable corrosive fumes or vapors shall be listed and labeled. Nonmetallic duct shall have a flame spread index of 25 or less and a smoke-developed index of 50 or less, when tested in accordance with ASTM E 84. Ducts shall be approved for installation in such an exhaust system.

Where the products being exhausted are detrimental to the duct material, the ducts shall be constructed of alternative materials that are compatible with the exhaust. Table 510.8 Minimum Duct Thickness

Duct or Maximum Side Dimension	Minimum Nominal Thickness	Nonabrasive Materials	Abrasive Materials
0-8 inches	0.028 inch (No. 24 Gage)	0.034 inch (No. 22 Gage)	0.040 inch (No. 20 Gage)
9-18 inches	0.034 inch (No. 22 Gage)	0.040 inch (No. 20 Gage)	0.052 inch (No. 18 Gage)
19-30 inches	0.040 inch (No. 20 Gage)	0.052 inch (No. 18 Gage)	0.064 inch (No. 16 Gage)

510.8.1 Duct joints. Ducts shall be made tight with lap joints having a minimum lap of 1 inch (25 mm).

510.8.2 Clearance to combustibles. Ducts shall have a clearance to combustibles in accordance with Table 510.8.2. Exhaust gases having temperatures in excess of 600(degrees)F (316(degrees)C) shall be exhausted to a chimney in accordance with Section 511.2. Table 510.8.2 Clearance to Combustibles

Type of Exhaust or Temperature of Exhaust ((degrees)F)	Clearance to Combustibles (inches)
Less than 100	1
100-600	12
Flammable vapors	6

For SI: 1 inch = 25.4 mm, (degrees)C = ;fb((degrees)F ;ms 32);rb/1.8.

510.8.3 Explosion relief. Systems exhausting potentially explosive mixtures shall be protected with an approved explosion relief system or by an approved explosion prevention system designed and installed in accordance with NFPA 69. An explosion relief system shall be designed to minimize the structural and mechanical damage resulting from an explosion or deflagration within the exhaust system. An explosion prevention system shall be designed to prevent an explosion or deflagration from occurring.

510.9 Supports. Ducts shall be supported at intervals not exceeding 10 feet (3048 mm). Supports shall be constructed of noncombustible material.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 17, eff. July 1, 2008.

510.8.2 Table amended L.L. 8/2008 § 182, eff. July 1, 2008.



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Chapter 5: EXHAUST SYSTEMS
SECTION MC 511: DUST, STOCK AND REFUSE CONVEYING SYSTEMS

NYC Administrative Code § 28-MC 511

511.1 Dust, stock and refuse conveying systems.

Dust, stock and refuse conveying systems shall comply with the provisions of Section 510 and Sections 511.1.1 through 511.2.

511.1.1 Collectors and separators. Cyclone collectors and separators and associated supports shall be constructed of noncombustible materials and shall be located on the exterior of the building or structure. A collector or separator shall not be located nearer than 10 feet (3048 mm) to combustible construction or to an unprotected wall or floor opening, unless the collector is provided with a metal vent pipe that extends above the highest part of any roof within a distance of 30 feet (9144 mm).

511.1.2 Discharge pipe. Discharge piping shall conform to the requirements for ducts, including clearances required for high-heat appliances, as contained in this code. A delivery pipe from a cyclone collector shall not convey refuse directly into the firebox of a boiler, furnace, dutch oven, refuse burner, incinerator or other appliance.

511.1.3 Conveying system exhaust discharge. An exhaust system shall discharge to the outside of the building either directly by flue, or indirectly through the separator, bin or vault into which the system discharges.

511.1.4 Spark protection. The outlet of an open-air exhaust terminal shall be protected with an approved metal or other noncombustible screen to prevent the entry of sparks.

511.1.5 Explosion relief vents. A safety or explosion relief vent shall be provided on all systems that convey combustible refuse or stock of an explosive nature, in accordance with the requirements of the New York City Building Code.

511.1.5.1 Screens. Where a screen is installed in a safety relief vent, the screen shall be attached so as to permit ready release under the explosion pressure.

511.1.5.2Hoods. The relief vent shall be provided with an approved noncombustible cowl or hood, or with a counterbalanced relief valve or cover arranged to prevent the escape of hazardous materials, gases or liquids.

511.2Exhaust outlets. Outlets for exhaust that exceed 600(degrees)F (315(degrees)C) shall be designed in accordance with Table 511.2.

The termination point for exhaust ducts discharging to the atmosphere shall not be less than the following:

1. Ducts conveying explosive or flammable vapors, fumes or dusts: 30 feet (9144 mm) from property line; 10 feet (3048 mm) from openings into the building; 6 feet (1829 mm) from exterior walls or roofs; 30 feet (9144 mm) from combustible walls or openings into the building which are in the direction of the exhaust discharge; and 10 feet (3048 mm) above adjoining grade.

2. Other product-conveying outlets: 10 feet (3048 mm) from property line; 3 feet (914 mm) from exterior wall or roof; 10 feet (3048 mm) from openings into the building; and 10 feet (3048 mm) above adjoining grade.

3. Environmental air duct exhaust: 3 feet (914 mm) from property line; and 3 feet (914 mm) from openings into the building.



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Chapter 5: EXHAUST SYSTEMS
SECTION MC 512: SUBSLAB SOIL EXHAUST SYSTEMS

NYC Administrative Code § 28-MC 512

512.1 General.

When a subslab soil exhaust system is provided, the duct shall conform to the requirements of this section.

512.2Materials.Subslab soil exhaust system duct material shall be air duct material listed and labeled to the requirements of UL 181 for Class 0 air ducts, or any of the following piping materials that comply with the New York City Plumbing Code as building sanitary drainage and vent pipe: cast iron; galvanized steel; brass or copper pipe; copper tube of a weight not less than that of copper drainage tube, Type DWV; and plastic piping.

512.3Grade.Exhaust system ducts shall not be trapped and shall have a minimum slope of one-eighth unit vertical in 12 units horizontal (1-percent slope).

512.4Termination.Subslab soil exhaust system ducts shall extend through the roof and terminate at least 6 inches (152 mm) above the roof and at least 10 feet (3048 mm) from any operable openings or air intake.

512.5Identification.Subslab soil exhaust ducts shall be permanently identified within each floor level by means of a tag, stencil or other approved marking.



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SECTION MC 513: SMOKE CONTROL SYSTEMS

NYC Administrative Code § 28-MC 513

513.1 Scope and purpose.

This section applies to mechanical and passive smoke control systems that are required by the New York City Building Code. The purpose of this section is to establish minimum requirements for the design, installation and acceptance testing of smoke control systems that are intended to provide a tenable environment for the evacuation or relocation of occupants. These provisions are not intended for the preservation of contents, the timely restoration of operations, or for assistance in fire suppression or overhaul activities. Smoke control systems regulated by this section serve a different purpose than the smoke- and heat-venting provisions found in Section 910 of the New York City Building Code.

513.2General design requirements.Buildings, structures, or parts thereof required by this code to have a smoke control system or systems shall have such systems designed in accordance with the applicable requirements of Section 909 of the New York City Building Code and the generally accepted and well-established principles of engineering relevant to the design. The construction documents shall include sufficient information and detail to describe adequately the elements of the design necessary for the proper implementation of the smoke control systems. These documents shall be accompanied with sufficient information and analysis to demonstrate compliance with these provisions

513.3Special inspection and test requirements.In addition to the ordinary inspection and test requirements which buildings, structures and parts thereof are required to undergo, smoke control systems subject to the provisions of Section 909 of the New York City Building Code shall undergo special inspections and tests sufficient to verify the proper commissioning of the smoke control design in its final installed condition. The design submission accompanying the construction documents shall clearly detail procedures and methods to be used and the items subject to such inspections and tests. Such commissioning shall be in accordance with generally accepted engineering practice and, where possible, based on published standards for the particular testing involved. The special inspections and tests required by this section shall be conducted under the same terms as found in Section 1704 of the New York City Building Code.

513.4Analysis.A rational analysis supporting the types of smoke control systems to be employed, their methods of

operation, the systems supporting them, and the methods of construction to be utilized shall accompany the submitted construction documents and shall include, but not be limited to, the items indicated in Sections 513.4.1 through 513.4.6.

513.4.1 Stack effect. The system shall be designed such that the maximum probable normal or reverse stack effects will not adversely interfere with the system's capabilities. In determining the maximum probable stack effects, altitude, elevation, weather history and interior temperatures shall be used.

513.4.2 Temperature effect of fire. Buoyancy and expansion caused by the design fire in accordance with Section 513.9 shall be analyzed. The system shall be designed such that these effects do not adversely interfere with its capabilities.

513.4.3 Wind effect. The design shall consider the adverse effects of wind. Such consideration shall be consistent with the wind-loading provisions of the New York City Building Code.

513.4.4 HVAC systems. The design shall consider the effects of the heating, ventilating and air-conditioning (HVAC) systems on both smoke and fire transport. The analysis shall include all permutations of systems' status. The design shall consider the effects of fire on the HVAC systems.

513.4.5 Climate. The design shall consider the effects of low temperatures on systems, property and occupants. Air inlets and exhausts shall be located so as to prevent snow or ice blockage.

513.4.6 Duration of operation. All portions of active or passive smoke control systems shall be capable of continued operation after detection of the fire event for not less than 20 minutes.

513.5 Smoke barrier construction. Smoke barriers shall comply with the New York City Building Code. Smoke barriers shall be constructed and sealed to limit leakage areas exclusive of protected openings. The maximum allowable leakage area shall be the aggregate area calculated using the following leakage area ratios:

1. Walls: $A/A_w = 0.00100$

2. Exit enclosures: $A/A_w = 0.00035$

3. All other shafts: $A/A_w = 0.00150$

4. Floors and roofs: $A/A_f = 0.00050$

where: A = Total leakage area, square feet (m^2). A_f = Unit floor or roof area of barrier, square feet (m^2). A_w = Unit wall area of barrier, square feet (m^2).

The leakage area ratios shown do not include openings due to doors, operable windows or similar gaps. These shall be included in calculating the total leakage area.

513.5.1 Leakage area. Total leakage area of the barrier is the product of the smoke barrier gross area times the allowable leakage area ratio, plus the area of other openings such as gaps and operable windows. Compliance shall be determined by achieving the minimum air pressure difference across the barrier with the system in the smoke control mode for mechanical smoke control systems. Passive smoke control systems tested using other approved means such as door fan testing shall be as approved by the commissioner.

513.5.2 Opening protection. Openings in smoke barriers shall be protected by automatic-closing devices actuated by the required controls for the mechanical smoke control system. Door openings shall be protected by door assemblies complying with the requirements of the New York Building Code for doors in smoke barriers.

Exceptions:

1. Passive smoke control systems with automatic-closing devices actuated by spot-type smoke detectors listed for releasing service installed in accordance with the New York City Building Code.

2. Fixed openings between smoke zones which are protected utilizing the airflow method.

3. In Group I-2 where such doors are installed across corridors, a pair of opposite-swinging doors without a center mullion shall be installed having vision panels with approved fire-rated glazing materials in approved fire-rated frames, the area of which shall not exceed that tested. The doors shall be close-fitting within operational tolerances, and shall not have undercuts, louvers or grilles. The doors shall have head and jamb stops, astragals or rabbets at meeting edges and automatic-closing devices. Positive latching devices are not required.

4. Group I-3.

5. Openings between smoke zones with clear ceiling heights of 14 feet (4267 mm) or greater and bank down capacity of greater than 20 minutes as determined by the design fire size.

513.5.2.1 Ducts and air transfer openings. Ducts and air transfer openings are required to be protected with a minimum Class II, 250(degrees)F (121(degrees)C) smoke damper complying with the New York City Building Code.

513.6 Pressurization method. The primary mechanical means of controlling smoke shall be by pressure differences across smoke barriers. Maintenance of a tenable environment is not required in the smoke control zone of fire origin.

513.6.1 Minimum pressure difference. The minimum pressure difference across a smoke barrier shall be 0.05-inch water Gage (12.4 Pa) in fully sprinklered buildings.

In buildings permitted to be other than fully sprinklered, the smoke control system shall be designed to achieve pressure differences at least two times the maximum calculated pressure difference produced by the design fire.

513.6.2 Maximum pressure difference. The maximum air pressure difference across a smoke barrier shall be determined by required door-opening or closing forces. The actual force required to open exit doors when the system is in the smoke control mode shall be in accordance with the New York City Building Code. Opening and closing forces for other doors shall be determined by standard engineering methods for the resolution of forces and reactions. The calculated force to set a side-hinged, swinging door in motion shall be determined by:
[SEE graphical material in printed version]

513.7 Airflow design method. When approved by the commissioner, smoke migration through openings fixed in a permanently open position, which are located between smoke control zones by the use of the airflow method, shall be permitted. The design airflows shall be in accordance with this section. Air-flow shall be directed to limit smoke migration from the fire zone. The geometry of openings shall be considered to prevent flow reversal from turbulent effects.

513.7.1 Velocity. The minimum average velocity through a fixed opening shall not be less than:
[SEE graphical material in printed version]

513.7.2 Prohibited conditions. This method shall not be employed where either the quantity of air or the velocity of the airflow will adversely affect other portions of the smoke control system, unduly intensify the fire, disrupt plume dynamics or interfere with exiting. In no case shall airflow toward the fire exceed 200 feet per minute (1.02 m/s). Where the formula in Section 513.7.1 requires airflow to exceed this limit, the airflow method shall not be used.

513.8 Exhaust method. When approved by the commissioner, mechanical smoke control for large enclosed volumes, such as in atria or malls, shall be permitted to utilize the exhaust method. The design exhaust volumes shall be in accordance with this section.

513.8.1 Exhaust rate. The height of the lowest horizontal surface of the accumulating smoke layer shall be maintained at least 10 feet (3048 mm) above any walking surface which forms a portion of a required egress system within the smoke zone. The required exhaust rate for the zone shall be the largest of the calculated plume mass flow rates for the possible plume configurations. Provisions shall be made for natural or mechanical supply of outside air from outside or adjacent smoke zones to make up for the air exhausted. Makeup airflow rates, when measured at the potential fire location, shall not exceed 200 feet per minute (1.02m/s) toward the fire. The temperature of the makeup air shall be such that it does not expose temperature-sensitive fire protection systems beyond their limits.

513.8.2 Axisymmetric plumes. The plume mass flow rate (mp), in pounds per second (kg/s), shall be determined by placing the design fire center on the axis of the space being analyzed. The limiting flame height shall be determined by: [SEE graphical material in printed version]

[SEE graphical material in printed version]

513.8.3 Balcony spill plumes. The plume mass flow rate (mp) for spill plumes shall be determined using the geometrically probable width based on architectural elements and projections in the following formula: [SEE graphical material in printed version]

513.8.4 Window plumes. The plume mass flow rate (mp) shall be determined from: [SEE graphical material in printed version]

513.8.5 Plume contact with walls. When a plume contacts one or more of the surrounding walls, the mass flow rate shall be adjusted for the reduced entrainment resulting from the contact provided that the contact remains constant. Use of this provision requires calculation of the plume diameter, that shall be calculated by: [SEE graphical material in printed version]

513.9 Design fire. The design fire shall be based on a Q of not less than 5,000 Btu per second (5275 kW) unless a rational analysis is performed by the registered design professional and approved by the commissioner. The design fire shall be based on the analysis in accordance with Section 513.4 and this section.

513.9.1 Factors considered. The engineering analysis shall include the characteristics of the fuel, fuel load, effects included by the fire, and whether the fire is likely to be steady or unsteady.

513.9.2 Separation distance. Determination of the design fire shall include consideration of the type of fuel, fuel spacing and configuration. The ratio of the separation distance to the fuel equivalent radius shall not be less than 4. The fuel equivalent radius shall be the radius of a circle of equal area to floor area of the fuel package. The design fire shall be increased if other combustibles are within the separation distance as determined by: [SEE graphical material in printed version]

513.9.3 Heat-release assumptions. The analysis shall make use of the best available data from approved sources and shall not be based on excessively stringent limitations of combustible material.

513.9.4 Sprinkler effectiveness assumptions. A documented engineering analysis shall be provided for conditions that assume fire growth is halted at the time of sprinkler activation.

513.10 Equipment. Equipment such as, but not limited to, fans, ducts, automatic dampers and balance dampers shall be suitable for their intended use, suitable for the probable exposure temperatures that the rational analysis indicates, and as approved by the commissioner.

513.10.1 Exhaust fans. Components of exhaust fans shall be rated and certified by the manufacturer for the probable temperature rise to which the components will be exposed. This temperature rise shall be computed by: [SEE graphical material in printed version]

513.10.2Ducts.Duct materials and joints shall be capable of withstanding the probable temperatures and pressures to which they are exposed as determined in accordance with Section 513.10.1. Ducts shall be constructed and supported in accordance with Chapter 6. Ducts shall be leak tested to 1.5 times the maximum design operating pressure in accordance with nationally accepted practices. Measured leakage shall not exceed 5 percent of design flow. Results of such testing shall be a part of the documentation procedure. Ducts shall be supported directly from fire-resistance-rated structural elements of the building by substantial, noncombustible supports.

Exception: Flexible connections, for the purpose of vibration isolation, that are constructed of approved fire-resistance-rated materials.

513.10.3Equipment, inlets and outlets.Equipment shall be located so as to not expose uninvolved portions of the building to an additional fire hazard. Outdoor air inlets shall be located so as to minimize the potential for introducing smoke or flame into the building. Exhaust outlets shall be so located as to minimize reintroduction of smoke into the building and to limit exposure of the building or adjacent buildings to an additional fire hazard.

513.10.4Automatic dampers.Automatic dampers, regardless of the purpose for which they are installed within the smoke control system, shall be listed and conform to the requirements of approved recognized standards.

513.10.5Fans.In addition to other requirements, belt-driven fans shall have 1.5 times the number of belts required for the design duty with the minimum number of belts being two. Fans shall be selected for stable performance based on normal temperature and, where applicable, elevated temperature. Calculations and manufacturer's fan curves shall be part of the documentation procedures. Fans shall be supported and restrained by noncombustible devices in accordance with the structural design requirements of the New York City Building Code. Motors driving fans shall not be operating beyond their nameplate horsepower (kilowatts) as determined from measurement of actual current draw. Motors driving fans shall have a minimum service factor of 1.15.

513.11Power systems.The smoke control system shall be supplied with two sources of power. Primary power shall be the normal building power systems. Secondary power shall be from an approved emergency source complying with the New York City Electrical Code. The emergency power source and its transfer switches shall be in a separate room from the normal power transformers and switch gear and shall be enclosed in a room constructed of not less than 1-hour fire-resistance-rated fire barriers, ventilated directly to and from the exterior. Power distribution from the two sources shall be by independent routes. Transfer to full emergency power shall be automatic and within 60 seconds of failure of the primary power. The systems shall comply with the New York City Electrical Code.

513.11.1Power sources and power surges.Elements of the smoke management system relying on volatile memories or the like shall be supplied with integral uninterruptible power sources of sufficient duration to span 15-minute primary power interruption. Elements of the smoke management system susceptible to power surges shall be suitably protected by conditioners, suppressors or other approved means.

513.12Detection and control systems.Fire detection systems providing control input or output signals to mechanical smoke control systems or elements thereof shall comply with the requirements of Chapter 9 of the New York City Building Code. Such systems shall be equipped with a control unit complying with UL 864 and listed as smoke control equipment.

Control systems for mechanical smoke control systems shall include provisions for verification. Verification shall include positive confirmation of actuation, testing, manual override, the presence of power downstream of all disconnects and, through a preprogrammed weekly test sequence report, abnormal conditions audibly, visually and by printed report.

513.12.1Wiring.In addition to meeting the requirements of the New York City Electrical Code, all wiring, regardless of voltage, shall be fully enclosed within continuous raceways.

513.12.2Activation. Smoke control systems shall be activated in accordance with the New York City Building Code.

513.12.3Automatic control. Where completely automatic control is required or used, the automatic control sequences shall be initiated from an appropriately zoned automatic sprinkler system complying with Chapter 9 of the New York City Building Code or from manual controls that are readily accessible to the Fire Department, and any smoke detectors required by engineering analysis.

513.13Control-air tubing. Control-air tubing shall be of sufficient size to meet the required response times. Tubing shall be flushed clean and dry prior to final connections. Tubing shall be adequately supported and protected from damage. Tubing passing through concrete or masonry shall be sleeved and protected from abrasion and electrolytic action.

513.13.1Materials. Control-air tubing shall be hard-drawn copper, Type L, ACR in accordance with ASTM B 42, ASTM B 43, ASTM B 68, ASTM B 88, ASTM B 251 and ASTM B 280. Fittings shall be wrought copper or brass, solder type in accordance with ASME B16.18 or ASME B 16.22. Changes in direction shall be made with appropriate tool bends. Brass compression-type fittings shall be used at final connection to devices; other joints shall be brazed using a BCuP5 brazing alloy with solidus above 1,100(degrees)F (593(degrees)C) and liquids below 1,500(degrees)F (816(degrees)C). Brazing flux shall be used on copper-to-brass joints only.

Exception: Nonmetallic tubing used within control panels and at the final connection to devices provided all of the following conditions are met:

1. Tubing shall be listed by an approved agency for flame and smoke characteristics.
2. Tubing and connected device shall be completely enclosed within a galvanized or paint-grade steel enclosure of not less than 0.030 inch (0.76mm) (No. 22 galvanized sheet Gage) thickness. Entry to the enclosure shall be by copper tubing with a protective grommet of neoprene or teflon or by suitable brass compression to male barbed adapter.
3. Tubing shall be identified by appropriately documented coding.
4. Tubing shall be neatly tied and supported within the enclosure. Tubing bridging cabinets and doors or moveable devices shall be of sufficient length to avoid tension and excessive stress. Tubing shall be protected against abrasion. Tubing serving devices on doors shall be fastened along hinges.

513.13.2Isolation from other functions. Control tubing serving other than smoke control functions shall be isolated by automatic isolation valves or shall be an independent system.

513.13.3Testing. Test control-air tubing at three times the operating pressure for not less than 30 minutes without any noticeable loss in gauge pressure prior to final connection to devices.

513.14Marking and identification. The detection and control systems shall be clearly marked at all junctions, accesses and terminations.

513.15Control diagrams. Identical control diagrams shall be provided and maintained as required by the New York City Fire Code.

513.16Fire fighter's smoke control panel. A fire fighter's smoke control panel for Fire Department emergency response purposes only shall be provided in accordance with the New York City Fire Code.

513.17System response time. Smoke control system activation shall comply with the New York City Fire Code.

513.18Acceptance testing. Devices, equipment, components and sequences shall be tested in accordance with the

New York City Fire Code.

513.19System acceptance.Acceptance of the smoke control system shall be in accordance with the New York City Fire Code.

513.20Underground building smoke exhaust system.Where required by the New York City Building Code for underground buildings, a smoke exhaust system shall be provided in accordance with this section.

513.20.1Exhaust capability.Where compartmentation is required, each compartment shall have an independent smoke exhaust system capable of manual operation. The system shall have an air supply and smoke exhaust capability that will provide a minimum of six air changes per hour.

513.20.2Operation.The smoke exhaust system shall be operated in accordance with Section 909 of the New York City Building Code.

513.20.3Alarm required.Activation of the smoke exhaust system shall activate an audible alarm at a constantly attended location in accordance with the New York City Fire Code.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 17, eff. July 1, 2008.

513.5.1 amended L.L. 8/2008 § 183, eff. July 1, 2008.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 8: THE NEW YORK CITY MECHANICAL CODES
Chapter 5: EXHAUST SYSTEMS
SECTION MC 514: ENERGY RECOVERY VENTILATION SYSTEMS

NYC Administrative Code § 28-MC 514

514.1 General.

Energy recovery ventilation systems shall be installed in accordance with this section. Where required for purposes of energy conservation, energy recovery ventilation systems shall also comply with the Energy Conservation Construction Code of New York State.

514.2 Prohibited applications. Energy recovery ventilation systems shall not be used in the following systems, unless specifically designed and/or listed for the specific applications and as part of an engineered system.

1. Hazardous exhaust systems covered in Section 510.
2. Dust, stock and refuse systems that convey explosive or flammable vapors, fumes or dust covered in Section 511.
3. Smoke control systems covered in Section 513.
4. Commercial kitchen exhaust systems serving Type I and Type II hoods covered in Section 506.
5. Clothes dryer exhaust systems covered in Section 504.

514.3 Access. A means of access shall be provided to the heat exchanger and other components of the system as required for service, maintenance, repair or replacement.



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Chapter 5: EXHAUST SYSTEMS
SECTION MC 515: POST-FIRE SMOKE PURGE SYSTEMS

NYC Administrative Code § 28-MC 515

515.1 General.

Post-fire smoke purge systems shall be provided as required by Chapter 9 of the New York City Building Code.



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CHAPTER 8: THE NEW YORK CITY MECHANICAL CODES
Chapter 6: DUCT SYSTEMS
SECTION MC 601: GENERAL

NYC Administrative Code § 28-MC 601

601.1 Scope.

Duct systems used for the movement of air in air-conditioning, heating, ventilating and exhaust systems shall conform to the provisions of this chapter except as otherwise specified in Chapters 5 and 7.

Exception: Ducts discharging combustible material directly into any combustion chamber shall conform to the requirements of NFPA 82.

601.2 Air movement in corridors. Corridors shall not be used as a portion of direct supply, return, or exhaust air system serving adjoining areas. Air transfer opening(s) shall not be permitted in walls or in doors separating public corridors from adjoining areas.

Exceptions:

1. Where located within dwelling units, the use of corridors for conveying return air shall not be prohibited.
2. Where located within tenant spaces of 1,000 square feet (93 m²) or less in area, utilization of corridors for conveying return air is permitted.
3. Corridors in Group B office buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 of the New York City Building Code.
4. Air transfer openings serving toilet rooms, bathrooms, shower rooms, sink closets, and similar auxiliary spaces opening onto the public corridor.
5. Group I-3 detention and correctional occupancies with corridor separations of open construction (e.g. grating doors or grating partitions).

6. Air transfer in openings because of pressure differential in Group I-2 health care occupancies from corridors is permitted.

7. Where door clearances do not exceed those specified for fire doors in the New York City Building Code, air transfer caused by pressure differentials shall be permitted.

8. Use of egress corridors as part of an engineered smoke-control system is permitted.

601.2.1 Corridor ceiling. Use of the space between the corridor ceiling and the floor or roof structure above as a return air plenum is permitted for one or more of the following conditions:

1. The corridor is not required to be of fire-resistance-rated construction;
2. The corridor is separated from the plenum by fire-resistance-rated construction;
3. The air-handling system serving the corridor is shut down upon activation of the air-handling unit smoke detectors required by this code;
4. The air-handling system serving the corridor is shut down upon detection of sprinkler waterflow where the building is equipped throughout with an automatic sprinkler system; or
5. The space between the corridor ceiling and the floor or roof structure above the corridor is used as a component of an approved engineered smoke control system.

601.3 Contamination prevention. Exhaust ducts under positive pressure, chimneys, and vents shall not extend into or pass through ducts or plenums.



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Chapter 6: DUCT SYSTEMS
SECTION MC 602: PLENUMS

NYC Administrative Code § 28-MC 602

602.1 General.

Supply, return, exhaust, relief and ventilation air plenums shall be limited to uninhabited crawl spaces, areas above a finished ceiling or below the finished floor, attic spaces and mechanical equipment rooms. Plenums shall be limited to one fire area. Fuel-fired appliances shall not be installed within a plenum.

602.2 Construction. Plenum enclosures shall be constructed of materials permitted for the type of construction classification of the building. The temperature of air delivered to or through these plenums shall not exceed 250(degrees)F (121(degrees)C), except where used as part of an engineered smoke control system.

The use of gypsum boards to form plenums shall be limited to systems where the air temperatures do not exceed 125(degrees)F (52(degrees)C) and the building and mechanical system design conditions are such that the gypsum board surface temperature will be maintained above the air stream dew-point temperature. Air plenums formed by gypsum boards shall not be incorporated in air-handling systems utilizing evaporative coolers.

602.2.1 Materials exposed within plenums. Except as required by Sections 602.2.1.1 through 602.2.1.5, materials exposed within plenums shall be noncombustible or shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E 84.

Exceptions:

1. Rigid and flexible ducts and connectors shall conform to Section 603.
2. Duct coverings, linings, tape and connectors shall conform to Sections 603 and 604.
3. This section shall not apply to materials exposed within plenums in one- and two-family dwellings.
4. This section shall not apply to smoke detectors.

5. Combustible materials enclosed in approved gypsum board assemblies or enclosed in materials listed and labeled for such application.

602.2.1.1Wiring. Combustible electrical or electronic wiring methods and materials, optical fiber cable, and optical fiber raceway exposed within a plenum shall have a peak optical density not greater than 0.50, an average optical density not greater than 0.15, and a flame spread not greater than 5 feet (1524 mm) when tested in accordance with NFPA 262. Only type OFNP (plenum rated nonconductive optical fiber cable) shall be installed in plenum- rated optical fiber raceways. Wiring, cable, and raceways addressed in this section shall be listed and labeled as plenum rated and shall be installed in accordance with New York City Electrical Code.

602.2.1.2Fire sprinkler piping. Plastic fire sprinkler piping exposed within a plenum shall be used only in wet pipe systems and shall have a peak optical density not greater than 0.50, an average optical density not greater than 0.15, and a flame spread of not greater than 5 feet (1524 mm) when tested in accordance with UL 1887. Piping shall be listed and labeled.

602.2.1.3Pneumatic tubing. Combustible pneumatic tubing exposed within a plenum shall have a peak optical density not greater than 0.50, an average optical density not greater than 0.15, and a flame spread of not greater than 5 feet (1524 mm) when tested in accordance with UL 1820. Combustible pneumatic tubing shall be listed and labeled.

602.2.1.4Combustible electrical equipment. Combustible electrical equipment exposed within a plenum shall have a peak rate of heat release not greater than 100 kilowatts, a peak optical density not greater than 0.50 and an average optical density not greater than 0.15 when tested in accordance with UL 2043. Combustible electrical equipment shall be listed and labeled.

602.2.1.5Foam plastic insulation. Foam plastic insulation used as wall or ceiling finish in plenums shall exhibit a flame spread index of 75 or less and a smoke developed index of 450 or less when tested in accordance with ASTM E 84 and shall also comply with Section 602.2.1.5.1, 602.2.1.5.2 or 602.2.1.5.3.

602.2.1.5.1Separation required. The foam plastic insulation shall be separated from the plenum by a thermal barrier complying with Section 2603.4 of the New York City Building Code.

602.2.1.5.2Approval. The foam plastic insulation shall be approved based on tests conducted in accordance with Section 2603.8 of the New York City Building Code.

602.2.1.5.3Covering. The foam plastic insulation shall be covered by corrosion-resistant steel having a base metal thickness of not less than 0.0160 inch (0.4 mm).

602.3Stud cavity and joist space plenums. Stud wall cavities and the spaces between solid floor joists to be utilized as air plenums shall comply with the following conditions:

1. Such cavities or spaces shall not be utilized as a plenum for supply air.
2. Such cavities or spaces shall not be part of a required fire-resistance-rated assembly.
3. Stud wall cavities shall not convey air from more than one floor level.
4. Stud wall cavities and joist space plenums shall comply with the floor penetration protection requirements of the New York City Building Code.
5. Stud wall cavities and joist space plenums shall be isolated from adjacent concealed spaces by approved fireblocking as required in the New York City Building Code.

602.4Flood hazard. For structures located in areas of special flood hazard, plenum spaces shall comply with

Appendix G of the New York City Building Code.

602.5 Firestopping. Where required by the New York City Building Code through penetrations shall be firestopped in accordance with Section 712 of the New York City Building Code.

602.6 Materials. Materials used in the construction of a plenum shall be suitable for continuous exposure to the temperature and humidity conditions of the environmental air in the plenum.



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CHAPTER 8: THE NEW YORK CITY MECHANICAL CODES
Chapter 6: DUCT SYSTEMS
SECTION MC 603: DUCT CONSTRUCTION AND INSTALLATION

NYC Administrative Code § 28-MC 603

603.1 General.

An air distribution system shall be designed and installed to supply the required distribution of air. The installation of an air distribution system shall not affect the fire protection requirements specified in the New York City Building Code. Ducts shall be constructed, braced, reinforced and installed to provide structural strength and durability.

603.2 Duct sizing. Ducts installed within a single dwelling unit shall be sized in accordance with ACCA Manual D or other approved methods. Ducts installed within all other buildings shall be sized in accordance with the ASHRAE Handbook of Fundamentals or other equivalent computation procedure.

603.3 Duct classification. Ducts shall be classified based on the maximum operating pressure of the duct at pressures of positive or negative 0.5, 1.0, 2.0, 3.0, 4.0, 6.0 or 10.0 inches of water column. The pressure classification of ducts shall equal or exceed the design pressure of the air distribution in which the ducts are utilized.

603.4 Metallic ducts. All metallic ducts shall be constructed as specified in the SMACNA HVAC Duct Construction Standards-Metal and Flexible.

Exception: Ducts installed within single dwelling units shall have a minimum thickness as specified in Table 603.4. Table 603.4 Duct Construction Minimum Sheet Metal Thickness for Single Dwelling Units Duct Size Galvanized Minimum Thickness (inches) Equivalent Galvanized Gage No. Approximate Aluminum B&S Gage Round ducts and enclosed

Rectangular ducts

14" or less 0.013 30 26

Over 14" 0.016 28 24 Exposed rectangular ducts

14" or less 0.016 28 24

Over 14" 0.019 26 22 For SI: 1 inch = 25.4 mm.

603.5 Nonmetallic ducts. Nonmetallic ducts shall be constructed with Class 0 or Class 1 duct material in accordance with UL 181. Fibrous duct construction shall conform to the SMACNA Fibrous Glass Duct Construction Standards or NAIMA Fibrous Glass Duct Construction Standards. The maximum air temperature within nonmetallic ducts shall not exceed 250(degrees)F (121(degrees)C).

603.6 Air ducts and air connectors. Air ducts, both metallic and nonmetallic, shall comply with Sections 603.6.1 and 603.6.1.1. Air connectors, both metallic and nonmetallic, shall comply with Sections 606.6.2 and 603.6.3.

603.6.1 Air ducts. Air ducts shall be permitted to be rigid or flexible and shall be constructed of materials that are reinforced and sealed to satisfy the requirements for the use of the air duct system, such as the supply air system, the return or exhaust air systems, and the variable volume/pressure air system.

603.6.1.1 Materials. All air duct materials shall be suitable for continuous exposure to the temperature and humidity conditions of the environmental air in the air duct. Air ducts shall be constructed of any of the following materials:

1. Iron, steel, aluminum, copper, concrete, masonry, or clay tile.
2. Class 0 or Class 1 rigid or flexible air ducts tested in accordance with UL 181 and installed in conformance with the conditions of the listing.

Exceptions:

1. Class 0 or Class 1 rigid or flexible air duct shall not be used as a vertical air duct that is more than two stories in height.
2. Class 0 or Class 1 rigid or flexible air ducts shall not be used for air ducts containing air at temperatures in excess of 250F (121C)
3. Where the temperature of the conveyed air does not exceed 125F (52C) in normal service, negative pressure exhaust or return air ducts shall be permitted to be constructed of gypsum board having a maximum flame spread index/rating of 25 without evidence of continued progressive combustion and a maximum smoke developed index/rating of 50. Air ducts formed by gypsum boards shall have a surface temperature maintained above the air stream dew-point temperature, and shall not be used in air-handling systems utilizing evaporative coolers.

Exception: The maximum conveyed air temperature of 125F (52C) shall not apply to gypsum board material used for emergency smoke exhaust air ducts.

603.6.1.2 Installation. The materials, thickness, construction, and installation of ducts shall provide structural strength and durability in conformance with recognized good practice. Air ducts shall be considered to be in compliance with this requirement where constructed and installed in accordance with the New York City Building Code. Where no standard exists for the construction of air ducts, they shall be constructed to withstand both the positive and negative pressures of the system.

603.6.2 Air Connectors. Air connectors are limited-use, flexible air ducts that are required to conform to other provisions applicable to air ducts and shall meet the following requirements:

1. Air connectors shall conform to the requirements for Class 0 or Class 1 connectors when tested and approved in accordance with UL 181.

2. Class 0 or Class 1 air connectors shall not be used for ducts containing air at temperatures in excess of 250(degrees)F (121(degrees)C).

3. Air connector runs shall not exceed 14 feet (4267 mm) in length.

4. Air connectors shall not penetrate any rated wall, partition, or shaft that is required to have a fire resistance rating of 1 hour or more.

5. Air connectors shall not pass through floors.

603.6.3Flexible air duct and air connector clearance.Flexible air ducts and air connectors shall be installed with a minimum clearance to an appliance as specified in the appliance manufacturer's installation instructions.

603.7Rigid duct penetrations.Duct system penetrations of walls, floors, ceilings and roofs and air transfer openings in such building components shall be protected as required by Section 607.

603.8Underground ducts.Ducts shall be approved for underground installation. Metallic ducts not having an approved protective coating shall be completely encased in a minimum of 2 inches (51 mm) of concrete.

603.8.1Slope.Ducts shall slope to allow drainage to a point provided with access.

603.8.2Sealing.Ducts shall be sealed and secured prior to pouring the concrete encasement.

603.8.3Plastic ducts and fittings.Plastic ducts shall be constructed of PVC having a minimum pipe stiffness of 8 psi (55 kPa) at 5-percent deflection when tested in accordance with ASTM D 2412. Plastic duct fittings shall be constructed of either PVC or high-density polyethylene. Plastic duct and fittings shall be utilized in underground installations only. The maximum design temperature for systems utilizing plastic duct and fittings shall be 150(degrees)F (66(degrees)C).

603.9Joints, seams and connections.All longitudinal and transverse joints, seams and connections in metallic and nonmetallic ducts shall be constructed as specified in SMACNA HVAC Duct Construction Standards-Metal and Flexible and SMACNA Fibrous Glass Duct Construction Standards or NAIMA Fibrous Glass Duct Construction Standards. All longitudinal and transverse joints, seams and connections shall be sealed in accordance with the Energy Conservation Construction Code of New York State.

603.10Supports.Ducts shall be supported with approved hangers at intervals not exceeding 10 feet (3048 mm) or by other approved duct support systems designed in accordance with the New York City Building Code. Flexible and other factory-made ducts shall be supported in accordance with the manufacturer's installation instructions. Ducts shall not be hung from or supported by suspended ceilings.

603.11Furnace connections.Ducts connecting to a furnace shall have a clearance to combustibles in accordance with the furnace manufacturer's installation instructions.

603.11.1Air duct at heat sources.Where heat sources from electrical equipment, fossil fuel-burning equipment, or solar energy collection equipment are installed in air ducts, the installation shall avoid the creation of a fire hazard. Air ducts rated as Class 1 in accordance with UL 181, air duct coverings, and linings shall be interrupted at the immediate area of operation of such heat sources in order to meet the clearances specified in the equipment listing.

Exceptions:

1. Appliances listed for zero clearance from combustibles where installed with the conditions of their listings.

2. Insulation specifically suitable for the maximum temperature that reasonably can be anticipated on the duct surface shall be permitted to be installed at the immediate area of operation of such appliances.

603.12Condensation.Provisions shall be made to prevent the formation of condensation on the exterior of any duct.

603.13Flood hazard areas.For structures in areas of special flood hazard, ducts shall comply with Appendix G of the New York City Building Code.

603.14Location.Ducts shall not be installed in or within 4 inches (102 mm) of the earth, except where such ducts comply with Section 603.8.

603.15Mechanical protection.Ducts installed in locations where they are exposed to mechanical damage by vehicles or from other causes shall be protected by approved vehicle barriers as required by the New York City Building Code.

603.16Weather protection.All ducts including linings, coverings and vibration isolation connectors installed on the exterior of the building shall be adequately protected against the elements.

603.17Registers, grilles and diffusers.Duct registers, grilles and diffusers shall be installed in accordance with the manufacturer's installation instructions. Balancing dampers or other means of supply air adjustment shall be provided in the branch ducts or at each individual duct register, grille or diffuser.

603.17.1Floor registers.Floor registers shall resist, without structural failure, a 200-pound (90.8 kg) concentrated load on a 2-inch-diameter (51 mm) disc applied to the most critical area of the exposed face.

603.18Vibration Isolation Connectors.Vibration isolation connectors in duct systems shall be made of an approved flame-retardant fabric or shall consist of sleeve joints with packing of approved material, each having a maximum flame spread index/rating of 25 and a maximum smoke developed rating of 50. The fabric shall have a maximum length of 10 inches (254 mm) in the direction of air flow.



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SECTION MC 604: INSULATION

NYC Administrative Code § 28-MC 604

604.1 General.

Duct insulation shall conform to the requirements of Sections 604.2 through 604.13 and the Energy Conservation Construction Code of New York State.

604.2 Surface temperature. Ducts that operate at temperatures exceeding 120(degrees)F (49(degrees)C) shall have sufficient thermal insulation to limit the exposed surface temperature to 120(degrees)F (49(degrees)C).

604.3 Coverings and linings. Coverings and linings, including adhesives when used, shall have a flame spread index not more than 25 and a smoke-developed index not more than 50, when tested in accordance with ASTM E 84. Duct coverings and linings shall not flame, glow, smolder or smoke when tested in accordance with ASTM C 411 at the temperature to which they are exposed in service. The test temperature shall not fall below 250(degrees)F (121(degrees)C).

604.4 Foam plastic insulation. Foam plastic used as duct coverings and linings shall conform to the requirements of Section 604.

604.5 Appliance insulation. Listed and labeled appliances that are internally insulated shall be considered as conforming to the requirements of Section 604.

604.6 Penetration of assemblies. Duct coverings shall not penetrate a wall or floor required to have a fire-resistance rating or required to be fireblocked.

604.7 Identification. External duct insulation and factory-insulated flexible duct shall be legibly printed or identified at intervals not greater than 36 inches (914 mm) with the name of the manufacturer, the thermal resistance R-value at the specified installed thickness and the flame spread and smoke-developed indexes of the composite materials. All duct insulation product R-values shall be based on insulation only, excluding air films, vapor retarders or other duct

components, and shall be based on tested C-values at 75(degrees)F (24(degrees)C) mean temperature at the installed thickness, in accordance with recognized industry procedures. The installed thickness of duct insulation used to determine its R-values shall be determined as follows:

1. For duct board, duct liner and factory-made rigid ducts not normally subjected to compression, the nominal insulation thickness shall be used.

2. For duct wrap, the installed thickness shall be assumed to be 75 percent (25-percent compression) of nominal thickness.

3. For factory-made flexible air ducts, the installed thickness shall be determined by dividing the difference between the actual outside diameter and nominal inside diameter by two.

604.8Lining installation.Linings shall be interrupted at the area of operation of a fire damper and at a minimum of 6 inches (152 mm) upstream of and 6 inches (152 mm) downstream of electric-resistance and fuel-burning heaters in a duct system. Metal nosings or sleeves shall be installed over exposed duct liner edges that face opposite the direction of airflow.

604.9Thermal continuity.Where a duct liner has been interrupted, a duct covering of equal thermal performanceshall be installed.

604.10Service openings.Service openings shall not be concealed by duct coverings unless the exact location of the opening is properly identified.

604.11Vapor retarders.Where ducts used for cooling are externally insulated, the insulation shall be covered with a vapor retarder having a maximum permeance of 0.05 perm [2.87 ng/(Pa ;tb s ;tb m2)] or aluminum foil having a minimum thickness of 2 mils (0.051 mm). Insulations having a permeance of 0.05 perm [2.87 ng/(P ;tb s ;tb m2)] or less shall not be required to be covered. All joints and seams shall be sealed to maintain the continuity of the vapor retarder.

604.12Weatherproof barriers.Insulated exterior ducts shall be protected with an approved weatherproof barrier.

604.13Internal insulation.Materials used as internal insulation and exposed to the airstream in ducts shall be shown to be durable when tested in accordance with UL 181. Exposed internal insulation that is not impermeable to water shall not be used to line ducts or plenums from the exit of a cooling coil to the downstream end of the drain pan.



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Chapter 6: DUCT SYSTEMS
SECTION MC 605: AIR FILTERS

NYC Administrative Code § 28-MC 605

605.1 General.

Heating and air-conditioning systems of the central type shall be provided with approved air filters. Filters shall be installed in the return air system, upstream from any heat exchanger or coil, in an approved convenient location. Liquid adhesive coatings used on filters shall have a flash point not lower than 325(degrees)F (163(degrees)C).

605.2 Standards. Media-type and electrostatic-type air filters shall be listed and labeled. Media-type air filters shall comply with UL 900. High-efficiency particulate air filters shall comply with UL 586. Electrostatic-type air filters shall comply with UL 867. Air filters utilized within dwelling units shall be designed for the intended application and shall not be required to be listed and labeled.

605.3 Airflow over the filter. Ducts shall be constructed to allow an even distribution of air over the entire filter.

605.4 Liquid adhesive tanks. Tanks for liquid adhesives, into which removable filters are dipped, shall be located either outside the building or, if such a location is not available, in a separate fire resistive room and stored in accordance with NFPA 30. Such tanks shall be metal, equipped with tight-fitting covers and shall be kept tightly covered when not in actual use.

605.5 Filter maintenance. All air filters shall be kept free of excess dust and combustible material. Unit filters shall be renewed or cleaned when the resistance to airflow has increased to two times the original resistance or when the resistance has reached a value of recommended replacement by the manufacturer. A permanently installed draft gauge shall be provided for this purpose. Where the filters are of the automatic liquid adhesive type, sludge shall be removed from the liquid adhesive reservoir regularly.



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SECTION MC 606: SMOKE DETECTION SYSTEMS CONTROL

NYC Administrative Code § 28-MC 606

606.1 Controls required.

Air distribution systems shall be equipped with smoke detectors listed and labeled for installation in air distribution systems, as required by this section.

606.2 Where required. Smoke detectors shall be installed where indicated in Sections 606.2.1 through 606.2.4.

Exception: Smoke detectors shall not be required where air distribution systems are incapable of spreading smoke beyond the enclosing walls, floors and ceilings of the room or space in which the smoke is generated.

606.2.1 Return air systems. Smoke detectors shall be installed in return air systems with a design capacity greater than 2,000 cfm (0.9 m³/s), in the return air duct or plenum upstream of any filters, exhaust air connections, outdoor air connections, or decontamination equipment and appliances.

Exception: Smoke detectors are not required in the return air system where all portions of the building served by the air distribution system are protected by area smoke detectors connected to a fire alarm system in accordance with the New York City Fire Code. The area smoke detection system shall comply with Section 606.4.

606.2.2 Common supply and return air systems. Where multiple air-handling systems share common supply or return air ducts or plenums with a combined design capacity greater than 2,000 cfm (0.9 m³/s), the return air system shall be provided with smoke detectors in accordance with Section 606.2.1.

Exception: Individual smoke detectors shall not be required for each fan-powered terminal unit, provided that such units do not have an individual design capacity greater than 2,000 cfm (0.9 m³/s) and will be shut down by activation of one of the following:

1. Smoke detectors required by Sections 606.2.1 and 606.2.3.

2. An approved area smoke detector system located in the return air plenum serving such units.

3. An area smoke detector system as prescribed in the exception to Section 606.2.1.

In all cases, the smoke detectors shall comply with Sections 606.4 and 606.4.1.

606.2.3Return air risers. Where return air risers serve two or more stories and serve any portion of a return air system having a design capacity greater than 15,000 cfm (7.1 m³/s), smoke detectors shall be installed at each story. Such smoke detectors shall be located up stream of the connection between the return air riser and any air ducts or plenums.

606.2.4Supply air systems. Smoke detectors listed for use in air distribution systems shall be installed downstream of the air filters and ahead of any branch connections in air supply systems having a capacity greater than 2,000 cfm (0.9 m³/s).

606.3Installation. Smoke detectors required by this section shall be installed in accordance with the New York City Electrical Code. The required smoke detectors shall be installed to monitor the entire airflow conveyed by the system including supply air, return air and exhaust or relief air. Access shall be provided to smoke detectors for inspection and maintenance.

606.4Controls operation. Upon activation, the smoke detectors shall automatically shut down their respective air distribution system(s). Air distribution systems that are part of a smoke control system shall switch to the smoke control mode upon activation of a detector.

606.4.1Supervision. The duct smoke detectors shall be connected to a fire alarm system. The actuation of a duct smoke detector shall activate a visible and audible supervisory signal at a constantly attended location.

Exceptions:

1. The supervisory signal at a constantly attended location is not required where the duct smoke detector activates the building's alarm-indicating appliances.

2. In occupancies not required to be equipped with a fire alarm system, actuation of either area or duct smoke detector shall activate a visible and an audible signal in an approved location. Additionally, duct smoke detector trouble conditions shall activate a visible or audible signal in an approved location and shall be identified as air duct detector trouble.

606.4.2Fan shutdown. When any building or floor is provided with an air system utilizing recirculated air and is protected by an automatic sprinkler system or an automatic fire alarm system, provisions shall be made to automatically stop the fans serving the affected area when the sprinkler system or fire alarm system are installed in the area, it shall be required to have only one of these systems arranged to stop the fans.

Exceptions:

1. Activation of a manual pull station shall not be required to automatically stop the fans.

2. Systems having a capacity of 2,000 cfm (0.2 m³/s) or less or serving not more than one floor.

606.4.3Manual restart of fans after automatic fire detecting device or fire alarm system shutdown. Fans or fan system which have been automatically shut down on activation of an automatic fire detecting device or fire alarm system shall be arranged and equipped so that they do not automatically restart when either the automatic fire detecting device or fire alarm system is reset. The manual means of restarting the fans or fan system shall function independently from the manual resetting of either the automatic fire detecting device or fire alarm system.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 8: THE NEW YORK CITY MECHANICAL CODES
Chapter 6: DUCT SYSTEMS
SECTION MC 607: DUCTS AND AIR TRANSFER OPENINGS

NYC Administrative Code § 28-MC 607

607.1 General.

The provisions of this section shall govern the protection of duct penetrations and air transfer openings in fire-resistance-rated assemblies.

607.1.1 Ducts and air transfer openings without dampers. Ducts and air transfer openings that penetrate fire-resistance-rated assemblies and are not required to have dampers by this section shall comply with the requirements of Section 712 of the New York City Building Code.

607.2 Installation. Fire dampers, smoke dampers, combination fire/smoke dampers and ceiling dampers located within air distribution and smoke control systems shall be installed in accordance with the requirements of this section, and the manufacturer's installation instructions and listing.

607.2.1 Smoke control system. Where the installation of a fire damper will interfere with the operation of a required smoke control system in accordance with Section 513, approved alternative protection shall be utilized.

607.2.1.1 Remote operation. Combination fire and smoke dampers shall be operable by remote controls where necessary for smoke removal. Such dampers shall have provisions that allow them to re-close automatically upon reaching the damper's maximum degradation test temperature in accordance with UL 555S.

607.2.2 Hazardous exhaust ducts. Fire dampers for hazardous exhaust duct systems shall comply with Section 510.

607.2.3 Supply air systems. Smoke dampers listed for use in air distribution systems shall be installed both upstream and downstream of filters and ahead of any branch connections in supply air-handling apparatus and systems having a capacity equal to or greater than 15,000 cfm (7.1 m³/s).

Exceptions:

1. Where the air-handling unit is located on the floor that it serves and serves only that floor.
2. Where the air-handling unit is located on the roof and serves only the floor immediately below the roof.
3. Existing buildings using only UL 90D Class 1 filters shall be exempt from this subdivision provided the control system is arranged to shut down the fresh air intake, return air, and exhaust air dampers, and fan shutdown and smoke detection is provided in accordance with Section 606.

607.3 Damper testing and ratings. Dampers shall be listed and bear the label of an approved testing agency indicating compliance with the standards in this section. Fire dampers shall comply with the requirements of UL 555. Only fire dampers labeled for use in dynamic systems shall be installed in heating, ventilation and air-conditioning systems designed to operate with fans on during a fire. Smoke dampers shall comply with the requirements of UL 555S. Combination fire/smoke dampers shall comply with the requirements of both UL 555 and UL 555S. Ceiling radiation dampers shall comply with the requirements of UL 555C.

607.3.1 Fire protection rating. Fire dampers shall have the minimum fire protection rating specified in Table 607.3.1 for the type of penetration.

Minimum Damper Rating (hour) Less than 3-hour fire-resistance-rated

assemblies 1 1/2 3-hour or greater fire-resistance-rated

assemblies 3

607.3.1.1 Fire damper actuating device. The fire damper actuating device shall meet one of the following requirements:

1. The operating temperature shall be approximately 50(degrees)F (27.8(degrees)C) above the normal temperature within the duct system, but not less than 160(degrees)F (71(degrees)C).
2. The operating temperature shall be not more than 286(degrees)F (141(degrees)C) where located in a smoke control system complying with Section 513.
3. Where a combination fire/smoke damper is located in a smoke control system complying with Section 513, the operating temperature rating shall be approximately 50(degrees)F (27.8(degrees)C) above the maximum smoke control system designed operating temperature, or a maximum temperature of 350(degrees)F (177(degrees)C). The temperature shall not exceed the UL 555S degradation test temperature rating for a combination fire/smoke damper.

607.3.2 Smoke damper ratings. Smoke damper leakage ratings shall not be less than Class II. Elevated temperature ratings shall be not less than 250(degrees)F (121(degrees)C).

607.3.2.1 Smoke damper actuation methods. The smoke damper shall close upon actuation of a listed smoke detector or detectors installed in accordance with Section 606 of this code and Sections 907.10 and 907.11 of the New York City Building Code and one of the following methods, as applicable:

1. Where a damper is installed within a duct, a smoke detector shall be installed in the duct within 5 feet (1524 mm) of the damper with no air outlets or inlets between the detector and the damper. The detector shall be listed for the air velocity, temperature and humidity anticipated at the point where it is installed. Other than in mechanical smoke control systems, dampers shall be closed upon fan shutdown where local smoke detectors require a minimum velocity to operate.
2. Where a damper is installed above smoke barrier doors in a smoke barrier, a spot-type detector listed for releasing service shall be installed on either side of the smoke barrier door opening.

3. Where a damper is installed within an unducted opening in a wall, a spot-type detector listed for releasing service shall be installed within 5 feet (1524 mm) horizontally of the damper.

4. Where a damper is installed in a corridor wall, the damper shall be permitted to be controlled by a smoke detection system installed in the corridor.

5. Where a total-coverage smoke detector system is provided within areas served by an HVAC system, dampers shall be permitted to be controlled by the smoke detection system.

6. Smoke dampers that are part of an engineered smoke control system shall be capable of being positioned manually from a command station. Such positioning devices shall be provided for supply and return/exhaust dampers grouped by floor and by type. Damper switch positions shall indicate whether the related dampers are commanded to be either open or closed. Smoke damper positioning switches shall be located at the Fire Command Station, or in a Mechanical Control Center in buildings without a Fire Command Station.

607.4 Access and identification. Fire and smoke dampers shall be provided with an approved means of access, large enough to permit inspection and maintenance of the damper and its operating parts. The access shall not affect the integrity of fire-resistance-rated assemblies. The access openings shall not reduce the fire-resistance rating of the assembly. Access points shall be permanently identified on the exterior by a label having letters not less than 0.5 inch (12.7 mm) in height reading: SMOKE DAMPER or FIRE DAMPER, followed by an identification marking that is unique to the damper accessed. Access doors in ducts shall be tight fitting and suitable for the required duct construction.

607.5 Where required. Fire dampers, smoke dampers, combination fire/smoke dampers and ceiling radiation dampers shall be provided at the locations prescribed in this section. Where an assembly is required to have both fire dampers and smoke dampers, combination fire/smoke dampers or a fire damper and a smoke damper shall be required.

Exceptions:

1. Smoke dampers shall not be required on air systems other than where necessary for the proper function of that system where the system is designed specifically to:

1.1. Function as an engineered smoke-control system, including the provision of continuous air movement with the air-handling system; or

1.2. Provide air to other areas of the building during a fire emergency; or

1.3. Provide pressure differentials during a fire emergency.

2. Smoke dampers shall not be required to be located within a prescribed distance of a fire rated enclosure where isolation smoke dampers are used in air-handling equipment (Refer to Section 607.2.3).

3. Smoke dampers shall not be required in ducts where the air continues to move and the air-handling system installed is arranged to prevent recirculation of exhaust or return air under fire emergency conditions.

607.5.1 Fire walls. Ducts and air transfer openings permitted in firewalls in accordance with Section 705.11 of the New York City Building Code shall be protected with approved fire dampers and smoke dampers installed in accordance with their listing.

607.5.2 Fire barriers. Duct penetrations and air transfer openings in fire barriers shall be protected with approved fire dampers installed in accordance with their listing. In addition, smoke dampers shall be installed in penetrations of public corridor walls in accordance with Section 607.5.2.1.

Exceptions: Fire dampers are not required at penetrations of fire barriers where any of the following apply:

1. Penetrations are tested in accordance with ASTM E 119 as part of the fire-resistance-rated assembly.
2. Where permitted under Section 513 and ducts are part of an engineered smoke control system.

3. Such walls are penetrated by ducted HVAC systems, have a required fire resistance rating of 1 hour or less, are in areas of other than Group H and are in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 of the New York City Building Code. For the purposes of this exception, a ducted HVAC system shall be a duct system for the structure's HVAC system. Such a duct system shall be constructed of sheet metal not less than 26-Gage (0.0217-inch) [0.55-mm] thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals.

607.5.2.1 Public corridors. A listed smoke damper designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a public corridor wall constructed as a fire barrier.

Exceptions:

1. Smoke dampers are not required where the building is equipped throughout with an approved smoke control system in accordance with Section 909, and smoke dampers are not necessary for the operation and control of the system.
2. Smoke dampers are not required in corridor penetrations where the duct is constructed of steel not less than 0.019-inch (0.48 mm) in thickness and there are no openings serving the corridor.
3. Smoke dampers are not required in corridor penetrations in Group R-2 buildings and spaces.

607.5.3 Fire partitions. Duct penetrations in fire partitions shall be protected with approved fire dampers installed in accordance with their listing.

Exceptions: In occupancies other than Group H, fire dampers are not required where any of the following apply:

1. The partitions are tenant separation and corridor walls in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 of the New York City Building Code and the duct is protected as a through penetration in accordance with the New York City Building Code.

2. The duct system is constructed of approved materials in accordance with this code and the duct penetrating the wall meets all of the following minimum requirements.

- 2.1. The duct shall not exceed 100 square inches (0.06 m²).
- 2.2. The duct shall be constructed of steel a minimum of 0.0217-inch (0.55 mm) in thickness.
- 2.3. The duct shall not have openings that communicate the corridor with adjacent spaces or rooms.
- 2.4. The duct shall be installed above a ceiling.
- 2.5. The duct shall not terminate at a wall register in the fire-resistance-rated wall.

2.6. A minimum 12-inch-long (304.8 mm) by 0.060-inch-thick (1.52 mm) steel sleeve shall be centered in each duct opening. The sleeve shall be secured to both sides of the wall and all four sides of the sleeve with minimum 1 1/2-inch by 1 1/2-inch by 0.060-inch (38 mm by 38 mm by 1.52 mm) steel retaining angles. The retaining angles shall be secured to the sleeve and the wall with No. 10 (M5) screws. The annular space between the steel sleeve and the wall

opening shall be filled with rock (mineral) wool batting or approved equivalent on all sides.

607.5.4Smoke barriers.A listed smoke damper designed to resist the passage of smoke shall be provided at each point where a duct or an air transfer opening penetrates a smoke barrier wall enclosure required to have smoke and draft control doors in accordance with the New York City Building Code. Smoke dampers and smoke damper actuation methods shall comply with Section 607.5.4.1.

Exception: Smoke dampers are not required in smoke barrier penetrations where the openings in ducts are limited to a single smoke compartment and the ducts are constructed of steel.

607.5.4.1Smoke damper.The smoke damper shall close upon actuation of a listed smoke detector or detectors installed in accordance with the New York City Building Code and Section 607.3.2.1.

607.5.5Shaft enclosures.Ducts and air transfer openings shall not penetrate a shaft serving as an exit enclosure except as permitted by Section 1019.1.2 of the New York City Building Code.

607.5.5.1Penetrations of shaft enclosures.Shaft enclosures that are permitted to be penetrated by ducts and air transfer openings shall be protected with approved fire and smoke dampers installed in accordance with their listing.

Exceptions:

1. Fire dampers are not required at penetrations of shafts where:

1.1. Steel exhaust subducts extend at least 22 inches (559 mm) vertically in exhaust shafts provided there is a continuous airflow upward to the outside, or

1.2. Penetrations are tested in accordance with ASTM E 119 as part of the fire-resistance-rated assembly, or

1.3. Ducts are used as part of an approved smoke control system designed and installed in accordance with Section 513 of this code, and where the fire damper will interfere with the operation of the smoke control system, or

1.4. The penetrations are in parking garage exhaust or supply shafts that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.

2. In Group B occupancies, equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 of the New York City Building Code, smoke dampers are not required at penetrations of shafts where:

2.1. Bathroom and toilet room exhaust openings with steel exhaust subducts, having a wall thickness of at least 0.019 inch (0.48 mm) extend at least 22 inches (559 mm) vertically and where the exhaust fan at the upper terminus is powered continuously in accordance with the provisions of Section 909.11 of the New York City Building Code, and maintains airflow upward to the outside, or

2.2. Ducts are used as part of an approved smoke control system designed and installed in accordance with Section 909 of the New York City Building Code, and where the smoke damper will interfere with the operation of the smoke control system.

3. Smoke dampers are not required at penetration of exhaust or supply shafts in parking garages that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.

4. Fire dampers and/or smoke dampers shall not be required at a shaft where the shaft is acting as an extension of the mechanical equipment room that it serves and the shaft and mechanical equipment room maintain fire and smoke separation required by the greater of the two spaces from the occupied portions of the building and meet the requirements of Section 707.11 of the New York City Building Code.

5. Smoke dampers shall not be required to be located within a prescribed distance of a fire rated enclosure where isolation smoke dampers are used in air-handling equipment.

6. Smoke dampers shall not be required in ducts where the air continues to move and the air-handling system installed is arranged to prevent recirculation of exhaust or return air under fire emergency conditions.

607.5.5.2 Limitations. Shafts that constitute air ducts or that enclose air ducts used for the movement of environmental air shall not enclose:

1. Exhaust ducts used for the removal of smoke and grease-laden vapors from cooking equipment;
2. Ducts used for removal of flammable vapors;
3. Ducts used for moving, conveying, or transporting stock, vapor or dust;
4. Ducts used for the removal of nonflammable corrosive fumes and vapors;
5. Refuse and linen chutes; or
6. Piping.

Exception: Shafts that constitute air ducts or that enclose air ducts used for the movement of environmental air may enclose noncombustible piping conveying water or other nonhazardous or nontoxic materials.

607.6 Horizontal assemblies. Penetrations by air ducts of a floor, floor/ceiling assembly or the ceiling membrane of a roof/ceiling assembly shall be protected by a shaft enclosure that complies with the New York City Building Code or shall comply with this section.

607.6.1 Through penetrations. In occupancies other than Groups I-2 and I-3, a duct and air transfer opening system constructed of approved materials in accordance with this code that penetrates a fire-resistance-rated floor/ceiling assembly that connects not more than two stories is permitted without shaft enclosure protection provided a fire damper is installed at the floor line and the penetration is firestopped.

Exception: A duct serving a dwelling unit is permitted to penetrate three floors or less without a fire damper at each floor provided it meets all of the following requirements.

1. The duct shall be contained and located within the cavity of a wall and shall be constructed of steel not less than 0.019 inch (0.48 mm) (26 gauge) in thickness.
2. The duct shall open into only one dwelling unit and the duct system shall be continuous from the unit to the exterior of the building.
3. The duct shall not exceed 5-inch (127 mm) nominal diameter and the total area of such ducts shall not exceed 100 square inches (64 516 mm²) for any 100 square feet (9.3 m²) of the floor area.
4. The annular space around the duct is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 time-temperature conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.
5. Grille openings located in a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be protected with a ceiling radiation damper in accordance with Section 607.6.2.

607.6.2 Membrane penetrations. Where duct systems constructed of approved materials in accordance with this code penetrate a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly, shaft enclosure protection is not required provided an approved ceiling radiation damper and firestopping is installed at the ceiling line. Where a duct is not attached to a diffuser that penetrates a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly, shaft enclosure protection is not required provided an approved ceiling radiation damper and firestopping is installed at the ceiling line. Ceiling radiation dampers shall be installed in accordance with UL 555C and constructed in accordance with the details listed in a fire-resistance-rated assembly or shall be labeled to function as a heat barrier for air-handling outlet/inlet penetrations in the ceiling of a fire-resistance-rated assembly. Ceiling radiation dampers shall not be required where ASTM E 119 fire tests have shown that ceiling radiation dampers are not necessary in order to maintain the fire-resistance rating of the assembly. Ceiling radiation damper shall not be required where exhaust duct penetrations are protected in accordance with Section 712.4.2 of the New York City Building Code and the exhaust ducts are located within the cavity of a wall, and do not pass through another dwelling unit or tenant space.

607.6.3 Nonfire-resistance-rated assemblies. Duct systems constructed of approved materials in accordance with this code that penetrate nonfire-resistance-rated floor assemblies that connect not more than two stories are permitted without shaft enclosure protection provided that the annular space between the assembly and the penetrating duct is filled with an approved noncombustible material to resist the free passage of flame and the products of combustion. Duct systems constructed of approved materials in accordance with this code that penetrate nonrated floor assemblies that connect not more than three stories are permitted without shaft enclosure protection provided that the annular space between the assembly and the penetrating duct is filled with an approved noncombustible material to resist the free passage of flame and the products of combustion, and a fire damper is installed at each floor line.

Exception: Fire dampers are not required in ducts within individual residential dwelling units.

607.7 Flexible ducts and air connectors. Flexible ducts and air connectors shall not pass through any fire-resistance-rated assembly.



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CHAPTER 8: THE NEW YORK CITY MECHANICAL CODES
Chapter 6: DUCT SYSTEMS
SECTION MC 608: AIR OUTLETS AND AIR INLETS

NYC Administrative Code § 28-MC 608

608.1 Air Outlets.

Air outlets shall comply with sections 608.1.1 through 608.1.3

608.1.1General.Air supplied to any space shall not contain flammable vapors, flyings, or dust in quantities and concentrations that would introduce a hazardous condition.

608.1.2Construction of air outlets.Air outlets shall be constructed of noncombustible material or a material that has a maximum smoke developed index/rating of 50 and a maximum flame spread index/rating of 25.

608.1.3Location of air outlets.The location of air outlets shall comply with the following requirements:

1. Air outlets shall be located at least 3 inches (76 mm) above the floor.

Exception: Air outlets may be located less than 3 inches (76mm) above the floor where provisions have been made to prevent dirt and dust accumulations from entering the system.

2. Where located less than 7 feet (2134 mm) above the floor, outlet openings shall be protected by a grille or screen having openings through which a 1/2-inch (12.7 mm) sphere cannot pass.

3. Grilles may be located in floors provided they are installed so that they may be removed for cleaning purposes and provided they are constructed as follows:

3.1 Grilles up to 3 square feet (0.2787 m²) in gross area shall be designed to support a concentrated live load of 250 pounds (114 kg) on any 4 square inches (2580 mm²) of surface.

3.2 Grilles over 3 square feet (0.2787 m²) in gross area shall be designed to support the same loads as the floor in the area where used.

3.3 If located where they may be walked upon, the opening in grilles shall reject a 1/2-inch (12.7 mm) sphere.

608.2 Air inlets (return or exhaust or return and exhaust). Air inlets shall be constructed in accordance with 608.2.1 through 608.2.3.

608.2.1 General. Air shall not be recirculated from any space in which flammable vapors, flyings, or dust is present in quantities and concentrations that would introduce a hazardous condition into the return air system.

608.2.2 Construction of air inlets. Air inlets shall be constructed of noncombustible material or a material that has a maximum flame spread index/rating of 25 and a maximum smoke developed index/rating of 50.

608.2.3 Location of air inlets. The location of air inlets shall comply with the following requirements.

1. Air inlets shall be located at least 3 inches (76 mm) above the floor.

Exception: Air inlets may be located less than 3 inches (76 mm) above the floor where provisions have been made to prevent dirt and dust accumulations from entering the system.

2. Where located less than 7 feet (2134 mm) above the floor, inlet openings shall be protected by a grille or screens having openings through which a 1-inch (12.7 mm) sphere cannot pass.

3. Grilles may be located in floors provided they are installed so that they may be removed for cleaning purposes and provided they are constructed as follows:

3.1. Grilles up to 3 square feet (0.2787 m²) in gross area shall be designed to support a concentrated live load of 250 pounds (114 kg) on any 4 square inches (2580 mm²) of surface.

3.2. Grilles over 3 square feet (0.2787 m²) in gross area shall be designed to support the same loads as the floor in the area where used.

3.3. If located where they may be walked upon, the opening in grilles shall reject a 1/2-inch (12.7 mm) sphere.



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Chapter 6: DUCT SYSTEMS
SECTION MC 609: SERVICE OPENINGS

NYC Administrative Code § 28-MC 609

609.1 General.

Horizontal air ducts and plenums shall be provided with service openings to facilitate the removal of accumulations of dust and combustible materials. Service openings shall be located at approximately 20 feet (6096 mm) intervals along the air duct and at the base of each vertical riser.

Exceptions:

1. Removable air outlet or air inlet devices of adequate size shall be permitted in lieu of service openings.
2. Service openings shall not be required in supply ducts where the supply air has previously passed through an air filter, air cleaner, or water spray. Such air filters and air cleaners shall be properly maintained and replaced when needed.
3. Service openings shall not be required where all of the following conditions exist:
 - 3.1. The occupancy has no process producing combustible material such as dust, lint, or greasy vapors. Such occupancies include banks, office buildings, houses of worship, hotels, and health care facilities (but not kitchens, laundries, and manufacturing portions of such facilities).
 - 3.2. The air inlets are at least 7 feet (2134 mm) above the floor or are protected by corrosion-resistant metal screens of at least 14 mesh (0.07 inches) (1.8 mm) that are installed at the inlets so that they cannot draw papers, refuse, or other combustible solids into the return air duct.
 - 3.3. The minimum design velocity in the return duct for the particular occupancy is 1000 feet/minute (5.080 m/s).

HISTORICAL NOTES:

NYC Administrative Code § 28-MC 609

Section added L.L. 33/2007 § 17, eff. July 1, 2008.

609.1 Exceptions item 3.1 amended L.L. 8/2008 § 184, eff. July 1, 2008.



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Chapter 7: COMBUSTION AIR
SECTION MC 701: GENERAL

NYC Administrative Code § 28-MC 701

701.1 Scope.

The provisions of this chapter shall govern the requirements for combustion and dilution air for fuel-burning appliances other than gas-fired appliances. The requirements for combustion and dilution air for gas-fired appliances shall be in accordance with the New York City Fuel Gas Code.

701.2 Combustion and dilution air required. Every room or space containing fuel-burning appliances shall be provided with combustion and dilution air as required by this code. Combustion and dilution air shall be provided in accordance with Section 702, 703, 704, 705, 706 or 707. Direct vent appliances or equipment that do not draw combustion air from inside of the building are not required to be considered in the determination of the combustion and dilution air requirements. Combustion air requirements shall be determined based on the simultaneous operation of all fuel-burning appliances drawing combustion and dilution air from the room or space. The combustion air system shall maintain the room in which the equipment is located at a pressure not less than the outdoor atmosphere pressure.

701.3 Circulation of air. The equipment and appliances within every room containing fuel-burning appliances shall be installed so as to allow free circulation of air. Provisions shall be made to allow for the simultaneous operation of mechanical exhaust systems, fireplaces or other equipment and appliances operating in the same room or space from which combustion and dilution air is being drawn. Such provisions shall prevent the operation of such appliances, equipment and systems from affecting the supply of combustion and dilution air.

701.4 Crawl space and attic space. For the purposes of this chapter, an opening to a naturally ventilated crawl space or attic space shall be considered equivalent to an opening to the outdoors.

701.4.1 Crawl space. Where lower combustion air openings connect with crawl spaces, such spaces shall have unobstructed openings to the outdoors at least twice that required for the combustion air openings. The height of the crawl space shall comply with the requirements of the New York City Building Code and shall be without obstruction to the free flow of air.

701.4.2 Attic space. Where combustion air is obtained from an attic area, the attic ventilating openings shall not be subject to ice or snow blockage, and the attic shall have not less than 30 inches (762 mm) vertical clear height at its maximum point. Attic ventilation openings shall be sufficient to provide the required volume of combustion air and the attic ventilation required by the New York City Building Code. The combustion air openings shall be provided with a sleeve of not less than 0.019 inch (0.48 mm) (No. 26 Gage) galvanized steel or other approved material extending from the appliance enclosure to at least 6 inches (152 mm) above the top of the ceiling joists and insulation.

701.5 Prohibited sources. Openings and ducts shall not connect appliance enclosures with a space in which the operation of a fan will adversely affect the flow of the combustion air. Combustion air shall not be obtained from a hazardous location, except where the fuel-fired appliances are located within the hazardous location and are installed in accordance with this code. Combustion air shall not be taken from a refrigeration machinery room, except where a refrigerant vapor detector system is installed to automatically shut off the combustion process in the event of refrigerant leakage. For structures in areas of special flood hazard, air shall be obtained from a location complying with Appendix G of the New York City Building Code. Combustion air shall be obtained solely from the outdoors for a boiler room.



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Chapter 7: COMBUSTION AIR
SECTION MC 702: INSIDE AIR

NYC Administrative Code § 28-MC 702

702.1 All air from indoors.

Combustion and dilution air shall be permitted to be obtained entirely from the indoors in buildings that are not of unusually tight construction. In buildings of unusually tight construction, combustion air shall be obtained from the outdoors in accordance with Section 703, 705, 706 or 707.

702.2 Air from the same room or space. The room or space containing fuel-burning appliances shall be an unconfined space as defined in Section 202.

702.3 Air from adjacent spaces. Where the volume of the room in which the fuel-burning appliances are located does not comply with Section 702.2, additional inside combustion and dilution air shall be obtained by opening the room to adjacent spaces so that the combined volume of all communicating spaces meets the volumetric requirement of Section 702.2. Openings connecting the spaces shall comply with Sections 702.3.1, 702.3.2 and Figure A-1 of Appendix A of this code.

702.3.1 Number and location of openings. Two openings shall be provided, one within 1 foot (305 mm) of the ceiling of the room and one within 1 foot (305 mm) of the floor.

702.3.2 Size of openings. The net free area of each opening, calculated in accordance with Section 708, shall be a minimum of 1 square inch per 1,000 Btu/h (2201 mm²/kW) of input rating of the fuel-burning appliances drawing combustion and dilution air from the communicating spaces and shall be not less than 100 square inches (64516 mm²).



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Chapter 7: COMBUSTION AIR
SECTION MC 703: OUTDOOR AIR

NYC Administrative Code § 28-MC 703

703.1 All air from the outdoors.

Where all combustion and dilution air is to be provided by outdoor air, the required combustion and dilution air shall be obtained by opening the room to the outdoors. Openings connecting the room to the outdoor air shall comply with Sections 703.1.1 through 703.1.4, and Figures A-2, A-3 and A-4 of Appendix A of this code. The size of the openings connecting the room to the outdoor air supply shall also comply with any applicable rules of the New York City Department of Environmental Protection.

703.1.1 Number and location of openings. Two openings shall be provided, one within 1 foot (305 mm) of the ceiling of the room and one within 1 foot (305 mm) of the floor.

703.1.2 Size of direct openings. The net free area of each direct opening to the outdoors, calculated in accordance with Section 709, shall be a minimum of 1 square inch per 4,000 Btu/h (550 mm²/kW) of combined input rating of the fuel-burning appliances drawing combustion and dilution air from the room.

703.1.3 Size of horizontal openings. The net free area of each opening, calculated in accordance with Section 709 and connected to the outdoors through a horizontal duct, shall be a minimum of 1 square inch per 2,000 Btu/h (1100 mm²/kW) of combined input rating of the fuel-burning appliances drawing combustion and dilution air from the room. The cross-sectional area of the duct shall be equal to or greater than the required size of the opening.

703.1.4 Size of vertical openings. The net free area of each opening, calculated in accordance with Section 709 and connected to the outdoors through a vertical duct, shall be a minimum of 1 square inch per 4,000 Btu/h (550 mm²/kW) of combined input rating of the fuel-burning appliances drawing combustion and dilution air from the room. The cross-sectional area of the duct shall be equal to or greater than the required size of the opening.



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CHAPTER 8: THE NEW YORK CITY MECHANICAL CODES
Chapter 7: COMBUSTION AIR
SECTION MC 704: COMBINED USE OF INSIDE AND OUTDOOR AIR (CONDITION 1)

NYC Administrative Code § 28-MC 704

704.1 Combination of air from inside and outdoors.

This section shall apply only to appliances located in confined spaces in buildings not of unusually tight construction. Where the volumes of rooms and spaces are combined for the purpose of providing indoor combustion air, such rooms and spaces shall communicate through permanent openings in compliance with Sections 702.3.1 and 702.3.2. The required combustion and dilution air shall be obtained by opening the room to the outdoors using a combination of inside and outdoor air, prorated in accordance with Section 704.1.6. The ratio of interior spaces shall comply with Section 704.1.5. The number, location and ratios of openings connecting the space with the outdoor air shall comply with Sections 704.1.1 through 704.1.4.

704.1.1 Number and location of openings. At least two openings shall be provided, one within 1 foot (305 mm) of the ceiling of the room and one within 1 foot (305 mm) of the floor.

704.1.2 Ratio of direct openings. Where direct openings to the outdoors are provided in accordance with Section 703.1, the ratio of direct openings shall be the sum of the net free areas of both direct openings to the outdoors, divided by the sum of the required areas for both such openings as determined in accordance with Section 703.1.2.

704.1.3 Ratio of horizontal openings. Where openings connected to the outdoors through horizontal ducts are provided in accordance with Section 703.1, the ratio of horizontal openings shall be the sum of the net free areas of both such openings, divided by the sum of the required areas for both such openings as determined in accordance with Section 703.1.3.

704.1.4 Ratio of vertical openings. Where openings connected to the outdoors through vertical ducts are provided in accordance with Section 703.1, the ratio of vertical openings shall be the sum of the net free areas of both such openings, divided by the sum of the required areas for both such openings as determined in accordance with Section 703.1.4.

704.1.5Ratio of interior spaces.The ratio of interior spaces shall be the available volume of all communicating spaces, divided by the required volume as determined in accordance with Sections 702.2 and 702.3.

704.1.6Prorating of inside and outdoor air.In spaces that utilize a combination of inside and outdoor air, the sum of the ratios of all direct openings, horizontal openings, vertical openings and interior spaces shall equal or exceed 1.



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SECTION MC 705: COMBINED USE OF INSIDE AND OUTDOOR AIR (CONDITION 2)

NYC Administrative Code § 28-MC 705

705.1 General.

This section shall apply only to appliances located in unconfined spaces in buildings of unusually tight construction. Combustion air supplied by a combined use of indoor and outdoor air shall be supplied through openings and ducts extending to the appliance room or to the vicinity of the appliance.

705.1.1 Openings and supply ducts. Openings shall be provided, located and sized in accordance with Sections 702.3.1 and 702.3.2; additionally, there shall be one opening to the outdoors having a free area of at least 1 square inch per 5,000 Btu/h (440 mm²/kW) of total input of all appliances in the space.



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SECTION MC 706: FORCED COMBUSTION AIR SUPPLY

NYC Administrative Code § 28-MC 706

706.1 Rate of air supplied.

Where all combustion air and dilution air is provided by a mechanical forced-air system, the combustion air and dilution air shall be supplied at the minimum rate of 1 cfm per 2,400 Btu/h [0.00067 m³/(s ;tb kW)] of combined input rating of all the fuel-burning appliances served. Combustion air rates shall also comply with any applicable rules of the New York City Department of Environmental Protection.



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Chapter 7: COMBUSTION AIR
SECTION MC 707: DIRECT CONNECTION

NYC Administrative Code § 28-MC 707

707.1 General.

Fuel-burning appliances that are listed and labeled for direct combustion air connection to the outdoors shall be installed in accordance with the manufacturer's installation instructions.



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Chapter 7: COMBUSTION AIR
SECTION MC 708: COMBUSTION AIR DUCTS

NYC Administrative Code § 28-MC 708

708.1 General.

Combustion air ducts shall:

1. Be of galvanized steel complying with Chapter 6 or of equivalent corrosion-resistant material approved for this application.

Exception: Within dwelling units, unobstructed stud and joist spaces shall not be prohibited from conveying combustion air, provided that not more than one required fireblock is removed.

2. Have a minimum cross-sectional dimension of 3 inches (76 mm).

3. Terminate in an unobstructed space allowing free movement of combustion air to the appliances.

4. Have the same cross-sectional areas as the free area of the openings to which they connect.

5. Serve a single appliance enclosure.

6. Not serve both upper and lower combustion air openings where both such openings are used. The separation between ducts serving upper and lower combustion air openings shall be maintained to the source of combustion air.

7. Not be screened where terminating in an attic space.

8. Not slope downward toward the source of combustion air, where serving the upper required combustion air opening.



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Chapter 7: COMBUSTION AIR
SECTION MC 709: OPENING OBSTRUCTIONS

NYC Administrative Code § 28-MC 709

709.1 General.

The required size of openings for combustion and dilution air shall be based on the net free area of each opening. The net free area of an opening shall be that specified by the manufacturer of the opening covering. In the absence of such information, openings covered with metal louvers shall be deemed to have a net free area of 60 percent of the area of the opening, and openings covered with wood louvers shall be deemed to have a net free area of 10 percent of the area of the opening. Louvers and grills shall be fixed in the open position.

Exception: Louvers interlocked with the appliance so that they are proven to be in the full open position prior to main burner ignition and during main burner operation. Means shall be provided to prevent the main burner from igniting if the louvers fail to open during burner startup and to shut down the main burner if the louvers close during operation.

709.2 Dampered openings. Where the combustion air openings are provided with volume, smoke or fire dampers, the dampers shall be electrically interlocked with the firing cycle of the appliances served, so as to prevent operation of any appliance that draws combustion and dilution air from the room when any of the dampers are closed. Manually operated dampers shall not be installed in combustion air openings.



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Chapter 7: COMBUSTION AIR
SECTION MC 710: OPENING LOCATION AND PROTECTION

NYC Administrative Code § 28-MC 710

710.1 General.

Combustion air openings to the outdoors shall comply with the location and protection provisions of Sections 401.5 and 401.6 applicable to outside air intake openings.



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CHAPTER 8: THE NEW YORK CITY MECHANICAL CODES
Chapter 8: CHIMNEYS AND VENTS
SECTION MC 801: GENERAL

NYC Administrative Code § 28-MC 801

801.1 Scope.

This chapter shall govern the installation, maintenance, design, minimum safety requirements, repair and approval of factory-built chimneys, chimney liners, vents and connectors, and field built chimneys and connectors. This chapter shall also govern the utilization of masonry chimneys. Gas-fired appliances shall be vented in accordance with the New York City Fuel Gas Code.

801.1.1 Adjoining chimneys and vents. Adjoining chimneys and vents shall be in accordance with Sections 801.1.1.1 through 801.1.1.8.

801.1.1.1 Responsibility of owner of taller building. Whenever a building is erected, enlarged, or increased in height so that any portion of such building, except chimneys or vents, extends higher than the top of any previously constructed chimneys or vents within 100 feet (30 480 mm), the owner of such new or altered building shall have the responsibility of altering such chimneys or vents to make them conform with the requirements of this chapter. A chimney or vent that is no longer connected with a fireplace or combustion or other equipment for which a chimney or vent was required, shall be exempt from this requirement. Such alterations shall be accomplished by one of the following means or a combination thereof:

1. Carry up the previously constructed chimneys or vents to the height required in this chapter.
2. Offset such chimneys or vents to a distance beyond that required in Chapter 5 of this code from the new or altered building provided that the new location of the outlet of the offset chimney or vent shall otherwise comply with the requirements of this chapter.

Such requirements shall not dispense with or modify any additional requirements that may be applicable pursuant to rules of the New York City Department of Environmental Protection.

801.1.1.2Protection of draft.After the alteration of a chimney or vent as required by this section, it shall be the responsibility of the owner of the new or altered building to provide any mechanical equipment or devices necessary to maintain the proper draft in the equipment.

801.1.1.3Written notification.The owner of the new or altered building shall notify the owner of the building affected in writing at least forty-five days before starting the work required and request written consent to do such work. Such notice shall be accompanied by plans indicating the manner in which the proposed alterations are to be made.

801.1.1.4Approval.The plans and method of alteration shall be subject to the approval of the commissioner.

801.1.1.5Refusal of consent.If consent is not granted by the owner of the previously constructed building to do the alteration work required by this section, such owner shall signify his or her refusal in writing to the owner of the new or altered building and to the commissioner; and the owner of the new or altered building having submitted plans that conform to the requirements of this section, shall thereupon be released from any responsibility for the proper operation of the equipment due to loss of draft and for any health hazard or nuisance that may occur as a result of the new or altered building. Such responsibilities shall then be assumed by the owner of the previously constructed building. Similarly, should such owner fail to grant consent within forty-five days from the date of written request or fail to signify his or her refusal, he or she shall then assume all responsibilities as prescribed above.

801.1.1.6Procedure.It shall be the obligation of the owner of the new or altered building to:

1. Schedule this work so as to create a minimum of disturbance to the occupants of the affected building; and
2. Provide such essential services as are normally supplied by the equipment while it is out of service; and
3. Where necessary, support such extended chimneys, vents and equipment from this building or to carry up such chimneys or vents within his or her building; and
4. Provide for the maintenance, repair, and/or replacement of such extensions and added equipment; and
5. Make such alterations of the same material as the original chimney or vent so as to maintain the same quality and appearance, except where the affected owner of the chimney or vent shall give his or her consent to do otherwise. All work shall be done in such fashion as to maintain the architectural aesthetics of the existing building. Where there is practical difficulty in complying strictly with the provisions of this Item, the commissioner may permit an equally safe alternative.

801.1.1.7Existing violations.Any existing violations on the previously constructed equipment shall be corrected by the owner of the equipment before any equipment is added or alterations made at the expense of the owner of the new or altered building.

801.1.1.8Variance.The commissioner may grant a variance in accordance with the provisions of this code.

801.2General.Every fuel-burning appliance shall discharge the products of combustion to a vent, factory-built chimney or masonry chimney, except for appliances vented in accordance with Section 804. The chimney or vent shall be designed for the type of appliance being vented.

801.2.1Design.Chimneys and vents shall be designed and constructed so as to provide the necessary draft and capacity for each appliance connected to completely exhaust the products of combustion to the outside air. The temperature on adjacent combustible surfaces shall not be raised above 160(degrees)F (71(degrees)C). Condensation shall not be developed to an extent that can cause deterioration of the chimney or vent.

801.2.2Outlets.The outlet shall be arranged that the flue gases are not directed so that they jeopardize people, overheat combustible structures, or enter building openings in the vicinity of the outlet.

801.2.3Support. Chimneys and vents shall not be supported by the equipment they serve unless such equipment has been specifically designed for such loads.

801.2.4Oil-fired appliances. Oil-fired appliances shall be vented in accordance with this code and NFPA31.

801.2.5Gas fired appliances. Gas fired appliances shall be vented in accordance with the New York City Fuel Gas Code.

801.3Masonry chimneys. Masonry chimneys shall be constructed in accordance with the New York City Building Code.

801.4Positive flow. Venting systems shall be designed and constructed so as to develop a positive flow adequate to convey all combustion products to the outside atmosphere.

801.5Design. Venting systems shall be designed in accordance with this chapter and comply with the requirements of the New York City Air Pollution Control Code.

801.6Minimum size of chimney or vent. Except as otherwise provided for in this chapter, the size of the chimney or vent, serving a single appliance, except engineered systems, shall have a minimum area equal to the area of the appliance connection.

801.7Solid fuel appliance flues. The cross-sectional area of a flue serving a solid fuel-burning appliance shall be not greater than three times the cross-sectional area of the appliance flue collar or flue outlet.

801.8Abandoned inlet openings. Abandoned inlet openings in chimneys and vents shall be closed by an approved method, sealed air-tight and permanently labeled as abandoned.

801.9Positive pressure. Where an appliance equipped with a forced or induced draft system creates a positive pressure in the venting system, the venting system shall be designed and listed for positive pressure applications.

801.10Connection to fireplace. Connection of appliances to chimney flues serving fireplaces shall be in accordance with Sections 801.10.1 through 801.10.3.

801.10.1Closure and access. A noncombustible seal shall be provided below the point of connection to prevent entry of room air into the flue. Means shall be provided for access to the flue for inspection and cleaning.

801.10.2Connection to factory-built fireplace flue. An appliance shall not be connected to a flue serving a factory-built fireplace unless the appliance is specifically listed for such installation. The connection shall be made in accordance with the appliance manufacturer's installation instructions.

801.10.3Connection to masonry fireplace flue. A connector shall extend from the appliance to the flue serving a masonry fireplace such that the flue gases are exhausted directly into the flue. The connector shall be provided with access or shall be removable for inspection and cleaning of both the connector and the flue. Listed direct connection devices shall be installed in accordance with their listing.

801.11Multiple solid fuel prohibited. A solid fuel-burning appliance or fireplace shall not connect to a chimney passageway venting another appliance.

801.12Chimney entrance. Connectors shall connect to a chimney flue at a point not less than 12 inches (305 mm) above the lowest portion of the interior of the chimney flue.

801.13Cleanouts. Masonry chimney flues shall be provided with a cleanout opening having a minimum height of 6 inches (152 mm). The upper edge of the opening shall be located not less than 6 inches (152 mm) below the lowest

chimney inlet opening. The cleanout shall be provided with a tight-fitting, noncombustible cover of a minimum size of 8 inches by 8 inches (203 mm by 203 mm).

Exception: Cleanouts shall not be required for chimney flues serving masonry fireplaces, if such flues are provided with access through the fireplace opening.

801.14Connections to exhauster. All appliance connections to a chimney or vent equipped with a power exhauster shall be made on the inlet side of the exhauster. All joints and piping on the positive pressure side of the exhauster shall be listed for positive pressure applications as specified by the manufacturer's installation instructions for the exhauster.

801.15Fuel-fired appliances. Masonry chimneys utilized to vent fuel-fired appliances shall be located, constructed and sized as specified in the manufacturer's installation instructions for the appliances being vented.

801.16Flue lining. Masonry chimneys shall be lined. The lining material shall be compatible with the type of appliance connected, in accordance with the appliance listing and manufacturer's installation instructions. Listed materials used as flue linings shall be installed in accordance with their listings and the manufacturer's installation instructions.

801.16.1Residential and low-heat appliances (general). Flue lining systems for use with residential-type and low-heat appliances shall be limited to the following:

1. Clay flue lining complying with the requirements of ASTM C 315 or equivalent. Clay flue lining shall be installed in accordance with the New York City Building Code.
2. Listed chimney lining systems complying with UL 1777.
3. Other approved materials that will resist, without cracking, softening or corrosion, flue gases and condensate at temperatures up to 1,800(degrees)F (982(degrees)C).

801.17Space around lining. The space surrounding a flue lining system or other vent installed within a masonry chimney shall not be used to vent any other appliance. This shall not prevent the installation of a separate flue lining in accordance with the manufacturer's installation instructions and this code.

801.18Existing chimneys and vents. Where an appliance is permanently disconnected from an existing chimney or vent, or where an appliance is connected to an existing chimney or vent during the process of a new installation, the chimney or vent shall comply with Sections 801.18.1 through 801.18.4.

801.18.1Size. The chimney or vent shall be resized as necessary to control flue gas condensation in the interior of the chimney or vent and to provide the appliance or appliances served with the required draft. For the venting of oil-fired appliances to masonry chimneys, the resizing shall be in accordance with NFPA 31.

801.18.2Flue passageways. The flue gas passageway shall be free of obstructions and combustible deposits and shall be cleaned if previously used for venting a solid or liquid fuel-burning appliance or fireplace. The flue liner, chimney innerwall or vent innerwall shall be continuous and shall be free of cracks, gaps, perforations or other damage or deterioration which would allow the escape of combustion products, including gases, moisture and creosote. Where an oil-fired appliance is connected to an existing masonry chimney, such chimney flue shall be repaired or relined in accordance with NFPA 31.

801.18.3Cleanout. Masonry chimneys shall be provided with a cleanout opening complying with Section 801.13.

801.18.4Clearances. Chimneys and vents shall have air-space clearance to combustibles in accordance with the New York City Building Code and the chimney or vent manufacturer's installation instructions.

Exception: Masonry chimneys equipped with a chimney lining system tested and listed for installation in chimneys in contact with combustibles in accordance with UL 1777, and installed in accordance with the manufacturer's instructions, shall not be required to have clearance between combustible materials and exterior surfaces of the masonry chimney. Noncombustible fireblocking shall be provided in accordance with the New York City Building Code.

801.19 Multistory prohibited. Common venting systems for appliances located on more than one floor level shall be prohibited, except where all of the appliances served by the common vent are located in rooms or spaces that are accessed only from the outdoors. The appliance enclosures shall not communicate with the occupiable areas of the building.

801.20 Reserved.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 17, eff. July 1, 2008.

801.1.1.1 amended L.L. 8/2008 § 185, eff. July 1, 2008.



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 Chapter 8: CHIMNEYS AND VENTS
 SECTION MC 802: VENTS

NYC Administrative Code § 28-MC 802

802.1 General.

All vent systems shall be listed and labeled or field fabricated in accordance with NFPA 211. Type L vents shall be tested in accordance with UL 641.

802.2 Vent application. The application of vents shall be in accordance with Table 802.2. Table 802.2 Vent Application Vent Types Appliance Types Type L oil vents Oil-burning appliances listed and labeled for venting with Type L vents; gas appliances listed and labeled for venting with Type B vents.

802.3 Installation. Vent systems shall be sized, installed and terminated in accordance with the vent and appliance manufacturer's installation instructions.

802.4 Vent termination caps. Vent termination caps shall not be permitted and a 2 1/2-inch (64 mm) minimum drain installed to receive condensed water shall be required. A positive means shall be provided to prevent water from entering the appliance.

802.5 Type L vent terminations. Type L vents shall terminate not less than 2 feet (610 mm) above the highest point of the roof penetration and not less than 2 feet (610 mm) higher than any portion of a building within 10 feet (3048 mm). Chimneys serving appliances less than 600(degrees)F (316(degrees)C) shall extend at least 3 feet (914 mm) above the highest construction, such as a roof ridge, parapet wall, or penthouse, within 10 feet (3048 mm) of the chimney outlet, whether the construction is on the same buildings as the chimney or on another building. Any chimney located in an area that is more than 10 feet (3048 mm) from such construction but not more than the distance determined by Equation 8-1 and Table 802.5, shall be at least as high as the highest construction in such area. For purposes of determining the required height of the chimney, such construction does not include other chimneys, vents, or open structural framing.

$$D = F \times rA \text{ (Equation 8-1)}$$

where: D = Distance, in feet, measured from the center of the chimney outlet to the nearest edge of the construction. F = Value determined from Table 802.5. A = Free area, in square inches, of chimney flue space. Table 802.5 "F" Factor for Determining Chimney Distances "F" Factor for Determining Chimney Distances Type of Fuel "F" Factor 600(degrees)F (316(degrees)C) and less 600(degrees)F (316(degrees)C) to 1000(degrees)F (538(degrees)C) Greater than 1000(degrees)F (538(degrees)C) No. 2 Fuel Oil 2.5 2.5 3 No. 4, 6 Fuel Oil 3 3 3

802.6 Minimum vent heights. Vents shall terminate not less than 5 feet (1524 mm) in vertical height above the highest connected appliance flue collar.

Exceptions:

1. Venting systems of direct vent appliances shall be installed in accordance with the appliance and the vent manufacturer's instructions.

2. Appliances listed for outdoor installations incorporating integral venting means shall be installed in accordance with their listings and the manufacturer's installation instructions.

802.7 Support of vents. All portions of vents shall be adequately supported for the design and weight of the materials employed.

802.8 Insulation shield. Where vents pass through insulated assemblies, an insulation shield constructed of not less than No. 26 Gage sheet metal shall be installed to provide clearance between the vent and the insulation material. The clearance shall be not less than the clearance to combustibles specified by the vent manufacturer's installation instructions. Where vents pass through attic space, the shield shall terminate not less than 2 inches (51 mm) above the insulation materials and shall be secured in place to prevent displacement. Insulation shields provided as part of a listed vent system shall be installed in accordance with the manufacturer's installation instructions.



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Chapter 8: CHIMNEYS AND VENTS
SECTION MC 803: CONNECTORS

NYC Administrative Code § 28-MC 803

803.1 Connectors required.

Connectors shall be used to connect appliances to the vertical chimney or vent, except where the chimney or vent is attached directly to the appliance.

803.2Location.Connectors shall be located entirely within the room in which the connecting appliance is located, except as provided for in Section 803.10.4. Where passing through an unheated space, a connector shall not be constructed of single-wall pipe.

803.3Size.The connector shall not be smaller than the size of the flue collar supplied by the manufacturer of the appliance. Where the appliance has more than one flue outlet, and in the absence of the manufacturer's specific instructions, the connector area shall be not less than the combined area of the flue outlets for which it acts as a common connector.

803.4Branch connections.All branch connections to the vent connector shall be made in accordance with the vent manufacturer's instructions.

803.5Manual dampers.Manual dampers shall not be installed in connectors except in chimney connectors serving solid fuel-burning appliances.

803.6Automatic dampers.Automatic dampers shall be listed and labeled in accordance with UL 17 for oil-fired heating appliances. The dampers shall be installed in accordance with the manufacturer's installation instructions. An automatic vent damper device shall not be installed on an existing appliance unless the appliance is listed and labeled and the device is installed in accordance with the terms of its listing. The name of the installer and date of installation shall be marked on a label affixed to the damper device.

803.7Connectors serving two or more appliances.Where two or more connectors enter a common vent or chimney,

the smaller connector shall enter at the highest level consistent with available headroom or clearance to combustible material.

803.8 Vent connector construction. Vent connectors shall be constructed of metal. The minimum nominal thickness of the connector shall be 0.019 inch (0.5 mm) (No. 28 Gage) for galvanized steel, 0.022 inch (0.6 mm) (No. 26 B & S Gage) for copper, and 0.020 inch (0.5 mm) (No. 24 B & S Gage) for aluminum.

803.9 Chimney connector construction. Chimney connectors for low-heat appliances shall be of sheet steel pipe having resistance to corrosion and heat not less than that of galvanized steel specified in Table 803.9(1). Connectors for medium-heat appliances and high-heat appliances shall be of sheet steel not less than the thickness specified in Table 803.9(2).
Table 803.9(1) Minimum Chimney Connector Thickness for Low-Heat Appliances
 Diameter of Connector (inches) Minimum Nominal Thickness (galvanized) (inches)
 5 and smaller 0.022 (No. 26 Gage)
 Larger than 5 and up to 10 0.028 (No. 24 Gage)
 Larger than 10 and up to 16 0.034 (No. 22 Gage)
 Larger than 16 0.064 (No. 16 Gage)
 For SI: 1 inch = 25.4 mm.
Table 803.9(2) Minimum Chimney Connector Thickness for Medium- and High-Heat Appliances
 Area (Square inches) Equivalent Round Diameter (inches) Minimum Nominal Thickness (inches)
 0-154 0-14 0.060 (No. 16 Gage)
 155-201 15-16 0.075 (No. 14 Gage)
 202-254 17-18 0.105 (No. 12 Gage)
 Greater than 254 Greater than 18 0.135 (No. 10 Gage)
 For SI: 1 inch = 25.4 mm, 1 square inch = 645.16 mm².

803.10 Installation. Connectors shall be installed in accordance with Sections 803.10.1 through 803.10.6.

803.10.1 Supports and joints. Connectors shall be supported in an approved manner, and joints shall be fastened with sheet metal screws, rivets or other approved means.

803.10.2 Length. The maximum horizontal length of a single- wall connector shall not affect the capability of the system to produce adequate draft.

803.10.3 Connection. The connector shall extend to the inner face of the chimney or vent liner, but not beyond. A connector entering a masonry chimney shall be cemented to masonry in an approved manner. Where thimbles are installed to facilitate removal of the connector from the masonry chimney, the thimble shall be permanently cemented in place with high-temperature cement.

803.10.4 Connector pass-through. Chimney connectors shall not pass through any floor or ceiling, nor through a fire-resistance-rated wall assembly. Chimney connectors for domestic-type appliances shall not pass through walls or partitions constructed of combustible material to reach a masonry chimney unless:

1. The connector is labeled for wall pass-through and is installed in accordance with the manufacturer's instructions; or

2. The connector is put through a device labeled for wall pass-through; or

3. The connector has a diameter not larger than 10 inches (254 mm) and is installed in accordance with one of the methods in Table 803.10.4. Concealed metal parts of the pass-through system in contact with flue gases shall be of stainless steel or equivalent material that resists corrosion, softening or cracking up to 1,800(degrees)F (980(degrees)C).
Table 803.10.4 Chimney Connector Systems and Clearances to Combustible Wall Materials for Domestic heating Appliances
 a,b,c,d System A (12-inch clearance)
 A 3.5-inch-thick brick wall shall be framed into the combustible wall. A 0.625-inch-thick fire-clay liner (ASTM C 315 or equivalent) shall be firmly cemented in the center of the brick wall maintaining a 12-inch clearance to combustibles. The clay liner shall run from the outer surface of the bricks to the inner surface of the chimney liner.
 System B (9-inch clearance)
 A labeled solid-insulated factory-built chimney section (1-inch insulation) the same inside diameter as the connector shall be utilized. Sheet metal supports cut to maintain a 9-inch clearance to combustibles shall be fastened to the wall surface and to the chimney section. Fasteners shall not penetrate the chimney flue liner. The chimney length shall be flush with the masonry chimney liner and sealed to the masonry with water-insoluble refractory cement. Chimney manufacturers' parts shall be utilized to

securely fasten the chimney connector to the chimney section. System C (6-inch clearance) A sheet metal (minimum number 24 Gage) ventilated thimble having two 1-inch air channels shall be installed with a sheet steel chimney connector (minimum number 24 Gage). Sheet steel supports (minimum number 24 Gage) shall be cut to maintain a 6-inch clearance between the thimble and combustibles. One side of the support shall be fastened to the wall on all sides. Glass-fiber insulation shall fill the 6-inch space between the thimble and the supports. System D (2-inch clearance) A labeled solid-insulated factory-built chimney section (1-inch insulation) with a diameter 2 inches larger than the chimney connector shall be installed with a sheet steel chimney connector (minimum number 24 Gage). Sheet metal supports shall be positioned to maintain a 2-inch clearance to combustibles and to hold the chimney connector to ensure that a 1-inch airspace surrounds the chimney connector through the chimney section. The steel support shall be fastened to the wall on all sides and the chimney section shall be fastened to the supports. Fasteners shall not penetrate the liner of the chimney section. For SI: 1 inch = 25.4 mm, 1.0 Btu x in/ft² ;tb h ;tb (degrees)F = 0.144 W/m² ;tb (degrees)K. a. Insulation material that is part of the wall pass-through system shall be noncombustible and shall have a thermal conductivity of 1.0 Btu x in/ft² ;tb h ;tb (degrees)F or less. b. All clearances and thicknesses are minimums. c. Materials utilized to seal penetrations for the connector shall be noncombustible. d. Connectors for all systems except System B shall extend through the wall pass-through system to the inner face of the flue liner. e. ASTM C 315.

803.10.5 Pitch. Connectors shall rise vertically to the chimney or vent with a minimum pitch equal to one-fourth unit vertical in 12 units horizontal (2-percent slope).

803.10.6 Clearances. Connectors shall have a minimum clearance to combustibles in accordance with Table 803.10.6. The clearances specified in Table 803.10.6 apply, except where the listing and labeling of an appliance specifies a different clearance, in which case the labeled clearance shall apply. The clearance to combustibles for connectors shall be reduced only in accordance with Section 308 or via the use of a listed chimney or vent connector system. Table 803.10.6 Connector Clearances to Combustibles Type of Appliance Minimum Clearance (inches)

Electric and oil incinerators 18

Oil and solid fuel appliances 18

Oil appliances labeled for venting with Type

L vents 9 Commercial, industrial-type appliances Low-heat appliances Chimney connectors

Oil and solid fuel boilers, furnaces and water

heaters 18

Oil unit heaters 18

Other low-heat industrial appliances 18 Medium-heat appliances Chimney connectors 36

All oil and solid fuel appliances In accordance with NFPA 211 High-heat appliances Masonry or metal connectors

All oil and solid fuel appliances



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SECTION MC 804: DIRECT-VENT, INTEGRAL VENT AND MECHANICAL DRAFT SYSTEMS

NYC Administrative Code § 28-MC 804

804.1 Direct-vent terminations.

Vent terminals for direct-vent appliances shall be installed in accordance with the manufacturer's installation instructions. Horizontal venting shall be allowed only if approved by the commissioner and only if in a non-hazardous location and if the appliance has a sealed combustion chamber.

804.2Appliances with integral vents.Appliances incorporating integral venting means shall be installed in accordance with their listings and the manufacturer's installation instructions. Horizontal venting shall be allowed only if in a non hazardous location and if the appliance has a sealed combustion chamber.

804.2.1Terminal clearances.Appliances designed for natural draft venting and incorporating integral venting means shall be located so that a minimum clearance of 9 inches (229 mm) is maintained between vent terminals and from any openings through which combustion products enter the building. Appliances using forced draft venting shall be located so that a minimum clearance of 12 inches (305 mm) is maintained between vent terminals and from any openings through which combustion products enter the building.

804.3Mechanical draft systems.Mechanical draft systems of either forced or induced draft design shall comply with Sections 804.3.1 through 804.3.7.

804.3.1Forced draft systems.Forced draft systems and all portions of induced draft systems under positive pressure during operation shall be designed and installed so as to be gas tight to prevent leakage of combustion products into a building.

804.3.2Automatic shutoff.Power exhausters serving automatically-fired appliances shall be electrically connected to each appliance to prevent operation of the appliance when the power exhauster is not in operation.

804.3.3Termination.The termination of chimneys or vents equipped with power exhausters shall be located a

minimum of 10 feet (3048 mm) from the lot line or from adjacent buildings. The exhaust shall be directed away from the building.

804.3.4Horizontal terminations.Horizontal terminations shall only be allowed if approved by the commissioner, if they are in a nonhazardous location and if the appliance has a sealed combustion chamber (direct vent) in accordance with the appliance listing and manufacturers instructions. In addition, horizontal terminations shall comply with the following requirements:

1. Where located adjacent to walkways, the termination of mechanical draft systems shall be not less than 7 feet (2134 mm) above the level of the walkway.
2. Vents shall terminate at least 3 feet (914 mm) above any forced air inlet located within 10 feet (3048 mm).
3. The vent system shall terminate at least 4 feet (1219 mm) below, 4 feet (1219 mm) horizontally from or 1 foot (305 mm) above any door, window or gravity air inlet into the building.
4. The vent termination point shall not be located closer than 3 feet (914 mm) to an interior corner formed by two walls perpendicular to each other.
5. The vent termination shall not be mounted directly above or within 3 feet (914 mm) horizontally from any gas or electric metering, regulating, venting relief equipment or other building opening.
6. The bottom of the vent termination shall be located at least 24 inches (610 mm) above finished grade.

804.3.5Vertical terminations.Vertical terminations shall comply with the following requirements and in accordance with the appliance listing and manufacturers instructions:

1. Chimneys serving appliances less than 600(degrees)F (316(degrees)C) shall extend at least 3 feet (914 mm) above the highest construction, such as a roof ridge, parapet wall, or penthouse, within 10 feet (3048 mm) of the chimney outlet, whether the construction is on the same building as the chimney or on another building. Any chimney located in an area that is more than 10 feet (3048 mm) from such construction, but not more than the distance determined by Equation 8-2 shall be at least as high as the highest construction in such area. However, for purposes of determining the required height of a chimney, such construction does not include other chimneys, vents, or open structural framing.
2. Chimneys serving appliances between 600(degrees)F (316(degrees)C) and 1000(degrees)F (538(degrees)C) shall extend at least 10 feet (3048 mm) above the highest construction, such as a roof ridge, or parapet wall or penthouse within 20 feet (6096 mm) of the chimney outlet, whether the construction is on the same building as the chimney or on another building. Any chimney located in an area more than 20 feet (6096 mm) from such construction, but not more than the distance determined from Equation 8-2 shall be at least as high as the highest construction in such area. However, for purposes of determining the required height of the chimney, such construction does not include other chimneys, vents or open structural framing.
3. Chimneys serving appliances greater than 1000(degrees)F (538(degrees)C) shall extend at least 20 feet (6096 mm) above the highest construction, such as roof ridge, parapet wall, penthouse, or other obstruction within 50 feet (15 240 mm) of the chimney outlet, whether the construction is on the same building as the chimney or in another building. Any chimney located in an area that is more than 50 feet (15 240 mm) from such construction, but not more than the distance determined from Equation 8-2 shall be at least as high as the highest construction located in such area. However, for purposes of determining the required height of the chimney, such construction does not include other chimneys, vents, or open structural framing.
4. Vent termination caps shall not be permitted and a 3-inch (76 mm) minimum drain installed to receive condensed

water shall be required. A positive means shall be provided to prevent water from entering the appliance.

5. The following formula shall be used in order to determine the distance referred to in Items 1, 2 and 3 of this section:

$$D = F \times rA \text{ (Equation 8-2)}$$

where: D = Distance, in feet, measured from the center of the chimney outlet to the nearest edge of the construction.

where: F = Value determined from table below

where: A = Free area, in square inches, of chimney flue space.

804.3.6Exhauster connections.An appliance vented by natural draft shall not be connected into a vent, chimney or vent connector on the discharge side of a mechanical flue exhauster.

804.3.7Exhauster sizing.Mechanical flue exhausters and the vent system served shall be sized and installed in accordance with the manufacturer's installation instructions.

804.3.8Mechanical draft systems for manually fired appliances and fireplaces.A mechanical draft system shall be permitted to be used with manually fired appliances and fireplaces where such system complies with all of the following requirements:

1. The mechanical draft device shall be listed and installed in accordance with the manufacturer's installation instructions.

2. A device shall be installed that produces visible and audible warning upon failure of the mechanical draft device or loss of electrical power, at any time that the mechanical draft device is turned on. This device shall be equipped with a battery backup if it receives power from the building wiring.

3. A smoke detector shall be installed in the room with the appliance or fireplace. This device shall be equipped with a battery backup if it receives power from the building wiring.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 17, eff. July 1, 2008.

804.1 amended L.L. 8/2008 § 186, eff. July 1, 2008.

804.3.4 amended L.L. 8/2008 § 186, eff. July 1, 2008.



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NYC Administrative Code § 28-MC 805

805.1 Listing.

Factory-built chimneys shall be listed and labeled and shall be installed and terminated in accordance with this code and the manufacturer's installation instructions.

805.2Solid fuel appliances.Factory-built chimneys for use with solid fuel-burning appliances shall comply with the Type HT requirements of UL 103.

Exception: Chimneys for use with fireplace stoves listed only to UL 737 shall comply with the requirements of UL 103.

805.3Factory-built fireplaces.Chimneys for use with factory-built fireplaces shall comply with the requirements of UL 127.

805.4Support.Where factory-built chimneys are supported by structural members, such as joists and rafters, such members shall be designed to support the additional load.

805.5Medium-heat appliances.Factory-built chimneys for medium-heat appliances producing flue gases having a temperature above 1,000(degrees)F (538(degrees)C), measured at the entrance to the chimney, shall comply with UL 959.

805.6Decorative shrouds.Decorative shrouds shall not be installed at the termination of factory-built chimneys except where such shrouds are listed and labeled for use with the specific factory-built chimney system and are installed in accordance with Section 304.1.



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SECTION MC 806: METAL CHIMNEYS

NYC Administrative Code § 28-MC 806

806.1 General.

Metal chimneys shall be constructed and installed in accordance with NFPA 211.

806.2 Exterior metal chimneys. Exterior metal chimneys shall be galvanized, painted on the exterior surface with a heat resisting paint or constructed of equal corrosion resistive alloys.



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SECTION MC 807: CHANGES IN APPLIANCE FUELS

NYC Administrative Code § 28-MC 807

807.1 Changes in appliance fuels.

Conversion from gas to fuel oil for a heating appliances shall be made only if:

1. The chimney design meets the requirements of this chapter for the conversion fuel; and
2. The chimney size is adequate to vent the combustion products from the new fuel. Conversion from solid or liquid fuels to natural gas fuels for heating appliances shall be made only if:
 - 2.1 The chimney design meets the requirements of this chapter for the conversion fuel and the New York City Fuel Gas Code.
 - 2.2 The chimney is thoroughly cleaned prior to the conversion to remove collected flue deposits, which can spill off when gas is used as a fuel;
 - 2.3 Chimney provides adequate draft the new fuel;
 - 2.4 Drains are installed to remove condensed water; and
 - 2.5 Gas vents are installed within the chimney for venting purposes if required by the appliance listing.



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SECTION MC 808: REDUCTION OF FLUE SIZE

NYC Administrative Code § 28-MC 808

808.1 Reduction of flue size.

Conversion from one fuel to another or the use of an existing chimney to service a fireplace or wood-burning appliance may require a flue size change for proper operation. This may be done if the redesigned flue meets the criteria for the fuel and chimney type to be used as set forth in this chapter.



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SECTION MC 809: CHIMNEY SUPPORTED FROM EQUIPMENT

NYC Administrative Code § 28-MC 809

809.1 Chimney support.

Chimneys shall not be supported by the equipment they serve, unless such equipment has been specifically designed for such loads.



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SECTION MC 810: TEST RUN AND SMOKE TEST

NYC Administrative Code § 28-MC 810

810.1 Test run.

All new chimneys shall be test run under operating conditions to demonstrate fire safety and the complete exhausting of smoke and the products of combustion to the outer air. The test run shall be conducted by a registered design professional responsible for the test, and the results of such test run shall be certified as correct by such professional and submitted in writing to the department.

810.2Requirement of a smoke test.A smoke test shall be made as outlined in Section 810.3. Any faults or leaks found shall be corrected. Such smoke test shall be witnessed by a representative of the commissioner. In lieu thereof, the commissioner may accept the test report of a registered design professional responsible for the test which shall be submitted in writing to the department.

810.3Smoke test.To determine the tightness of chimney construction, a smoke test shall be made in accordance with the following conditions and requirements:

1. The equipment, materials, power and labor necessary for such test shall be furnished by, and at the expense of, the owner or holder of the work permit.
2. If the test shows any evidence of leakage or other defects, such defects shall be corrected in accordance with the requirements of this chapter, and the test shall be repeated until the results are satisfactory.
3. The chimney shall be filled with a thick penetrating smoke produced by one or more smoke machines, or smoke bombs, or other equivalent method. As the smoke appears at the stack opening on the roof, such opening shall be tightly closed and a pressure equivalent to 1- inch (13 mm) column of water measured at the base of the stack, shall be applied. The test shall be applied for a length of time sufficient to permit the inspection of the chimney.



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SECTION MC 811: EXHAUST GASES FROM INTERNAL COMBUSTION ENGINES

NYC Administrative Code § 28-MC 811

811.1 Exhaust pipe construction.

The exhaust pipe from internal combustion engines shall be constructed in accordance with the requirements for metal chimneys in this chapter, NFPA 211 and NFPA 37 based on the temperature of the gases entering the exhaust pipe, and in accordance with the following:

1. The exhaust pipe, if factory fabricated shall be constructed in accordance with their listing and manufacturers instructions.
2. The exhaust pipe, if field fabricated, shall be constructed of at least 3/16-inch (5 mm) steel, or of other equivalent metal of similar strength and resistance to the temperature and corrosive action of the exhaust gases.
3. No lining shall be required.
4. Where the exhaust pipe runs inside a building, it shall be insulated with insulation adequate for the temperature of the pipe, so that the surface temperature shall be not more than 200(degrees)F (93(degrees)C).
5. All joints shall be constructed so as to be gas tight under all operating conditions.

811.2 Discharge openings. The location of discharge openings for emergency and standby internal combustion engines shall comply with the requirements of NFPA 37 so that the flue gases are not directed to jeopardize the health or safety of people, overheat combustible structures, nor enter building openings in the vicinity of the outlet, nor shall the location of such openings cause the condensate leaving the outlet to come into contact with people.

811.2.1 Interference. No discharge opening shall be located and constructed so as to interfere with the proper functioning of other openings in the same building or adjoining buildings, to interfere unreasonably with the occupants of the same building or adjoining buildings, or with the general public, or to create a fire or health hazard.

811.2.2Chimneys.The exhaust pipe may be connected to a chimney used for other equipment, provided that the operation of the engine does not adversely affect the operation of the other equipment so that it is in violation of the New York City Air Pollution Control Code.

811.3Vertical termination requirements.The location of the discharge outlet from all other engines shall comply with the vertical termination requirements of at least a 600(degrees)F (316(degrees)C) to 1000(degrees)F (538(degrees)C) chimney or a greater than 1000(degrees)F (538(degrees)C) chimney based on the temperature of the gases entering the exhaust pipe.



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Chapter 9: SPECIFIC APPLIANCES, FIREPLACES AND SOLID FUEL-BURNING EQUIPMENT
SECTION MC 901: GENERAL

NYC Administrative Code § 28-MC 901

901.1 Scope.

This chapter shall govern the approval, design, installation, construction, maintenance, alteration and repair of the appliances and equipment specifically identified herein and factory-built fireplaces. The approval, design, installation, construction, maintenance, alteration and repair of gas-fired appliances shall be regulated by the New York City Fuel Gas Code.

901.2 General. The requirements of this chapter shall apply to the mechanical equipment and appliances regulated by this chapter, in addition to the other requirements of this code, and installed in accordance with the requirements of NFPA 31, NFPA 54 and NFPA 211.

901.3 Hazardous locations. Fireplaces and solid fuel-burning appliances shall not be installed in hazardous locations.

901.4 Fireplace accessories. Listed fireplace accessories shall be installed in accordance with the conditions of the listing and the manufacturer's installation instructions.

901.5 Inspection of solid fuel-burning heating appliances, chimneys and flues. Inspections of solid fuel burning heating appliances, chimneys and flues shall be in accordance with the New York City Building Code.

901.6 Fireplaces. Fireplaces (solid-fuel-type or ANSI Z21.50) shall be installed with tight-fitting noncombustible fireplace doors to control infiltration losses in construction types listed here:

1. Masonry or factory-built fireplaces designed to allow an open burn.
2. Decorative appliances (ANSI Z21.60 gas-log style unit) installed in a vented solid fuel fireplace.
3. Vented decorative gas fireplace appliances (ANSI Z21.50 unit).

Fireplaces shall be provided with a source of combustion air as required by the fireplace construction provisions of the New York City Building Code and Chapter 7 of this code.



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SECTION MC 902: MASONRY FIREPLACES

NYC Administrative Code § 28-MC 902

902.1 General.

Masonry fireplaces shall be constructed in accordance with the New York City Building Code.



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SECTION MC 903: FACTORY-BUILT FIREPLACES

NYC Administrative Code § 28-MC 903

903.1 General.

Factory-built fireplaces shall be listed and labeled and shall be installed in accordance with the conditions of the listing. Factory-built fireplaces shall be tested in accordance with UL 127.

903.2Hearth extensions.Hearth extensions of approved factory-built fireplaces and fireplace stoves shall be installed in accordance with the listing of the fireplace. The hearth extension shall be readily distinguishable from the surrounding floor area.

903.3Unvented gas log heaters.The installation of unvented gas fired space heaters, gas stoves, gas logs, gas fireplaces and gas fireplace inserts is prohibited.

903.4Flues.Separate flues shall be provided for every fireplace and fireplace stove.

903.5Combustion air supply.All installations of factory-built fireplaces shall comply with the requirements of the Energy Conservation Construction Code of New York State concerning combustion air supply.



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SECTION MC 904:

PELLET FUEL-BURNING APPLIANCES

NYC Administrative Code § 28-MC 904

904.1 General.

Pellet fuel-burning appliances shall be listed and labeled and shall be installed in accordance with the terms of the listing. If permitted, such appliances shall be operated in accordance with the New York City Air Pollution Control Code.



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SECTION MC 905: FIREPLACE STOVES AND ROOM HEATERS

NYC Administrative Code § 28-MC 905

905.1 General.

Fireplace stoves and solid-fuel-type room heaters shall be listed and labeled and shall be installed in accordance with the conditions of the listing. Fireplace stoves shall be tested in accordance with UL 737. Solid-fuel-type room heaters shall be tested in accordance with UL 1482. Fireplace inserts intended for installation in fireplaces shall be listed and labeled in accordance with the requirements of UL 1482 and shall be installed in accordance with the manufacturer's installation instructions.

905.2 Connection to fireplace. The connection of solid fuel appliances to chimney flues serving fireplaces shall comply with Sections 801.7 and 801.10.

905.3 Air pollution. All fireplace stoves and room heaters shall comply with the requirements of the New York City Air Pollution Control Code.

905.4 Combustion air supply. All fireplace stoves and room heaters shall comply with the requirements of the Energy Conservation Construction Code of New York State concerning combustion air supply.

905.5 Flues. Separate flues and independent combustion air source shall be provided for every fireplace stove and room heater. Combustion air shall be provided in accordance with the manufacturer's recommendations and Chapter 7.



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SECTION MC 906: FACTORY-BUILT BARBECUE APPLIANCES

NYC Administrative Code § 28-MC 906

906.1 General.

Factory-built barbecue appliances shall be of an approved type and shall be installed in accordance with the manufacturer's installation instructions, this chapter and Chapters 3, 5, 7, 8 and the New York City Fuel Gas Code. All provisions for the construction and installation of fireplaces shall be complied within the construction and installation of barbecue grills.



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SECTION MC 907: INCINERATORS AND CREMATORIES

NYC Administrative Code § 28-MC 907

907.1 General.

Incinerators and crematories shall be listed and labeled in accordance with UL 791 and NFPA 82 and shall be installed in accordance with the manufacturer's installation instructions.

907.2 Compliance. All incinerators and crematories shall be installed, altered and maintained in buildings in conformity with the applicable provisions of the Administrative Code and the New York City Air Pollution Control Code.



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SECTION MC 908: COOLING TOWERS, EVAPORATIVE CONDENSERS AND FLUID COOLERS

NYC Administrative Code § 28-MC 908

908.1 General.

A cooling tower used in conjunction with an air-conditioning appliance shall be installed in accordance with the manufacturer's installation instructions.

908.2Access.Cooling towers, evaporative condensers and fluid coolers shall be provided with ready access.

908.3Location.Cooling towers, evaporative condensers and fluid coolers shall be located to prevent the discharge vapor plumes from entering occupied spaces. Plume discharges shall be not less than 5 feet (1524 mm) above or 20 feet (6096 mm) away from any ventilation inlet to a building. Location on the property shall be as required for buildings in accordance with the New York City Building Code.

908.3.1Indoor.Cooling towers, evaporative condensers and fluid coolers located inside of buildings shall be constructed of noncombustible materials including fill and drift eliminators.

908.3.2Outside.Cooling towers shall be constructed of noncombustible materials.

Exception: Fill and drift eliminators may be made of limited combustibility materials provided all the following conditions are met:

1. The cooling tower is located on a building in construction group 1-A or 1-B of the New York City Building Code.

2. The cooling tower, fill and drift eliminators are located at least 30 feet (9144 mm) away from windows or fresh air intakes which are at an elevation above the roof on which the cooling tower is located, whether in the same building or in an adjoining building.

3. The cooling tower is located not less than 15 feet (4572 mm) from the lot line.

4. The cooling tower is located not less than 10 feet (3048 mm) from any chimney, except that the distance shall not be less than 20 feet (6096 mm) from a chimney venting products of combustion other than from gas or oil-fired appliances, whether on the same or an adjoining building.

908.4Support and anchorage.Supports for cooling towers, evaporative condensers and fluid coolers shall be designed in accordance with the New York City Building Code. Seismic restraints shall be as required by the New York City Building Code. Adequate vibration isolation shall be provided in accordance with the manufacturer's installation guidelines and as required for the supporting structure, and in accordance with the following:

908.4.1Cooling towers.All moving parts of cooling towers located on a roof or floor other than a floor on grade shall be installed on vibration isolators providing a minimum isolation efficiency of 85 percent at fan rotor rpm with a maximum static deflection of 4 inches (102 mm). Each isolator shall incorporate a leveling device and a resilient pad having a minimum thickness of 1/4 inch (6 mm).

908.4.2Evaporative condensers.Evaporative and air cooled condensers located on a roof or floor other than a floor on grade shall be mounted on vibration isolators providing a minimum isolation efficiency of 85 percent at fan rotor rpm with a maximum static deflection of 4 inches (102 mm). Each isolator shall incorporate a leveling device and a resilient pad having a minimum thickness of 1/4 inch (6 mm).

908.5Water supply.Water supplies and protection shall be as required by the New York City Plumbing Code.

908.6Drainage.Drains, overflows and blowdown provisions shall be indirectly connected to an approved disposal location. Discharge of chemical waste shall be approved by the appropriate regulatory authority.

908.7Refrigerants and hazardous fluids.Heat exchange equipment that contains a refrigerant and that is part of a closed refrigeration system shall comply with Chapter 11. Heat exchange equipment containing heat transfer fluids which are combustible or hazardous shall comply with the New York City Fire Code. Flammable heat transfer fluids are prohibited.



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SECTION MC 909: VENTED WALL FURNACES

NYC Administrative Code § 28-MC 909

909.1 General.

Vented wall furnaces shall be installed in accordance with their listing and the manufacturer's installation instructions. Oil-fired furnaces shall be tested in accordance with UL 730.

909.2Location. Vented wall furnaces shall be located so as not to cause a fire hazard to walls, floors, combustible furnishings or doors. Vented wall furnaces installed between bathrooms and adjoining rooms shall not circulate air from bathrooms to other parts of the building.

909.3Door swing. Vented wall furnaces shall be located so that a door cannot swing within 12 inches (305 mm) of an air inlet or air outlet of such furnace measured at right angles to the opening. Doorstops or door closers shall not be installed to obtain this clearance.

909.4Ducts prohibited. Ducts shall not be attached to wall furnaces. Casing extension boots shall not be installed unless listed as part of the appliance.

909.5Manual shutoff valve. A manual shutoff valve shall be installed ahead of all controls.

909.6Access. Vented wall furnaces shall be provided with access for cleaning of heating surfaces, removal of burners, replacement of sections, motors, controls, filters and other working parts, and for adjustments and lubrication of parts requiring such attention. Panels, grilles and access doors that must be removed for normal servicing operations shall not be attached to the building construction.



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SECTION MC 910: FLOOR FURNACES

NYC Administrative Code § 28-MC 910

910.1 General.

Floor furnaces shall be installed in accordance with their listing and the manufacturer's installation instructions. Oil-fired furnaces shall be tested in accordance with UL 729. Unvented floor furnaces are prohibited.

910.2 Placement. Floor furnaces shall not be installed in any corridor, in the floor of any aisle or passageway of any auditorium, public hall, place of assembly, or in any egress element from any such room or space.

With the exception of wall register models, a floor furnace shall not be placed closer than 6 inches (152 mm) to the nearest wall, and wall register models shall not be placed closer than 6 inches (152 mm) to a corner.

The furnace shall be placed such that a drapery or similar combustible object will not be nearer than 12 inches (305 mm) to any portion of the register of the furnace. Floor furnaces shall not be installed in concrete floor construction built on grade. The controlling thermostat for a floor furnace shall be located within the same room or space as the floor furnace or shall be located in an adjacent room or space that is permanently open to the room or space containing the floor furnace. Floor furnaces shall be located so as to be accessible. Floor furnaces shall be installed only in floors of noncombustible construction having at least a 2-hour fire rating, except as where required for one- and two-family dwellings.

910.3 Bracing. The floor around the furnace shall be braced and headed with a support framework design in accordance with the New York City Building Code.

910.4 Clearance. The lowest portion of the floor furnace shall have not less than a 6-inch (152 mm) clearance from the grade level; except where the lower 6-inch (152 mm) portion of the floor furnace is sealed by the manufacturer to prevent entrance of water, the minimum clearance shall be reduced to not less than 2 inches (51 mm). Where these clearances are not present, the ground below and to the sides shall be excavated to form a pit under the furnace so that the required clearance is provided beneath the lowest portion of the furnace. A 12-inch (305 mm) minimum clearance

shall be provided on all sides except the control side, which shall have an 18-inch (457 mm) minimum clearance.

910.5Enclosures.Enclosures of floor furnaces shall be constructed entirely of noncombustible materials with a fire-resistance rating of at least 1 hour and shall be provided with adequate outdoor air to ensure proper combustion. The enclosure shall be provided with adequate means of access for servicing the furnace.

910.6Duct temperature.The outlet duct temperature of warm air heating furnaces shall not be greater than 250(degrees)F (121(degrees)C).

910.7One- and two- family dwellings.Floor furnace enclosures shall be constructed of noncombustible materials with a fire-resistance rating of at least 1 hour. Means shall be provided for supporting the furnace when the grille is removed. Clearances shall be provided as per NFPA 54.



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SECTION MC 911: DUCT FURNACES

NYC Administrative Code § 28-MC 911

911.1 General.

Duct furnaces shall be installed in accordance with the manufacturer's installation instructions. Electric furnaces shall be tested in accordance with UL 1995. Unvented furnaces are prohibited.

911.2 Access panels. Ducts connected to duct furnaces shall have removable access panels on both the upstream and downstream sides of the furnace.

911.3 Location of draft hood and controls. The controls, combustion air inlets and draft hoods for duct furnaces shall be located outside of the ducts. The draft hood shall be located in the same enclosure from which combustion air is taken.

911.4 Circulating air. Where a duct furnace is installed so that supply ducts convey air to areas outside the space containing the furnace, the return air shall also be conveyed by a duct(s) sealed to the furnace casing and terminating outside the space containing the furnace. The duct furnace shall be installed on the positive pressure side of the circulating air blower.

911.5 Duct Temperature. The outlet duct temperature of duct furnaces shall not be greater than 250(degrees)F (121(degrees)C).



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SECTION MC 912: INFRARED RADIANT HEATERS

NYC Administrative Code § 28-MC 912

912.1 Support.

Infrared radiant heaters shall be safely and adequately fixed in an approved position independent of fuel and electric supply lines. Hangers and brackets shall be noncombustible material.

912.2 Clearances. Heaters shall be installed with clearances from combustible material in accordance with the manufacturer's installation instructions.



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SECTION MC 913: CLOTHES DRYERS

NYC Administrative Code § 28-MC 913

913.1 General.

Clothes dryers shall be installed in accordance with the manufacturer's installation instructions. Electric commercial clothes dryers shall be tested in accordance with UL 1240. Electric residential and coin-operated clothes dryers shall be tested in accordance with UL 2158.

913.2 Exhaust required. Clothes dryers shall be exhausted in accordance with Section 504.

Exception: Electric clothes dryers provided with a condensate drain.

913.3 Clearances. Clothes dryers shall be installed with clearance to combustibles in accordance with the manufacturer's instructions.



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SECTION MC 914: SAUNA HEATERS

NYC Administrative Code § 28-MC 914

914.1 Location and protection.

Sauna heaters shall be located so as to minimize the possibility of accidental contact by a person in the room.

914.1.1 Guards. Sauna heaters shall be protected from accidental contact by an approved guard or barrier of material having a low coefficient of thermal conductivity. The guard shall not substantially affect the transfer of heat from the heater to the room.

914.2 Installation. Sauna heaters shall be listed and labeled and shall be installed in accordance with their listing and the manufacturer's installation instructions.

914.3 Access. Panels, grilles and access doors that are required to be removed for normal servicing operations shall not be attached to the building.

914.4 Heat and time controls. Sauna heaters shall be equipped with a thermostat that will limit room temperature to 194(degrees)F (90(degrees)C). If the thermostat is not an integral part of the sauna heater, the heat-sensing element shall be located within 6 inches (152 mm) of the ceiling. If the heat-sensing element is a capillary tube and bulb, the assembly shall be attached to the wall or other support, and shall be protected against physical damage.

914.4.1 Timers. A timer, if provided to control main burner operation, shall have a maximum operating time of 1 hour. The control for the timer shall be located outside the sauna room.

914.5 Sauna room. A ventilation opening into the sauna room shall be provided. The opening shall be not less than 4 inches by 8 inches (102 mm by 203 mm) located near the top of the door into the sauna room.

914.5.1 Warning notice. The following permanent notice, constructed of approved material, shall be mechanically attached to the sauna room on the outside: WARNING: DO NOT EXCEED 30 MINUTES IN SAUNA. EXCESSIVE EXPOSURE CAN BE HARMFUL TO HEALTH. ANY PERSON WITH POOR HEALTH SHOULD CONSULT A

PHYSICIAN BEFORE USING SAUNA.

The words shall contrast with the background and the wording shall be in letters not less than 0.25-inch (6.4 mm) high.

Exception: This section shall not apply to one- and two-family dwellings.



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SECTION MC 915: ENGINE AND GAS TURBINE-POWERED EQUIPMENT AND APPLIANCES

NYC Administrative Code § 28-MC 915

915.1 General.

The installation of liquid-fueled stationary internal combustion engines and gas turbines, including fuel storage and piping, shall meet the requirements of NFPA 37 and Chapter 13 of this code.

915.2 Powered equipment and appliances. Permanently installed equipment and appliances powered by internal combustion engines and turbines shall be installed in accordance with the manufacturer's installation instructions and NFPA 37.



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SECTION MC 916: POOL AND SPA HEATERS

NYC Administrative Code § 28-MC 916

916.1 General.

Pool and spa heaters shall be installed in accordance with the manufacturer's installation instructions. Oil-fired pool and spa heaters shall be tested in accordance with UL 726. Electric pool and spa heaters shall be tested in accordance with UL 1261.



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SECTION MC 917: COOKING APPLIANCES

NYC Administrative Code § 28-MC 917

917.1 Cooking appliances.

Cooking appliances that are designed for permanent installation, including ranges, ovens, stoves, broilers, grills, fryers, griddles and barbecues, shall be listed, labeled and installed in accordance with the manufacturer's installation instructions. Oil-fired cooking appliances are prohibited. Solid fuel-fired ovens shall be tested in accordance with UL 2162.

917.2 Prohibited location. Cooking appliances designed, tested, listed and labeled for use in commercial occupancies shall not be installed within dwelling units or within any area where domestic cooking operations occur.

917.3 Domestic appliances. Cooking appliances installed within dwelling units and within areas where domestic cooking operations occur shall be listed and labeled as household-type appliances for domestic use.

917.4 Domestic range installation. Domestic ranges installed on combustible floors shall be set on their own bases or legs and shall be installed with clearances of not less than that shown on the label.

917.5 Open-top broiler unit hoods. A ventilating hood shall be provided above a domestic open-top broiler unit, unless otherwise listed for forced down draft ventilation.

917.5.1 Clearances. A minimum clearance of 24 inches (610 mm) shall be maintained between the cooking top and combustible material above the hood. The hood shall be at least as wide as the open-top broiler unit and be centered over the unit.

917.6 Commercial cooking appliance venting. Commercial cooking appliances, other than those exempted by Section 501.8 of the New York City Fuel Gas Code, shall be vented by connecting the appliance to a vent or chimney in accordance with this code and the appliance manufacturer's instructions or the appliance shall be vented in accordance with Section 505.1.1 of the New York City Fuel Gas Code.

917.7 Domestic ventilation. When a hood is required for proper ventilation of a domestic cooking appliance, the exhaust and make-up air systems shall be properly engineered and designed in accordance with Chapter 5.



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SECTION MC 918: FORCED-AIR WARM-AIR FURNACES

NYC Administrative Code § 28-MC 918

918.1 Forced-air furnaces.

Oil-fired furnaces shall be tested in accordance with UL 727. Electric furnaces shall be tested in accordance with UL 1995. Solid fuel furnaces shall be tested in accordance with UL 391. Forced-air furnaces shall be installed in accordance with the listings and the manufacturer's installation instructions. Forced-air warm-air furnaces shall be installed in accordance with the requirements of NFPA 31 and the New York City Fuel Gas Code. Unvented furnaces are prohibited.

918.2 Minimum duct sizes. The minimum unobstructed total area of the outside and return air ducts or openings to a forced-air warm-air furnace shall be not less than 2 square inches per 1,000 Btu/h (4402 mm²/kW) output rating capacity of the furnace and not less than that specified in the furnace manufacturer's installation instructions. The minimum unobstructed total area of supply ducts from a forced-air warm-air furnace shall not be less than 2 square inches for each 1,000 Btu/h (4402 mm²/kW) output rating capacity of the furnace and not less than that specified in the furnace manufacturer's installation instructions.

Exception: The total area of the supply air ducts and outside and return air ducts shall not be required to be larger than the minimum size required by the furnace manufacturer's installation instructions and in accordance with NFPA 54.

918.3 Heat pumps. The minimum unobstructed total area of the outside and return air ducts or openings to a heat pump shall be not less than 6 square inches per 1,000 Btu/h (13 208 mm²/kW) output rating or as indicated by the conditions of listing of the heat pump. Electric heat pumps shall be tested in accordance with UL 1995.

918.4 Dampers. Volume dampers shall not be placed in the air inlet to a furnace in a manner that will reduce the required air to the furnace.

918.5 Circulating air ducts for forced-air warm-air furnaces. Circulating air for fuel-burning, forced-air-type,

warm-air furnaces shall be conducted into the blower housing from outside the furnace enclosure by continuous air-tight ducts.

918.6 Prohibited sources. Outside or return air for a forced-air heating system shall not be taken from the following locations:

1. Closer than 10 feet (3048 mm) from an appliance vent outlet, a vent opening from a plumbing drainage system or the discharge outlet of an exhaust fan, unless the outlet is 3 feet (914 mm) above the outside air inlet.

2. Where there is the presence of objectionable odors, fumes or flammable vapors; or where located less than 10 feet (3048 mm) above the surface of any abutting public way or driveway; or where located at grade level by a sidewalk, street, alley or driveway.

3. A hazardous or unsanitary location or a refrigeration machinery room as defined in this code.

4. A room or space, the volume of which is less than 25 percent of the entire volume served by such system. Where connected by a permanent opening having an area sized in accordance with Sections 918.2 and 918.3, adjoining rooms or spaces shall be considered as a single room or space for the purpose of determining the volume of such rooms or spaces.

Exception: The minimum volume requirement shall not apply where the amount of return air taken from a room or space is less than or equal to the amount of supply air delivered to such room or space.

5. A closet, bathroom, toilet room, kitchen, garage, mechanical room, boiler room or furnace room.

6. A room or space containing a fuel-burning appliance where such room or space serves as the sole source of return air.

Exceptions:

1. This shall not apply where the fuel-burning appliance is a direct-vent appliance.

2. This shall not apply where the room or space complies with the following requirements:

2.1. The return air shall be taken from a room or space having a volume exceeding 1 cubic foot for each 10 Btu/h (9.6 L/W) of combined input rating of all fuel-burning appliances therein.

2.2. The volume of supply air discharged back into the same space shall be approximately equal to the volume of return air taken from the space.

2.3. Return-air inlets shall not be located within 10 feet (3048 mm) of any appliance firebox or draft hood in the same room or space.

3. This shall not apply to rooms or spaces containing solid fuel-burning appliances, provided that return-air inlets are located not less than 10 feet (3048 mm) from the firebox of such appliances.

918.7 Outside opening protection. Outdoor air intake openings shall be protected in accordance with Section 401.6.

918.8 Return-air limitation. Return air from one dwelling unit shall not be discharged into another dwelling unit.



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SECTION MC 919: CONVERSION BURNERS

NYC Administrative Code § 28-MC 919

919.1 Conversion burners.

The installation of conversion burners shall conform to ANSI Z21.8.



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SECTION MC 920: UNIT HEATERS

NYC Administrative Code § 28-MC 920

920.1 General.

Unit heaters shall be installed in accordance with the listing and the manufacturer's installation instructions. Oil-fired unit heaters shall be tested in accordance with UL 731.

920.2Support.Suspended-type unit heaters shall be supported by elements that are designed and constructed to accommodate the weight and dynamic loads. Hangers and brackets shall be of noncombustible material. Suspended-type oil-fired unit heaters shall be installed in accordance with NFPA 31.

920.3Ductwork.A unit heater shall not be attached to a warm-air duct system unless listed for such installation.



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SECTION MC 921: VENTED ROOM HEATERS

NYC Administrative Code § 28-MC 921

921.1 General.

Vented room heaters shall be listed and labeled and shall be installed in accordance with the conditions of the listing and the manufacturer's instructions.



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SECTION MC 922: KEROSENE AND OIL-FIRED STOVES

NYC Administrative Code § 28-MC 922

922.1 General.

The installation of kerosene and oil-fired stoves is prohibited.



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SECTION MC 923: SMALL CERAMIC KILNS

NYC Administrative Code § 28-MC 923

923.1 General.

The provisions of this section shall apply to kilns that are used for ceramics, have a maximum interior volume of 20 cubic feet (0.566 m³) and are used for hobby and noncommercial purposes.

923.1.1 Installation. Kilns shall be installed in accordance with the manufacturer's installation instructions and the provisions of this code.



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SECTION MC 924: STATIONARY FUEL CELL POWER PLANTS

NYC Administrative Code § 28-MC 924

924.1 General.

Stationary fuel cell power plants having a power output not exceeding 1,000 kW, shall be tested in accordance with ANSI Z21.83 and shall be installed in accordance with the manufacturer's installation instructions and NFPA 853. Such fuel cell plants shall be powered by hydrogen derived on-site from piped natural gas, except where the storage, handling and use of hydrogen or other flammable gas is authorized by the Fire Code for such purposes and approved by the fire commissioner.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 17, eff. July 1, 2008.

924.1 amended L.L. 26/2008 § 11, eff. July 1, 2008.

924.1 amended Int. No. 732-A of 2008 § 11, passed City Council May 28, 2008,

eff. July 1, 2008 and upon approval of the Mayor.



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SECTION MC 925:

MASONRY HEATERS

NYC Administrative Code § 28-MC 925

925.1 General.

Masonry heaters shall be constructed in accordance with the New York City Building Code.



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SECTION MC 926: NOISE CONTROL REQUIREMENTS

NYC Administrative Code § 28-MC 926

926.1 Minimum air-borne noise insulation requirements.

926.1.1 Exterior mechanical equipment. Mechanical equipment in a building in any occupancy group, when located outside of the building in a yard or court or on a roof, or where the equipment opens to the exterior of the building, shall be subject to the noise output limitations given in Table 926.1 where one or more windows of a dwelling unit in any building in occupancy groups R-1, R-2, and R-3, are located within a sphere of 100 foot radius (30 480 mm) whose center is any part of the equipment or its housing, unless it can be shown that the sound pressure levels, in octave bands, of the exterior mechanical equipment as measured within the dwelling unit do not exceed the levels given in Table 926.1(2). Table 926.1(2) Noise Output Limitations for Exterior Mechanical Equipment Maximum Sound Pressure Level (Not To Be Exceeded In Any Octave Bands) Octave Bands Center Frequency (cps) Decibels Re .0002 Microbar
63 61 125 53 250 46 500 40 1000 36 2000 34 4000 33 8000 32 Note: a. Measurements shall be obtained with a sound level meter and octave band analyzer, calibrated both electronically and acoustically before and after the measurements are made.

926.1.2 Noise Control Code. Sound sources shall also comply with any applicable requirements of Section 24-232 of the Administrative Code, also known as the New York City Noise Control Code.

926.2 Minimum structure-borne noise and vibration isolation requirements. All isolators shall comply with the requirements of Section 926.2.1 through Section 926.2.9.

926.2.1 Boiler rooms.

926.2.1.1 Boilers. All boilers supported on floors above a story having dwelling units shall be supported on resilient isolators having a minimum static deflection of 1 inch (25 mm). The isolators shall be installed directly under the structural frame of the boiler.

926.2.1.2Boiler breeching and piping.When boilers are equipped with mechanical draft fans, the boiler breeching and piping that are supported from or on slabs, floors or walls that are contiguous to the dwelling unit shall be supported for a distance of 50 pipe diameters on or from resilient isolators. Each isolator shall have a minimum static deflection of 1 inch (25 mm).

926.2.2Incinerator charging chutes.

926.2.2.1Metal chutes.Metal chutes, metal chute supports, and/or metal chute bracing shall be free of direct contact with the shaft enclosure and the openings provided in the floor construction. Metal chutes shall be resiliently supported at each structural support location. Isolators shall provide a minimum static deflection of 0.30 inches (7.62 mm). All chutes shall be plumb.

926.2.2.2Masonry chutes.The interior chute wall shall be plumb and without obstructions for the full height of the shaft and shall have a smooth interior finish.

926.2.3Piping.Equipment piping shall be installed as follows:

1. Metal piping connected to power driven equipment shall be resiliently supported from or on the building structure for a distance of 50 pipe diameters from the power driven equipment. The resilient isolators shall have a minimum static deflection of 1 inch (25 mm) for all piping with a 4 inch (25 mm) or larger in actual outside diameter and 1/2 inch (12.7 mm) for piping with less than 4 inches (25 mm) in actual outside diameter. Piping connected to fluid pressure-reducing valves shall be resiliently isolated for a distance of 50 pipe diameters from pressure reducing valves and isolators shall provide a minimum static deflection of 1/2 inch (12.7 mm).

2. Equipment such as heat exchangers, absorption refrigeration machines, or similar equipment, that is located on any floor or roof other than a floor on grade, and that is not power driven but is connected by metal piping to power driven equipment, shall be resiliently supported from or on the building structure, for a distance of 50 pipe diameters from the power driven equipment. The resilient supports shall be vibration isolators having a minimum static deflection of 1 inch (25 mm) and shall incorporate approved resilient pads having a minimum thickness of 1/4 inch (6.4 mm).

926.2.4Fans.All fan equipment located on any roof or floor other than a floor on grade shall be mounted on or from vibration isolators. Fan equipment with motor drives separated from the fan equipment shall be supported on an isolated integral rigid structural base supporting both the fan and motor. Fan equipment with motor drives supported from the fan equipment shall be mounted directly on vibration isolators. Each isolator shall have provision for leveling. Isolators shall incorporate resilient pads having a minimum thickness of 1/4 inch (6.4 mm). The vibration isolators shall provide a minimum isolation efficiency of 90 percent at fan rotor rpm with a maximum deflection of 2 inches (51 mm). Fans and compressors of 3 horsepower (2.25 kW) or less assembled in unitary containers may meet this requirement with isolators internal to the container providing the isolators meet the above minimum isolator efficiencies.

926.2.5Pumps.All pumps of 3 horsepower (2.25 kW) or more located on any floor other than a floor on grade shall be supported on vibration isolators having a minimum isolation efficiency of 85 percent at the lowest disturbing frequency. Each isolator shall incorporate a leveling device and a resilient pad having a minimum thickness of 1/4 inch (6.4 mm).

926.2.6Compressors.Compressors and drives located on a floor other than a floor on grade shall be mounted on vibration isolators having a minimum isolation efficiency of 85 percent at the lowest disturbing frequency. Each isolator shall incorporate a leveling device and a resilient pad having a minimum thickness of 1/4 inch (6.4 mm).

926.2.7Cooling towers.All moving parts of cooling towers located on a roof or floor other than a floor on grade shall be installed on vibration isolators providing a minimum isolation efficiency of 85 percent at fan rotor rpm with a maximum static deflection of 4 inches (102 mm). Each isolator shall incorporate a leveling device and a resilient pad having a minimum thickness of 1/4 inch (6.4 mm).

926.2.8Evaporative condensers.Evaporative and air cooled condensers located on a roof or floor other than a floor on grade shall be mounted on vibration isolators providing a minimum isolation efficiency of 85 percent at fan rotor rpm with a maximum static deflection of 4 inches (102 mm). Each isolator shall incorporate a leveling device and a resilient pad having a minimum thickness of 1/4 inch (6.4 mm).

926.2.9Duct connections to fan equipment.Flexible connections shall be installed between fan equipment and connecting ductwork.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**

CHAPTER 6: THE NEW YORK CITY PLUMBING CODE

Chapter 10: TRAPS, INTERCEPTORS AND SEPARATORS

SECTION PC 1001: GENERAL

NYC Administrative Code § 28-PC 1001

1001.1 Scope.

This chapter shall govern the material and installation of traps, interceptors and separators.



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SECTION PC 1002: TRAP REQUIREMENTS

NYC Administrative Code § 28-PC 1002

1002.1 Fixture traps.

Each plumbing fixture shall be separately trapped by a water-seal trap, except as otherwise permitted by this code. The trap shall be placed as close as possible to the fixture outlet. The vertical distance from the fixture outlet to the trap weir shall not exceed 24 inches (610 mm). The distance of a clothes washer standpipe above a trap shall conform to Section 802.4. A fixture shall not be double trapped.

Exceptions:

1. This section shall not apply to fixtures with integral traps.
2. A combination plumbing fixture is permitted to be installed on one trap provided that one compartment is not more than 6 inches (152 mm) deeper than the other compartment and the waste outlets are not more than 30 inches (762 mm) apart.
3. A grease trap intended to serve as a fixture trap in accordance with the manufacturer's installation instructions shall be permitted to serve as the trap for a single fixture or a combination sink of not more than three compartments where the vertical distance from the fixture outlet to the inlet of the interceptor does not exceed 30 inches (762 mm), and the developed length of the waste pipe from the most upstream fixture outlet to the inlet of the interceptor does not exceed 60 inches (1524 mm).

1002.2 Design of traps. Fixture traps shall be self-scouring. Fixture traps shall not have interior partitions, except where such traps are integral with the fixture or where such traps are constructed of an approved material that is resistant to corrosion and degradation. Slip joints shall be made with an approved elastomeric gasket and shall be installed only on the trap inlet, trap outlet and within the trap seal.

1002.3 Prohibited traps. The following types of traps are prohibited:

1. Traps that depend on moving parts to maintain the seal.
2. Bell traps.
3. Crown-vented traps.
4. Traps not integral with a fixture and that depend on interior partitions for the seal, except those traps constructed of an approved material that is resistant to corrosion and degradation.
5. "S" traps.
6. Drum traps.

Exception: Drum traps used as solids interceptors and drum traps serving chemical waste systems shall not be prohibited.

1002.4Trap seals.Each fixture trap shall have a liquid seal of not less than 2 inches (51 mm) and not more than 4 inches (102 mm), or deeper for special designs relating to accessible fixtures. Where a trap seal is subject to loss by evaporation, a trap seal primer valve shall be installed. A trap seal primer valve shall conform to ASSE 1018 or ASSE 1044.

1002.5Size of fixture traps.Fixture trap size shall be sufficient to drain the fixture rapidly and not less than the size indicated in Table 709.1. A trap shall not be larger than the drainage pipe into which the trap discharges.

1002.6Building traps.Building traps shall be provided with a cleanout and a relief vent or fresh air intake but in no case less than 3 inches (76 mm) on the inlet side of the trap. The size of the relief vent or fresh air intake shall not be less than one-half the diameter of the drain to which the relief vent or air intake connects. Such relief vent or fresh air intake shall be carried above grade and shall be terminated in a screened outlet located outside the building.

1002.7Trap setting and protection.Traps shall be set level with respect to the trap seal and, where necessary, shall be protected from freezing.

1002.8Recess for trap connection.A recess provided for connection of the underground trap, such as one serving a bathtub in slab-type construction, shall have sides and a bottom of corrosion-resistant, insect- and vermin proof construction.

1002.9Acid-resisting traps.Where a vitrified clay or other brittleware, acid-resisting trap is installed underground, such trap shall be embedded in concrete extending 6 inches (152 mm) beyond the bottom and sides of the trap.

1002.10Plumbing in mental health centers.In mental health centers, pipes and traps shall not be exposed.



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SECTION PC 1003: INTERCEPTORS AND SEPARATORS

NYC Administrative Code § 28-PC 1003

1003.1 Where required.

Interceptors and separators shall be provided to prevent the discharge of oil, grease, sand and other substances harmful or hazardous to the building drainage system, the public sewer, or sewage treatment plant or processes.

1003.2Approval. The size, type and location of each interceptor and of each separator shall be designed and installed in accordance with the manufacturer's instructions and the requirements of this section based on the anticipated conditions of use. Wastes that do not require treatment or separation shall not be discharged into any interceptor or separator.

1003.3Grease traps and grease interceptors. Grease traps and grease interceptors shall comply with the requirements of Sections 1003.3.1 through 1003.3.4.2.

1003.3.1Grease traps and grease interceptors required. A grease trap or grease interceptor shall be required to receive the drainage from fixtures and equipment with grease-laden waste located in food preparation areas, such as in restaurants, hotel kitchens, hospitals, school kitchens, bars, factory cafeterias, or restaurants and clubs.

1003.3.2Food waste grinders. Where food waste grinders connect to grease traps, a solids interceptor shall separate the discharge before connecting to the grease trap. Solids interceptors and grease interceptors shall be sized and rated for the discharge of the food waste grinder.

1003.3.3Grease trap and grease interceptor not required. A grease trap or a grease interceptor shall not be required for individual dwelling units or any private living quarters.

1003.3.4Grease traps and grease interceptors. Grease traps and grease interceptors shall conform to PDI G101, ASME A112.14.3 or ASME A112.14.4 and shall be installed in accordance with the manufacturer's instructions.

1003.3.4.1Grease trap capacity. Grease traps shall have the grease retention capacity indicated in Table 1003.3.4.1

for the flow-through rates indicated.

1003.3.4.2Rate of flow controls.Grease traps shall be equipped with devices to control the rate of water flow so that the water flow does not exceed the rated flow. The flow-control device shall be vented and terminate not less than 6 inches (152 mm) above the flood rim level or be installed in accordance with the manufacturer's instructions.3]Table 1003.3.4.1 Capacity of Grease Traps Total Flow-Through Rating (gpm) Grease Retention Capacity (pounds) 1]Total Flow-Through Rating (gpm) Grease Retention Capacity (pounds) 2] 4 8 6 12 7 14 9 18 10 20 12 24 14 28 15 30 18 36 20 40 25 50 35 70 50 100 4]For SI: 1 gallon per minute = 3.785 L/m, 1 pound = 0.454 kg.

1003.4Oil separators required.At repair garages, car washing facilities with engine or undercarriage cleaning capability and at factories where oily and flammable liquid wastes are produced, separators shall be installed into which all oil-bearing, grease-bearing or flammable wastes shall be discharged before emptying in the building drainage system or other point of disposal.

1003.4.1Separation of liquids.A mixture of treated or untreated light and heavy liquids with various specific gravities shall be separated in an approved receptacle.

1003.4.2Oil separator design.Oil separators shall be designed in accordance with Sections 1003.4.2.1 and 1003.4.2.2.

1003.4.2.1General design requirements.Oil separators shall have a depth of not less than 2 feet (610 mm) below the invert of the discharge drain. The outlet opening of the separator shall have not less than an 18-inch (457 mm) water seal.

1003.4.2.2Garages and service stations.Where automobiles are serviced, greased, repaired or washed or where gasoline is dispensed, oil separators shall have a minimum capacity of 6 cubic feet (0.17 m³) for the first 100 square feet (9.3 m²) of area to be drained, plus 1 cubic foot (0.028 m³) for each additional 100 square feet (9.3 m²) of area to be drained into the separator. Parking garages in which servicing, repairing or washing is not conducted, and in which gasoline is not dispensed, shall not require a separator. Areas of commercial garages utilized only for storage of automobiles are not required to be drained through a separator.

1003.5Sand interceptors in commercial establishments.Sand and similar interceptors for heavy solids shall be designed and located so as to be provided with ready access for cleaning, and shall have a water seal of not less than 6 inches (152 mm).

1003.6Laundries.Commercial laundries shall be equipped with an interceptor with a wire basket or similar device, removable for cleaning, that prevents passage into the drainage system of solids 0.5 inch (12.7 mm) or larger in size, string, rags, buttons or other materials detrimental to the public sewage system.

1003.7Bottling establishments.Bottling plants shall discharge process wastes into an interceptor that will provide for the separation of broken glass or other solids before discharging waste into the drainage system.

1003.8Slaughterhouses.Slaughtering room and dressing room drains shall be equipped with approved separators. The separator shall prevent the discharge into the drainage system of feathers, entrails and other materials that cause clogging.

1003.9Venting of interceptors and separators.Interceptors and separators shall be designed so as not to become air bound where tight covers are utilized. Each interceptor or separator shall be vented where subject to a loss of trap seal.

1003.10Access and maintenance of interceptors and separators.Access shall be provided to each interceptor and separator for service and maintenance. Interceptors and separators shall be maintained by periodic removal of accumulated grease, scum, oil, or other floating substances and solids deposited in the interceptor or separator.



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SECTION PC 1004: MATERIALS, JOINTS AND CONNECTIONS

NYC Administrative Code § 28-PC 1004

1004.1 General.

The materials and methods utilized for the construction and installation of traps, interceptors and separators shall comply with this chapter and the applicable provisions of Chapters 4 and 7. The fittings shall not have ledges, shoulders or reductions capable of retarding or obstructing flow in the piping system.



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CHAPTER 1: ADMINISTRATION
SECTION PC 101: GENERAL

NYC Administrative Code § 28-PC 101

101.1 Title.

This code shall be known and may be cited as the "New York City Plumbing Code," "NYCPC" or "PC". All section numbers in this code shall be deemed to be preceded by the designation "PC".

101.2 Scope. The provisions of this code shall apply to the erection, installation, alteration, repair, relocation, replacement, addition to, use or maintenance of plumbing systems. This code shall also regulate nonflammable medical gas, inhalation anesthetic, vacuum piping, nonmedical oxygen systems and sanitary and condensate vacuum collection systems. The installation of fuel gas distribution piping and equipment, fuel gas-fired water heaters, and water heater venting systems shall be regulated by the New York City Fuel Gas Code.

101.3 Intent. The purpose of this code is to provide minimum standards to safeguard life or limb, health, property and public welfare by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of plumbing systems.

101.4 Severability. If a section, subsection, sentence, clause or phrase of this code is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this code.

HISTORICAL NOTES:

Section repealed and added L.L. 8/2008 § 30, eff. July 1, 2008.

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10.



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SECTION PC 102: APPLICABILITY

NYC Administrative Code § 28-PC 102

102.1 General.

The provisions of this code shall apply to all matters affecting or relating to structures and premises, as set forth in Section 101. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

102.2 Existing installations. Plumbing systems lawfully in existence at the time of the adoption of this code shall be permitted to have their use and maintenance continued if the use maintenance or repair is in accordance with the original design and no hazard to life, health or property is created by such plumbing system.

102.2.1 Existing buildings. Additions, alterations, renovations or repairs related to building or structural issues shall be governed by Chapter 1 of Title 28 of the Administrative Code, the New York City Building Code and the 1968 Building Code, as applicable.

102.3 Maintenance. Installations, both existing and new, and parts thereof shall be maintained in proper operating condition in accordance with the original design and in a safe and sanitary condition. Devices or safeguards that are required by this code shall be maintained in compliance with the applicable provisions under which they were installed. The owner or the owner's designated agent shall be responsible for maintenance of plumbing systems. To determine compliance with this provision, the commissioner shall have the authority to require any plumbing system to be inspected.

102.4 Additions, alterations or repairs. Additions, alterations, renovations or repairs to installations shall conform to that required for new installations without requiring the existing installation to comply with all of the requirements of this code. Additions, alterations or repairs shall not cause an existing installation to become unsafe, hazardous or overloaded. Minor additions, alterations, renovations and repairs to existing installations shall meet the provisions for new construction, unless such work is done in the same manner and arrangement as was in the existing system, is not hazardous and is approved.

102.5Change in occupancy.Refer to Chapter 1 of Title 28 of the Administrative Code.

102.6Reserved.

102.7Reserved.

102.8Referenced standards.The standards referenced in this code shall be those that are listed in Chapter 13 and such standards shall be considered as part of the requirements of this code to the prescribed extent of each such reference. Where differences occur between the provisions of this code and the referenced standards, the provisions of this code shall be the minimum requirements. Refer to Article 103 of Chapter 1 of Title 28 of the Administrative Code for additional provisions relating to referenced standards.

102.9Requirements not covered by code.Requirements necessary for the strength, stability or proper operation of an existing or proposed plumbing system, or for the public safety, health and general welfare, not specifically covered by this code, shall be determined by the commissioner.

HISTORICAL NOTES:

Section repealed and added L.L. 8/2008 § 30, eff. July 1, 2008.

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10.



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SECTION PC 103: DEPARTMENT OF BUILDINGS

NYC Administrative Code § 28-PC 103

103.1 Enforcement agency.

Refer to the New York City Charter and Chapter 1 of Title 28 of the Administrative Code.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 30, eff. July 1, 2008.



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SECTION PC 104: DUTIES AND POWERS OF THE COMMISSIONER OF BUILDINGS

NYC Administrative Code § 28-PC 104

104.1 General.

The commissioner shall have the authority to render interpretations and to adopt rules establishing policies, and procedures to clarify and implement the provisions of this code. Such interpretations and rules shall be in compliance with the intent and purpose of this code. See the New York City Charter and Chapter 1 of Title 28 of the Administrative Code for additional provisions relating to the authority of the Commissioner of Buildings.

104.2 Remedies for non-functioning storm water disposal systems. If the commissioner determines that a system of storm water disposal which has been previously approved under the provisions of this code or of previous codes is no longer providing adequate drainage of storm water from a lot or development, the commissioner shall order repair of such system as required by section 28-301.1 of the Administrative Code; or if, in the judgment of the commissioner, repair of such system is not sufficient to ensure adequate drainage of storm water from such lot or development, the commissioner shall order that one of the methods of storm water disposal set forth in Chapter 11 shall be used to provide such drainage. The commissioner may apply to the Board of Standards and Appeals for modification of the certificate of occupancy of any building constructed on such lot or development to require the use of such method.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 30, eff. July 1, 2008.



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SECTION PC 105: PERMITS

NYC Administrative Code § 28-PC 105

105.1 General.

Permits shall comply with this section, with Article 105 of Chapter 1 of Title 28 of the Administrative Code, and with requirements found elsewhere in this code.

105.2Required. Any owner or authorized agent who intends to construct, add to, alter, repair, move, demolish, or change the occupancy of a building or structure, or to erect, install, add to, alter, repair, remove, convert or replace any gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be done, shall first make application for construction document approval in accordance with Chapter 1 of Title 28 of the Administrative Code and this chapter and obtain the required permit.

105.3Work exempt from permit. Exemptions from permit requirements of this code as authorized in Chapter 1 of Title 28 of the Administrative Code and the rules of the department shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or rules.

105.4Validity of permit. The issuance or granting of a permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other law. Permits presuming to give authority to violate or cancel the provisions of this code or other law shall not be valid. The issuance of a permit based on construction documents and other data shall not prevent the commissioner from requiring the correction of errors in the construction documents and other data. The commissioner is also authorized to prevent occupancy or use of a structure where in violation of this code or of any other law.

105.5Mandatory sewer and catch basin work required by Section 24-526 of the Administrative Code. An applicant for a permit who is required pursuant to Section 24-526 of the Administrative Code to construct or repair defects in sewers or catch basins that lie outside the property shall submit certification from the Department of Environmental Protection in accordance with Section 105.9 of the New York City Building Code.

105.6 Other permits. In addition to any permits required by the provisions of this code, the following permits shall also be required:

1. Permits for all water supplies and backflow devices for all buildings shall be obtained from the Department of Environmental Protection, and the installation of the water service system from the street main up to and including the meter shall be subject to inspection and approval by such department.
2. Permits for the installation of the building house sewer or drain from the street line to, and including, the spur connection at the street sewer shall be obtained from the Department of Environmental Protection, except that, in conjunction with the issuance of a permit for the construction or alteration of a structure within the curb line, the commissioner may issue a permit for connection with a sewer or drain.
3. Permits for sidewalk and street openings shall be obtained from the Department of Transportation.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 30, eff. July 1, 2008.



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SECTION PC 106: CONSTRUCTION DOCUMENTS

NYC Administrative Code § 28-PC 106

106.1 General.

Construction documents shall comply with Article 104 of Chapter 1 of Title 28 of the Administrative Code and other applicable provisions of this code and its referenced standards. Such construction documents shall be coordinated with architectural, structural and means of egress plans.

106.2 Required documents. The applicant shall submit all of the documents specified in Sections 106.3 through 106.10 as appropriate to the nature and extent of the work proposed. Construction documents shall indicate the plumbing work to be performed, so drawn as to conform to the architectural and structural aspects of the building and to show in detail compliance with this code.

106.2.1 Composite plans. Composite plans showing compliance of architectural, structural, and mechanical parts of a building may be submitted provided that a clear understanding of each part is not impaired.

106.3 Lot diagram. The lot diagram shall be provided where applicable to the work proposed, including but not limited to street connection locations and increases of impervious surfaces.

106.4 Building classification statement. Where applicable to the proposed work, the statement shall identify:

1. The occupancy group or groups that apply to parts of the building in accordance with Section 302 of the New York City Building Code;
2. The occupancy group of the main use or dominant occupancy of the building;
3. The construction class of the building in accordance with Section 602 of the New York City Building Code;
4. The structure category in accordance with Table 1604.5 of the New York City Building Code;

5. The height of the building as defined in Section 502.1 of the New York City Building Code;
6. The applicable measurements to the highest and lowest level of Fire Department access; and
7. Whether the building is inside or outside of the fire districts.

106.5 Plumbing plans. Construction documents for plumbing work shall contain plans which include the following data and information. Such plans shall not be required in connection with applications for limited plumbing alterations.

1. Riser diagrams showing the story heights, all plumbing fixtures with diagrammatic arrangement of their connections to soil, waste, and vent piping, all soil, waste, and vent stacks from the point of connection with the building drain to their termination above the roof, all leader and storm water piping from the point of connection with the building drain to the roof drain, and all risers.

2. Diagrammatic floor plans showing the location, layout, and spacing of all plumbing fixtures, the summation of plumbing loads, the size, location, and material for all building sewers and drains, and the soil, waste, vent, water, and gas distribution piping.

3. Floor plans showing typical layouts; and stack details shown on one drawing, provided that such details are clearly identified as to location and stack number.

4. Plans clearly indicating all appurtenant equipment, including, but not limited to, pumps, ejectors, water tanks, and piping.

5. In the case of plans for new plumbing systems, and alterations of existing plumbing systems, plans indicating:

- 5.1. The relative elevation of the lowest fixture referred to the city datum provided in Section 28-104.7.6 of the Administrative Code and the approximate inside top of the public sewers;

- 5.2. The number, size, and location of all proposed sewer connections and relative location and size of all water mains, leaders, and risers; and

- 5.3. A statement from the Department of Environmental Protection, giving the minimum water pressure in the main serving the building.

6. Seismic protection and restraint details for piping and equipment as required by Chapter 16 of the New York City Building Code.

7. Details showing structural supports for water tanks where required.

8. In areas of special flood hazards, construction documents shall comply with Appendix G of the New York City Building Code.

106.6 Sewer adequacy verification. Applications for construction document approval shall include a house/site connection application approved or accepted by the Department of Environmental Protection as to the availability of a public sewer system, and when not available, alternate provisions for disposal of storm water and sanitary sewerage.

106.6.1 Increases in existing impervious surfaces. Whenever an alteration increases impervious surfaces on the lot to greater than 20 percent of the impervious surfaces existing when the structure was constructed, the applicant shall submit a house/site connection application approved or accepted by the Department of Environmental Protection as to the availability of a public sewer system, as well as an evaluation of the adequacy of any existing system for the disposal of storm water by any means other than storm or combined sewers.

Exception: Where the total area of impervious surfaces proposed to be increased by an alteration after the effective date of this code is less than or equal to 1,000 square feet (93 m²).

106.7Private sewers.If private sewers are to be constructed pursuant to subdivision b of Section 1403 of the New York City Charter, a copy of the sewer plan shall be submitted.

106.8Private sewage treatment plant.If a private sewage treatment plant is to be constructed, a copy of plans approved by the Department of Health and Mental Hygiene and the Department of Environmental Protection shall be submitted.

106.9Private sewage disposal system.If a private sewage disposal system is to be installed, a site and subsoil evaluation indicating that the site and subsoil conditions comply with the applicable law and rules shall be submitted in accordance with the provisions of Section 1704.20.1 of the New York City Building Code.

106.10Energy efficiency.Construction documents shall include a statement by the registered design professional of record that: "To the best of my knowledge, belief and professional judgment, these plans and specifications are in compliance with the Energy Conservation Construction Code of New York State." In addition, the following requirements shall apply:

1. A lead energy professional shall be identified for each project, who shall draw the relevant information regarding envelope, mechanical systems, service water heating system and lighting and power systems from construction documents into an energy analysis. The energy analysis shall balance total energy consumption of all systems in accordance with the Energy Conservation Construction Code of New York State and shall be signed and sealed by the lead energy professional.

2. The format for the energy analysis shall be as established in the Energy Conservation Construction Code of New York State, or as approved by the department, and shall comprise a sheet within the drawing set. Supporting documentation shall be available within the drawing set or upon request of the department.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 30, eff. July 1, 2008.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
 Title 28: NEW YORK CITY CONSTRUCTION CODES**
 CHAPTER 6: THE NEW YORK CITY PLUMBING CODE
 CHAPTER 1: ADMINISTRATION
 SECTION PC 107: INSPECTIONS AND TESTING

NYC Administrative Code § 28-PC 107

107.1 General.

Except as otherwise specifically provided, inspections required by this code or by the department during the progress of work may be performed on behalf of the owner by approved agencies or, if applicable, by special inspectors. However, in the interest of public safety, the commissioner may direct that any of such inspections be performed by the department. All inspections shall be performed at the sole cost and expense of the owner. Refer to Article 116 of Chapter 1 of Title 28 of the Administrative Code for additional provisions relating to inspections. In addition to any inspections otherwise required by this code or applicable rules, the holder of the permit shall be responsible for the scheduling of the following required inspections:

1. Progress inspections:

1.1. Underground inspection and/or testing shall be made after trenches or ditches are excavated and bedded, piping installed, and before backfill is put in place.

1.2. Rough-in inspection and/or testing shall be made after the roof, framing, fireblocking, firestopping, draftstopping and bracing is in place and all sanitary, storm and water distribution piping is roughed-in, and prior to the installation of wall or ceiling membranes.

2. Special inspections. Special inspections shall be performed in accordance with this code and Chapter 17 of the New York City Building Code, and, where applicable, Section 107.2.

3. Final inspection shall be made after the building is complete, all plumbing fixtures are in place and properly connected, and the structure is ready for occupancy. Refer to Article 116 of Chapter 1 of Title 28 of the Administrative Code for additional requirements.

107.1.1 Approved agencies. Refer to Articles 114 and 115 of Chapter 1 of Title 28 of the Administrative Code.

107.1.2Exposure of work.It shall be the duty of the permit holder to cause the work to remain accessible and exposed for inspection purposes. Neither the commissioner nor the city shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

107.2Special inspections of alternative engineered design systems.Special inspections of alternative engineered design plumbing systems shall be conducted in accordance with Sections 107.2.1 and 107.2.2.

107.2.1Periodic inspection.The registered design professional or designated inspector shall periodically inspect and observe the alternative engineered design to determine that the installation is in accordance with the approved construction documents. All discrepancies shall be brought to the immediate attention of the plumbing contractor for correction. Records shall be kept of all inspections.

107.2.2Written report.The registered design professional shall submit a final report in writing to the commissioner upon completion of the installation, certifying that the alternative engineered design conforms to the approved construction documents.

107.3Testing.Plumbing work and systems shall be tested as required in Section 312 and in accordance with Sections 107.3.1 through 107.3.3. Tests shall be made by the permit holder and observed by the commissioner.

107.3.1New, altered, extended or repaired systems.New plumbing systems and parts of existing systems that have been altered, extended or repaired shall be tested as prescribed herein to disclose leaks and defects, except that testing is not required in the following cases:

1. In any case that does not include addition to, replacement, alteration or relocation of any water supply, drainage or vent piping.

2. In any case where plumbing equipment is set up temporarily for exhibition purposes.

3. For ordinary plumbing work, the department may accept written certification from a licensed master plumber that the job was performed in compliance with the requirements of this code and rules of the department in lieu of the inspection requirements otherwise set forth in this code.

4. Minor alterations and ordinary repairs.

107.3.2Equipment, material and labor for tests.All equipment, material and labor required for testing a plumbing system or part thereof shall be furnished by the permit holder.

107.3.3Reinspection and testing.Where any work or installation does not pass any initial test or inspection, the necessary corrections shall be made to comply with this code. The work or installation shall then be resubmitted to the commissioner for inspection and testing.

107.4Sign-off of completed work.Refer to Article 116 of Chapter 28 of the Administrative Code.

107.5Temporary connection.The commissioner shall have the authority to authorize the temporary connection of the building or system to the utility source for the purpose of testing plumbing systems or for use under a temporary certificate of occupancy.

HISTORICAL NOTES:

Section repealed and added L.L. 8/2008 § 30, eff. July 1, 2008.

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10.



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SECTION PC 108: VIOLATIONS

NYC Administrative Code § 28-PC 108

108.1 General.

Refer to Chapters 2 and 3 of Title 28 of the Administrative Code.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 30, eff. July 1, 2008.



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CHAPTER 6: THE NEW YORK CITY PLUMBING CODE
Chapter 11: STORM DRAINAGE
SECTION PC 1101: GENERAL

NYC Administrative Code § 28-PC 1101

1101.1 Scope.

The provisions of this chapter shall govern the materials, design, construction and installation of storm drainage. Storm water discharge shall be in accordance with city department of environmental protection requirements.

1101.2Where required.All roofs, paved areas, yards, courts and courtyards shall drain into a separate storm sewer system, or a combined sewer system, or to an approved place of disposal. In accordance with city department of environmental protection requirements, an approved system for beneficial collection and use of storm water may be installed in which case overflow from such a system shall be discharged to street storm sewer or street combined sewer.

1101.2.1Increases in existing impervious surfaces.Whenever an alteration increases impervious surfaces on the lot to greater than 20 percent of the impervious surfaces existing when the structure was constructed, such impervious surfaces shall drain into a storm sewer system, or a combined sewer system, or to an approved place of disposal.

Exception: Where the total area of impervious surfaces proposed to be increased by an alteration after the effective date of this code is less than or equal to 1,000 square feet (93 m2).

1101.3Prohibited drainage.Storm water shall not be drained into sewers intended for sewage only.

1101.4Tests.The conductors and the building storm drain shall be tested in accordance with Section PC 312.

1101.5Change in size.The size of a drainage pipe shall not be reduced in the direction of flow.

1101.6Fittings and connections.All connections and changes in direction of the storm drainage system shall be made with approved drainage-type fittings in accordance with Table 706.3. The fittings shall not obstruct or retard flow in the system.

1101.7Roof design.Roofs shall be designed for the maximum possible depth of water that will pond thereon as

determined by the relative levels of roof deck and overflow weirs, scuppers, edges or serviceable drains in combination with the deflected structural elements. In determining the maximum possible depth of water, all primary roof drains shall be assumed to be blocked.

1101.8 Cleanouts required. Cleanouts shall be installed in the storm drainage system and shall comply with the provisions of this code for sanitary drainage pipe cleanouts.

Exception: Subsurface drainage system.

1101.9 Backwater valves. Backwater valves installed in a storm drainage system shall conform to Section PC 715.

1101.10 Plastic pipe. Plastic piping and fittings shall not be used.

Exceptions:

1. Plastic piping and fittings may be used in residential buildings five stories or less in height.

2. Corrugated polyethylene piping and fittings, with a diameter of twelve inches (305 mm) or more may be used in connection with any type of building for underground yard drainage and storm water piping when used outside of the foundation wall of the building and not connecting to any piping system from the interior of the building.

1101.11 Site grading. Except as otherwise permitted by this code, no person shall perform site grading or land contour work, as defined in section 19-146 of the Administrative Code, which work would cause storm water to flow across sidewalks or onto an adjacent property.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

1101.2.1 added L.L. 8/2008 § 53, eff. July 1, 2008.

1101.5 amended L.L. 8/2008 § 54, eff. July 1, 2008.

1101.11 added L.L. 8/2008 § 55, eff. July 1, 2008.



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Chapter 11: STORM DRAINAGE
SECTION 1102: MATERIALS

NYC Administrative Code § 28-PC 1102

1102.1 General.

The materials and methods utilized for the construction and installation of storm drainage systems shall comply with this section and the applicable provisions of Chapter 7.

1102.2 Inside storm drainage conductors. Inside storm drainage conductors installed above ground shall conform to one of the standards listed in Table 702.1.

1102.3 Underground building storm drain pipe. Underground building storm drain pipe shall conform to one of the standards listed in Table 702.2.

1102.4 Building storm sewer pipe. Building storm sewer pipe shall conform to one of the standards listed in Table 1102.4. Table 1102.4 Building Storm Sewer Pipe Material Standard Cast-iron pipe ASTM A 74; ASTM A 888; CISPI 301 Concrete pipe ASTM C 14; ASTM C 76; CAN/CSA A257.1M; CAN/CSA A257.2M Ductile-iron pipe AWWA C151 High density polyethylene pipe (HDPE) ASTM D 3350 Non-asbestos fiber-cement pipe ASTM C 1449 Polyvinyl chloride (PVC) plastic pipe (Type DWV, SDR26, SDR35, SDR41, PS50 or PS100) ASTM D 2665; ASTM D 3034; ASTM F 891; CSA B182.2; CAN/CSA B182.4 Vitrified clay pipe ASTM C 4; ASTM C 700 Stainless steel drainage systems, Type 316 LASME A112.3.1a. Approved plastic sewer for piping 12 inches and larger.

1102.5 Subsoil drain pipe. Subsoil drains shall be open-jointed, horizontally split or perforated pipe conforming to one of the standards listed in Table 1102.5.3] Table 1102.5 Subsoil Drain Pipe Material Standard 1] Material Standard 2] Cast-iron pipe ASTM A 74; ASTM A 888; CISPI 301 Polyethylene (PE) plastic pipe ASTM F 405 Polyvinyl chloride (PVC) plastic pipe (type sewer pipe, PS25, PS50 or PS100) ASTM D 2729; ASTM F 891; CSA B 182.2; CAN/CSA B182.4 Porous concrete pipe ASTM C 654 Vitrified clay pipe ASTM C 4; ASTM C 700 Stainless steel drainage systems, Type 316 LASME A112.3.1

1102.6 Roof drains. Roof drains shall conform to ASME A112.21.2M or ASME A112.3.1.

1102.7 Fittings. Pipe fittings shall be approved for installation with the piping material installed, and shall conform to the respective pipe standards or one of the standards listed in Table 1102.7. The fittings shall not have ledges, shoulders or reductions capable of retarding or obstructing flow in the piping. Threaded drainage pipe fittings shall be of the recessed drainage type.

Table 1102.7 Pipe Fittings Material Standard	Cast-iron	ASME B16.4; ASME B16.12; ASTM A 888; CISPI 301; ASTM A 74	Chlorinated polyvinyl chloride (CPVC) plastic	ASTM F 437; ASTM F 438; ASTM F 439	ASME B16.15; ASME	Gray iron and ductile iron	AWWA C110	High-density polyethylene (HDPE)	ASTM D 3350	Malleable iron	ASME B16.3	Plastic, general	ASTM F 409	Polyethylene (PE) plastic	ASTM D 2609	Polyvinyl chloride (PVC) plastic	ASTM D 2464; ASTM D 2466; ASTM D 2467; CSA B137.2; ASTM D 2665; ASTM F 1866	Steel	ASME B16.9; ASME B16.11; ASME B16.28	Stainless steel drainage systems, Type 316L	ASME A112.3.1



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SECTION PC 1103: TRAPS

NYC Administrative Code § 28-PC 1103

1103.1 Main trap.

Leaders and storm drains connected to a combined sewer shall be trapped. Individual storm water traps shall be installed on the storm water drain branch serving each conductor, or a single trap shall be installed in the main storm drain just before its connection with the combined building sewer or the public sewer. A hooded catch basin located within the street line shall be the equivalent of a building house trap for the connection to a street combined sewer.

1103.2Material.Storm water traps shall be of the same material as the piping system to which they are attached.

1103.3Size.Traps for individual conductors shall be the same size as the horizontal drain to which they are connected.

1103.4Cleanout.An accessible cleanout shall be installed on the building side of the trap.



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SECTION PC 1104: CONDUCTORS AND CONNECTIONS

NYC Administrative Code § 28-PC 1104

1104.1 Prohibited use.

Conductor pipes shall not be used as soil, waste or vent pipes, and soil, waste or vent pipes shall not be used as conductors.

1104.2Combining storm with sanitary drainage.The sanitary and storm drainage systems of a structure shall be entirely separate except for minor modifications to existing buildings having combined systems. Where a combined building drain is utilized, the building storm drain shall be connected in the same horizontal plane through a single-wye fitting to the combined sewer at least 10 feet (3048 mm) downstream from any soil stack. If a separate city storm sewer is not available, building sanitary drains shall be separate and shall only be permitted to connect to common building combined sewer downstream of building house trap.

1104.3Clear water drains.Drains carrying clear water, i.e. air conditioning drips, pump drips, cooling water, etc. may discharge into the storm water drainage system through an indirect waste connection discharging into a trapped funnel or raised lip floor drain.



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SECTION PC 1105: ROOF DRAINS

NYC Administrative Code § 28-PC 1105

1105.1 Strainers.

Roof drains shall have strainers extending not less than 4 inches (102 mm) above the surface of the roof immediately adjacent to the roof drain. Strainers shall have an available inlet area, above roof level, of not less than one and one-half times the area of the conductor or leader to which the drain is connected.

1105.2Flat decks.Roof drain strainers for use on sun decks, parking decks and similar areas that are normally serviced and maintained shall comply with Section 1105.1 or shall be of the flat-surface type, installed level with the deck, with an available inlet area not less than two times the area of the conductor or leader to which the drain is connected.

1105.3Roof drain flashings.The connection between roofs and roof drains which pass through the roof and into the interior of the building shall be made water tight by the use of approved flashing material.



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SECTION 1106: SIZE OF CONDUCTORS, LEADERS

NYC Administrative Code § 28-PC 1106

1106.1 General.

The size of the vertical conductors and leaders, gutters, building storm drains, building storm sewers, and any horizontal branches of such drains or sewers shall be based on the 100-year hourly rainfall rate of 3 inches (76 mm) per hour. Sizing for secondary and combined primary and secondary conductors, leaders and drains shall be in accordance with Section PC 1107.

1106.2 Vertical conductors and leaders. Vertical conductors and leaders shall be sized for the maximum projected roof area, in accordance with Table 1106.2. Table 1106.2 Size of Vertical Conductors and Leaders

Diameter of Leader (inches)	Horizontally Projected Roof Area (square feet)	Rainfall rate (inches per hour)
3	2,960	3
4	6,130	5
6	17,995	8
8	38,660	11

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m². a. Sizes indicated are the diameter of circular piping. This table is applicable to piping of other shapes provided the cross-sectional shape fully encloses a circle of the diameter indicated in this table.

1106.3 Building storm drains and sewers. The size of the building storm drain, building storm sewer and their horizontal branches having a slope of one-half unit or less vertical in 12 units horizontal (4 percent slope) shall be based on the maximum projected roof area in accordance with Table 1106.3. The minimum slope of horizontal branches shall be one-eighth unit vertical in 12 units horizontal (1 percent slope) unless otherwise approved. Table 1106.3 Size of Horizontal Storm Drainage Piping

Size of Horizontal Piping (inches)	Horizontally Projected Roof Area (square feet)	Rainfall rate (inches per hour)
3	2,960	3
4	6,130	5
6	17,995	8
8	38,660	11

3

6

NYC Administrative Code § 28-PC 1106

1/8 unit vertical in 12 units horizontal (1 percent slope) 3 1,096 548 4 2,506 1,253 5 4,453 2,227 6 7,133 3,566 8 15,330 7,600 10 27,600 13,800 12 44,400 22,200 15 72,800 39,650

1/4 unit vertical in 12 units horizontal (2 percent slope) 3 1,546 773 4 3,533 1,766 5 6,293 3,146 6 10,066 5,033 8 21,733 10,866 10 38,950 19,450 12 62,600 31,350 15 112,000 56,000

1/2 unit vertical in 12 units horizontal (4 percent slope) 3 2,295 1,096 4 5,010 2,500 5 8,900 4,450 6 13,700 7,140 8 30,650 15,320 10 55,200 27,600 12 88,800 44,400 15 158,800 79,250 For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m².

1106.4 Vertical walls. In sizing roof drains and storm drainage piping, one-half of the area of any vertical wall that diverts rainwater to the roof shall be added to the projected roof area for inclusion in calculating the required size of vertical conductors, leaders and horizontal storm drainage piping.

1106.5 Parapet wall scupper location. Parapet wall roof drainage scupper and overflow scupper location shall comply with the requirements of the New York city building code.

1106.6 Size of roof gutters. The size of semicircular gutters shall be based on the maximum projected roof area in accordance with Table 1106.6. Table 1106.6 Size of Semicircular Roof Gutters Diameter of Gutters (inches)

Horizontally Projected Roof Area (square feet) Rainfall rate (inches per hour)

3 1/16 unit vertical in 12 units horizontal (0.5 percent slope) 3 226 4 480 5 834 6 1,280 7 1,840 8 2,655 10 4,800 1/8-unit vertical in 12 units horizontal (1 percent slope) 3 320 4 681 5 1,172 6 1,815 7 2,600 8 3,740 10 6,800 1/4 unit vertical in 12 units horizontal (2 percent slope) 3 454 4 960 5 1,668 6 2,560 7 3,860 8 5,310 10 9,600 1/2 unit vertical in 12 units horizontal (4 percent slope) 3 640 4 1,360 5 2,360 6 3,695 7 5,200 8 7,460 10 13,330 For SI: inch = 25.4 mm, 1 square foot = 0.0929 m².



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SECTION PC 1107: SECONDARY (EMERGENCY) ROOF DRAINS

NYC Administrative Code § 28-PC 1107

1107.1 Secondary drainage required.

Secondary (emergency) roof drains or scuppers shall be provided where the roof perimeter construction extends above the roof in such a manner that water will be entrapped if the primary drains allow buildup for any reason. The inlet elevation of secondary (overflow) drains and the invert elevation of overflow scuppers should be not less than 2 inches (51 mm) or more than 4 inches (102 mm) above the low point of the (adjacent to) roof surface unless a safer water depth loading, including the required hydraulic head to maintain required flow rate out of the overflow drainage system that has been determined by the structural design.

1107.2 Primary and secondary storm systems. Where practical secondary roof drain systems shall have the end point of discharge separate from the primary system. Discharge shall be above grade, in a location which would normally be observed by the building occupants or maintenance personnel. Where separate systems are impractical and to prevent water from flowing over sidewalk or pedestrian walkways, secondary drainage system may tie into the primary drainage system in the vertical conductors.

1107.3 Sizing of secondary drains. Secondary (emergency) roof drain systems shall be sized in accordance with Section PC 1106 based on the rainfall rate of 3 inches (76 mm) per hour. Scuppers shall be sized to prevent the depth of ponding water from exceeding that for which the roof was designed as determined by Section 1101.7. Scuppers shall not have an opening dimension of less than 4 inches (102 mm). Where secondary drainage systems tie into primary drainage systems, the combined primary and secondary system shall be sized based on their combined rainfall rate of 6 inches (152 mm) per hour.



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SECTION PC 1108: COMBINED SANITARY AND STORM SYSTEM

NYC Administrative Code § 28-PC 1108

1108.1 Size of combined drains and sewers.

The size of a combination sanitary and storm drain or sewer shall be computed in accordance with the method in Section 1106.3. The fixture units shall be converted into an equivalent projected roof or paved area. Where the total fixture load on the combined drain is less than or equal to 256 fixture units, the equivalent drainage area in horizontal projection shall be taken as 1333 square feet (124m²). Where the total fixture load exceeds 256 fixture units, each additional fixture unit shall be considered the equivalent of 5.2 square feet (.48m²) of drainage area. These values are based on a rainfall rate of 3 inch (75 mm) per hour.



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Chapter 11: STORM DRAINAGE

SECTION PC 1109: VALUES FOR CONTINUOUS FLOW

NYC Administrative Code § 28-PC 1109

1109.1 Equivalent roof area.

Where there is a continuous or semicontinuous discharge into the building storm drain or building storm sewer, such as from a pump, ejector, air conditioning plant or similar device, each gallon per minute of such discharge shall be computed as being equivalent to 32 square feet (2.97m²) of roof area, based on a rainfall rate of 3 inches (75 mm) per hour.



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Chapter 11: STORM DRAINAGE
SECTION PC 1110: CONTROLLED FLOW ROOF DRAIN SYSTEMS

NYC Administrative Code § 28-PC 1110

1110.1 General.

The roof of a structure shall be designed for the storage of water where the storm drainage system is engineered for controlled flow. The controlled flow roof drain system shall be an engineered system in accordance with this section and Section 28-113.2.2 of the Administrative Code. The controlled flow system shall be designed based on the design rainfall rate in accordance with Section 1106.1.

1110.2Control devices.The control devices shall be installed so that the rate of discharge of water per minute shall not exceed the values for continuous flow as indicated in Section 1109.1.

1110.3Installation.Runoff control shall be by control devices. Control devices shall be protected by strainers.

1110.4Minimum number of roof drains.Not less than two roof drains shall be installed in roof areas 10,000 square feet (929m²) or less and not less than four roof drains shall be installed in roofs over 10,000 square feet (929m²) in area.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

1110.1 amended L.L. 8/2008 § 56, eff. July 1, 2008.



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SECTION PC 1111: SUBSOIL DRAINS

NYC Administrative Code § 28-PC 1111

1111.1 Subsoil drains.

Subsoil drains shall be open-jointed, horizontally split or perforated pipe conforming to one of the standards listed in Table 1102.5. Such drains shall not be less than 4 inches (102 mm) in diameter. Where the building is subject to backwater, the subsoil drain shall be protected by an accessibly located backwater valve. Where subsoil drainage is discharged into a public sewer, the sub-soil drains shall discharge into a readily accessible silt and sand interceptor before being connected into the gravity drainage or sump system. Subsoil drainage shall discharge to a trapped area drain, sump, dry well or approved location above ground. The subsoil sump shall not be required to have either a gas-tight cover or a vent. The sump and pumping system shall comply with Section 1113.1.



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Chapter 11: STORM DRAINAGE

SECTION PC 1112: BUILDING SUBDRAINS

NYC Administrative Code § 28-PC 1112

1112.1 Building subdrains.

Building subdrains located below the public sewer level shall discharge into a sump or receiving tank, the contents of which shall be automatically lifted and discharged into the drainage system as required for building sumps. The sump and pumping equipment shall comply with Section 1113.1.



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SECTION PC 1113: SUMPS AND PUMPING SYSTEMS

NYC Administrative Code § 28-PC 1113

1113.1 Pumping system.

The sump pump, pit and discharge piping shall conform to Sections 1113.1.1 through 1113.1.4.

1113.1.1 Pump capacity and head. The sump pump shall be of a capacity and head appropriate to anticipated use requirements.

1113.1.2 Sump pit. The sump pit shall not be less than 18 inches (457 mm) in diameter and 24 inches (610 mm) deep, unless otherwise approved. The pit shall be accessible and located such that all drainage flows into the pit by gravity. The sump pit shall be constructed of tile, steel, plastic, cast-iron, concrete or other approved material, with a removable cover adequate to support anticipated loads in the area of use. The pit floor shall be solid and provide permanent support for the pump.

1113.1.3 Electrical. Electrical service outlets, when required, shall meet the requirements of the New York city electrical code.

1113.1.4 Piping. Discharge piping shall meet the requirements of Section 1102.2, 1102.3 or 1102.4 and shall include a gate valve and a full flow check valve. Pipe and fittings shall be the same size as, or larger than, pump discharge tapping.

Exception: In one- and two-family dwellings, only a check valve shall be required, located on the discharge piping from the pump or ejector.



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Chapter 12: SPECIAL PIPING AND STORAGE SYSTEMS
SECTION PC 1201: GENERAL

NYC Administrative Code § 28-PC 1201

1201.1 Scope.

The provisions of this chapter shall govern the design and installation of piping and storage systems for nonflammable medical gas systems and nonmedical oxygen systems. All maintenance and operations of such systems shall be in accordance with the New York city fire code.



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CHAPTER 6: THE NEW YORK CITY PLUMBING CODE
Chapter 12: SPECIAL PIPING AND STORAGE SYSTEMS
SECTION PC 1202: MEDICAL GASES

NYC Administrative Code § 28-PC 1202

1202.1 Nonflammable medical gases.

Nonflammable medical gas systems, inhalation anesthetic systems and vacuum piping systems shall be designed and installed in accordance with NFPA 99 and 99C.

Exceptions:

1. This section shall not apply to portable systems or cylinder storage.
2. Vacuum system exhaust shall comply with the New York city mechanical code.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

1202.1 amended L.L. 8/2008 § 57, eff. July 1, 2008.



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SECTION PC 1203: OXYGEN SYSTEMS

NYC Administrative Code § 28-PC 1203

1203.1 Design and installation.

Nonmedical oxygen systems shall be designed and installed in accordance with NFPA 50 and NFPA 51.



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SECTION PC 1204: OTHER CRYOGENIC SYSTEMS

NYC Administrative Code § 28-PC 1204

1204.1 Design and installation.

Design and installation of cryogenic systems shall be in accordance with Section 1202, 1203 and the New York City Fire Code.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 58, eff. July 1, 2008.



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CHAPTER 6: THE NEW YORK CITY PLUMBING CODE
Chapter 2: DEFINITIONS
SECTION PC 201: GENERAL

NYC Administrative Code § 28-PC 201

201.1 Scope.

Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter.

201.2Interchangeability.Words stated in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural the singular.

201.3Terms defined in other codes.Where terms are not defined in this code and are defined in the New York city building code, New York city fire code, New York city electrical code, New York city fuel gas code or the New York city mechanical code, such terms shall have the meanings ascribed to them as in those codes.

201.4Terms not defined.Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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CHAPTER 6: THE NEW YORK CITY PLUMBING CODE
Chapter 3: GENERAL REGULATIONS
SECTION PC 301: GENERAL

NYC Administrative Code § 28-PC 301

301.1 Scope.

The provisions of this chapter shall govern the general regulations regarding the installation of plumbing not specific to other chapters.

301.2 System installation. Plumbing shall be installed with due regard to preservation of the strength of structural members and prevention of damage to walls and other surfaces through fixture usage.

301.3 Connections to the sanitary drainage system. All plumbing fixtures, drains, appurtenances and appliances used to receive or discharge liquid wastes or sewage shall be directly connected to the sanitary drainage system of the building or premises, in accordance with the requirements of this code. This section shall not be construed to prevent the indirect waste systems required by Chapter 8.

Exception: Lavatories shall not be required to discharge to the sanitary drainage system where such fixtures discharge to a water recycling system in accordance with Appendix C and that is approved by the Commissioner.

301.4 Connections to water supply. Every building intended for human habitation, occupancy or use shall be directly or indirectly connected to the water supply system in accordance with the provisions of this code. Every plumbing fixture, device or appliance requiring or using water for its proper operation shall be directly or indirectly connected to the water supply system in accordance with the provisions of this code.

301.5 Pipe, tube and fitting sizes. Unless otherwise specified, the pipe, tube and fitting sizes specified in this code are expressed in nominal or standard sizes as designated in the referenced material standards.

301.6 Prohibited locations. Plumbing systems shall not be located in an elevator shaft or in an elevator equipment room.

Exception: Sump pumps and floor drains indirectly connected to the plumbing system shall be permitted at the base

of the shaft.

301.7Conflicts.Where conflicts between this code and the conditions of the listing or the manufacturer's installation instructions occur, the provisions of this code apply.

Exception: Where a code provision is less restrictive than the conditions of the listing of the equipment or appliance or the manufacturer's installation instructions, the conditions of the listing and manufacturer's installation instructions shall apply.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

301.3 Exception amended L.L. 8/2008 § 32, eff. July 1, 2008.

301.4 amended L.L. 8/2008 § 33, eff. July 1, 2008.



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SECTION PC 302: EXCLUSION OF MATERIALS DETRIMENTAL TO THE SEWER SYSTEM

NYC Administrative Code § 28-PC 302

302.1 Detrimental or dangerous materials.

Ashes, cinders or rags; flammable, poisonous or explosive liquids or gases; oil, grease or any other insoluble material capable of obstructing, damaging or overloading the building drainage or sewer system, or capable of interfering with the normal operation of the sewage treatment processes, shall not be deposited, by any means, into such systems.

302.2 Industrial wastes. Waste products from manufacturing or industrial operations shall not be introduced into the public sewer until it has been determined by the city department of environmental protection that the introduction thereof will not damage the public sewer system or interfere with the functioning of the sewage treatment plant.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 303: MATERIALS

NYC Administrative Code § 28-PC 303

303.1 Identification.

Each length of pipe and each pipe fitting, trap, fixture, material and device utilized in a plumbing system shall bear the identification of the manufacturer.

303.2 Installation of materials. All materials used shall be installed in strict accordance with the standards under which the materials are approved. In the absence of such installation procedures, the manufacturer's installation instructions shall be followed. Where the requirements of referenced standards or manufacturer's installation instructions do not conform to minimum provisions of this code, the provisions of this code shall apply.

303.3 Plastic pipe, fittings and components. Where permitted by this code, plastic pipe, fittings and components shall be third-party certified as conforming to NSF 14.

303.4 Third-party testing and certification. All plumbing products and materials shall comply with the referenced standards, specifications and performance criteria of this code and shall be identified in accordance with Section 303.1. When required by Table 303.4, plumbing products and materials shall either be tested by an approved third-party testing agency or certified by an approved third-party certification agency. 3] Table 303.4 Products and Materials Requiring Third-Party Testing and Third-Party Certification

Third-Party Tested 1] Product or Material Third-Party Certified

Third-Party Tested 2] Portable water supply system components and potable water fixture fittings Required =
Sanitary drainage and vent system components Plastic pipe, fittings and pipe-related components All others Waste fixture
fittings Plastic pipe, fittings and pipe-related components All others Storm drainage system components Plastic pipe,

fittings and pipe-related componentsAll others Plumbing fixtures= Required Plumbing appliancesRequired = Backflow prevention devicesRequired = Water distribution system safety devicesRequired = Special waste system components= Required Subsoil drainage system components= Required 4]

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]
303.2 amended L.L. 8/2008 § 34, eff. July 1, 2008.



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Chapter 3: GENERAL REGULATIONS
SECTION PC 304: RODENT PROOFING

NYC Administrative Code § 28-PC 304

304.1 General.

Plumbing systems shall be designed and installed in accordance with Sections 304.2 and 304.4 to prevent rodents from entering structures.

304.2 Strainer plates. All strainer plates on drain inlets shall be designed and installed so that all openings are not greater than 0.5 inch (12.7 mm) in least dimension.

304.3 Reserved.

304.4 Openings for pipes. In or on structures where openings have been made in walls, floors or ceilings for the passage of pipes, such openings shall be closed and protected in an approved manner.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 305: PROTECTION OF PIPES AND PLUMBING SYSTEM COMPONENTS

NYC Administrative Code § 28-PC 305

305.1 Corrosion.

Pipes passing through concrete or cinder walls and floors or other corrosive material shall be protected against external corrosion by a protective sheathing or wrapping or other means that will withstand any reaction from the lime and acid of concrete, cinder or other corrosive material. Sheathing or wrapping shall allow for expansion and contraction of piping to prevent any rubbing action. Minimum thickness of sheathing or wrapping material shall be 0.025 inch (0.64 mm).

305.2 Breakage. Pipes passing through or under walls shall be protected from breakage.

305.3 Stress and strain. Piping in a plumbing system shall be installed so as to prevent strains and stresses that exceed the structural strength of the pipe. Where necessary, provisions shall be made to protect piping from damage resulting from expansion, contraction and structural settlement.

305.4 Sleeves. Annular spaces between sleeves and pipes shall be filled or tightly caulked in an approved manner. Annular spaces between sleeves and pipes in fire-resistance-rated assemblies shall be filled or tightly caulked in accordance with the New York city building code.

305.5 Pipes through or under footings or foundation walls. Any pipe that passes under a footing or through a foundation wall shall be provided with a relieving arch, or a pipe sleeve pipe shall be built into the foundation wall. The sleeve shall be two pipe sizes greater than the pipe passing through the wall.

305.6 Freezing. Water, soil and waste pipes shall not be installed outside of a building, in attics or crawl spaces, concealed in outside walls, or in any other place subjected to freezing temperature unless adequate provision is made to protect such pipes from freezing by insulation or heat or both. Exterior water supply system piping shall be installed not less than 48 inches (1219 mm) below grade.

305.6.1Sewer depth.Building sewers that connect to private sewage disposal systems shall be a minimum of 36 inches (914 mm) below finished grade at the point of septic tank connection. Building sewers shall be a minimum of 36 inches (914 mm) below grade.

305.7Waterproofing of openings.Joints at the roof and around vent pipes, shall be made water tight by the use of lead, copper, galvanized steel, aluminum, plastic or other approved flashings or flashing material. Exterior wall openings shall be made water tight.

305.8Protection against physical damage.In concealed locations where piping, other than cast-iron or galvanized steel, is installed through holes or notches in studs, joists, rafters or similar members less than 1.5 inches (38 mm) from the nearest edge of the member, the pipe shall be protected by shield plates. Protective shield plates shall be a minimum of 0.062-inch-thick (1.6 mm) steel, shall cover the area of the pipe where the member is notched or bored, and shall extend a minimum of 2 inches (51 mm) above sole plates and below top plates.

305.9Protection of components of plumbing system.Components of a plumbing system installed along alleyways, driveways, parking garages or other locations exposed to damage shall be recessed into the wall or otherwise protected in an approved manner.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 306: TRENCHING, EXCAVATION AND BACKFILL

NYC Administrative Code § 28-PC 306

306.1 Support of piping.

Buried piping shall be supported throughout its entire length.

306.2 Trenching and bedding. Where trenches are excavated such that the bottom of the trench forms the bed for the pipe, solid and continuous load-bearing support shall be provided between joints. Bell holes, hub holes and coupling holes shall be provided at points where the pipe is joined. Such pipe shall not be supported on blocks to grade. In instances where the materials manufacturer's installation instructions are more restrictive than those prescribed by the code, the material shall be installed in accordance with the more restrictive requirement.

306.2.1 Overexcavation. Where trenches are excavated below the installation level of the pipe such that the bottom of the trench does not form the bed for the pipe, the trench shall be backfilled to the installation level of the bottom of the pipe with sand or fine gravel placed in layers of 6 inches (152 mm) maximum depth and such backfill shall be compacted after each placement.

306.2.2 Rock removal. Where rock is encountered in trenching, the rock shall be removed to a minimum of 3 inches (76 mm) below the installation level of the bottom of the pipe, and the trench shall be backfilled to the installation level of the bottom of the pipe with sand tamped in place so as to provide uniform load-bearing support for the pipe between joints. The pipe, including the joints, shall not rest on rock at any point.

306.2.3 Soft load-bearing materials. If soft materials of poor load-bearing quality are found at the bottom of the trench, pipe shall be hung from slab above.

306.3 Backfilling. Backfill shall be free from discarded construction material and debris. Loose earth free from rocks, broken concrete and frozen chunks shall be placed in the trench in 6 inch (152 mm) layers and tamped in place until the crown of the pipe is covered by 12 inches (305 mm) of tamped earth. The backfill under and beside the pipe shall be compacted for pipe support. Backfill shall be brought up evenly on both sides of the pipe so that the pipe

remains aligned. In instances where the manufacturer's installation instructions for materials are more restrictive than those prescribed by the code, the material shall be installed in accordance with the more restrictive requirement.

306.4 Tunneling. Where pipe is to be installed by tunneling, jacking or a combination of both, the pipe shall be protected from damage during installation and from subsequent uneven loading. Where earth tunnels are used, adequate supporting structures shall be provided to prevent future settling or caving.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 307: STRUCTURAL SAFETY

NYC Administrative Code § 28-PC 307

307.1 General.

In the process of installing or repairing any part of a plumbing and drainage installation, the finished floors, walls, ceilings, tile work or any other part of the building or premises that must be changed or replaced shall be left in a safe structural condition in accordance with the requirements of the New York city building code.

307.2Cutting, notching or bored holes.A framing member shall not be cut, notched or bored in excess of limitations specified in the New York city building code.

307.3Penetrations of floor/ceiling assemblies and fire-resistance-rated assemblies.Penetrations of floor/ceiling assemblies and assemblies required to have a fire-resistance rating shall be protected in accordance with the New York city building code.

307.4Alterations to trusses.Truss members and components shall not be cut, drilled, notched, spliced or otherwise altered in any way without written concurrence and approval of a registered design professional. Alterations resulting in the addition of loads to any member (e.g., HVAC equipment, water heater) shall not be permitted without verification that the truss is capable of supporting such additional loading.

307.5Trench location.Trenches installed parallel to footings shall not extend below the 45-degree (0.79 rad) bearing plane of the footing or wall.

307.6Piping materials exposed within plenums.All piping materials exposed within plenums shall comply with the provisions of the New York city mechanical code.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See
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SECTION PC 308: PIPING SUPPORT

NYC Administrative Code § 28-PC 308

308.1 General.

All plumbing piping shall be supported in accordance with this section.

308.2 Piping seismic supports. Where earthquake loads are applicable in accordance with the building code, plumbing piping supports shall be designed and installed for the seismic forces in accordance with the New York city building code.

308.3 Materials. Hangers, anchors and supports shall support the piping and the contents of the piping. Hangers and strapping material shall be of approved material that will not promote galvanic action.

308.4 Structural attachment. Hangers and anchors shall be attached to the building construction in an approved manner.

308.5 Interval of support. Pipe shall be supported in accordance with Table 308.5.

Exception: The interval of support for piping systems designed to provide for expansion/contraction shall conform to the engineered design in accordance with Section 28-113.2.2 of the Administrative Code. Table 308.5 Hanger Spacing

Piping Material	Maximum Horizontal Spacing (feet)	Maximum Vertical Spacing (feet)
ABS pipe	4	10
Brass pipe	10	10
Cast-iron pipe	5a At base and at each story height no greater than 20	12 At each story height no greater than 12
Copper or copper-alloy pipe	12	12
Copper or copper-alloy tubing	11/4-inch diameter and smaller	6 At each story height no greater than 10
Steel pipe	12 At every story height	10 At each story height no greater than 10
PVC pipe	4 10b Stainless steel drainage systems	10 10b For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. The maximum horizontal spacing of cast-iron pipe hangers shall be increased to 10 feet where 10-foot lengths of pipe are installed.
b. Midstory guide for sizes 2 inches and smaller.

11/4-inch diameter and smaller 6 At each story height no greater than 10 Copper or copper-alloy tubing,

11/2-inch diameter and larger 10 At each story height no greater than 10 Steel pipe 12 At every story height PVC pipe 4 10b Stainless steel drainage systems 10 10b For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm. a. The maximum horizontal spacing of cast-iron pipe hangers shall be increased to 10 feet where 10-foot lengths of pipe are installed. b. Midstory guide for sizes 2 inches and smaller.

308.6 Sway bracing. Rigid support sway bracing shall be provided at changes in direction greater than 45 degrees (0.79 rad) for pipe sizes 4 inches (102 mm) and larger.

308.7 Anchorage. Anchorage shall be provided to restrain drainage piping from axial movement.

308.7.1 Location. For pipe sizes greater than 4 inches (102 mm), restraints shall be provided for drain pipes at all changes in direction and at all changes in diameter greater than two pipe sizes. Braces, blocks, rodding and other suitable methods as specified by the coupling manufacturer shall be utilized.

308.8 Expansion joint fittings. Expansion joint fittings shall be used only where necessary to provide for expansion and contraction of the pipes. Expansion joint fittings shall be of the typical material suitable for use with the type of piping in which such fittings are installed.

308.9 Stacks. Bases of stacks shall be supported by concrete, brick laid in cement mortar or metal brackets attached to the building or by other approved methods.

308.10 Parallel water distribution systems. Piping bundles for manifold systems shall be supported in accordance with Table 308.5. Support at changes in direction shall be in accordance with the manufacturer's installation instructions. Hot and cold water piping shall not be grouped in the same bundle.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

308.5 amended L.L. 8/2008 § 35, eff. July 1, 2008.



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SECTION PC 309: FLOOD HAZARD RESISTANCE

NYC Administrative Code § 28-PC 309

309.1 General.

Plumbing systems and equipment in structures erected in flood hazard areas shall be constructed in accordance with the requirements of this section and Appendix G of the New York City Building Code.

309.2 Flood hazard. For structures located in flood hazard areas, the following systems and equipment shall be located at or above the design flood elevation:

Exception: In accordance with Appendix G of the New York City Building Code, the following systems are permitted to be located below the design flood elevation provided that the systems are designed and installed to prevent water from entering or accumulating within their components and the systems are constructed to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding to the design flood elevation.

1. All water service pipes.
2. Pump seals in individual water supply systems where the pump is located below the design flood elevation.
3. Covers on potable water wells shall be sealed, except where the top of the casing well or pipe sleeve is elevated to at least 1 foot (304.8 mm) above the design flood elevation.
4. All sanitary drainage piping.
5. All storm drainage piping.
6. Manhole covers shall be sealed, except where elevated to or above the design flood elevation.
7. All other plumbing fixtures, faucets, fixture fittings, piping systems and equipment.

8. Water heaters.

9. Vents and vent systems.

309.3 Flood hazard areas subject to high-velocity wave action. Structures located in flood hazard areas subject to high-velocity wave action shall meet the requirements of Section 309.2. The plumbing systems, pipes and fixtures shall not be mounted on or penetrate through walls intended to break away under flood loads.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

309.1 amended L.L. 8/2008 § 36, eff. July 1, 2008.

309.2 amended L.L. 8/2008 § 36, eff. July 1, 2008.



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SECTION PC 310: WASHROOM AND TOILET ROOM REQUIREMENTS

NYC Administrative Code § 28-PC 310

310.1 Light and ventilation.

Washrooms and toilet rooms shall be illuminated and ventilated in accordance with the New York city building code and New York city mechanical code.

310.2 Location of fixtures and piping. Piping, fixtures or equipment shall not be located in such a manner as to interfere with the normal operation of windows, doors or other means of egress openings.

310.3 Interior finish. Interior finish surfaces of toilet rooms shall comply with the New York city building code.

310.4 Water closet compartment. Each water closet utilized by the public or employees shall occupy a separate compartment with walls or partitions and a door enclosing the fixtures to ensure privacy.

Exceptions:

1. Water closet compartments shall not be required in a single-occupant toilet room with a lockable door.
2. Toilet rooms located in day care and child-care facilities and containing two or more water closets shall be permitted to have one water closet without an enclosing compartment.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 311: TOILET FACILITIES FOR WORKERS

NYC Administrative Code § 28-PC 311

311.1 General.

Toilet facilities shall be provided for construction workers and such facilities shall be maintained in a sanitary condition. Construction worker toilet facilities of the nonsewer type shall conform to ANSI Z4.3.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 312: TESTS AND INSPECTIONS

NYC Administrative Code § 28-PC 312

312.1 Required tests.

The licensed master plumber shall make the applicable tests prescribed in sections 312.2 through 312.9 to determine compliance with the provisions of this code. The licensed master plumber shall give two days notice to the commissioner when the plumbing work is ready for tests. The equipment, material, power and labor necessary for the inspection and test shall be furnished by the licensed master plumber and the licensed master plumber shall be responsible for determining that the work will withstand the test pressure prescribed in the following tests. All plumbing system piping shall be tested with either water or, for piping systems other than plastic, by air. After the plumbing fixtures have been set and their traps filled with water, the entire drainage system shall be submitted to final tests. The commissioner shall require the removal of any cleanouts if necessary to ascertain whether the pressure has reached all parts of the system.

Exception: The repair, replacement or alteration to existing water waste, vent or storm water piping or the addition of no more than three (3) plumbing fixtures or roof drains to an existing floor of an existing building, shall require only a visual inspection of waste, vent and storm water pipe roughing and finish in addition to a pressure test of water piping at available building water pressure.

312.1.1 Test gauges. Gauges used for testing shall be as follows:

1. Tests requiring a pressure of 10 psi or less shall utilize a testing gauge having increments of 0.10 psi or less.
2. Tests requiring a pressure of greater than 10 psi but less than or equal to 100 psi shall utilize a testing gauge having increments of 1 psi or less.
3. Tests requiring a pressure of greater than 100 psi shall utilize a testing gauge having increments of 2 psi or less.

312.1.2 Witnessing tests. Tests in accordance with this code shall be witnessed by department plumbing inspectors

or approved agencies. The department shall prescribe qualifications for individuals who are authorized to witness such tests on behalf of approved agencies, including but not limited to the requirement that such individuals shall be licensed master plumbers or registered design professionals with not less than five years experience in the inspection and testing of piping systems. Such tests may be conducted without any verifying inspection or tests by the department, provided that verified statements and supporting inspectorial and test reports are filed with the department within one working day of such tests.

312.2 Drainage and vent water test. A water test shall be applied to the drainage system either in its entirety or in sections. If applied to the entire system, all openings in the piping shall be tightly closed, except the highest opening, and the system shall be filled with water to the point of overflow. If the system is tested in sections, each opening shall be tightly plugged except the highest openings of the section under test, and each section shall be filled with water, but no section shall be tested with less than a 10 foot (3048 mm) head of water. In testing successive sections, at least the upper 10 feet (3048 mm) of the next preceding section shall be tested so that no joint or pipe in the building, except the uppermost 10 feet (3048 mm) of the system, shall have been submitted to a test of less than a 10 foot (3048 mm) head of water. This pressure shall be held for at least 15 minutes. The system shall then be tight at all points.

312.3 Drainage and vent air test. An air test shall be made by forcing air into the system until there is a uniform gauge pressure of 5 pounds per square inch (psi) (34.5 kPa). This pressure shall be held for a test period of at least 15 minutes. Any adjustments to the test pressure required because of changes in ambient temperature or the seating of gaskets shall be made prior to the beginning of the test period.

312.4 Drainage and vent final test. The final test of the completed drainage and vent system shall be visual and in sufficient detail to determine compliance with the provisions of this code except that the plumbing shall be subjected to a smoke test where necessary for cause. Where the smoke test is utilized, it shall be made by filling all traps with water and then introducing into the entire system a pungent, thick smoke produced by one or more smoke machines. When the smoke appears at stack openings on the roof, the stack openings shall be closed and a pressure equivalent to a 1-inch water column (248.8 Pa) shall be held for a test period of not less than 15 minutes.

312.5 Water supply system test. Upon completion of a section of or the entire water supply system, the system, or portion completed, shall be tested and proved tight under a water pressure of 50 psi above its normal working pressure but not less than 150 psi. The water utilized for tests shall be obtained from a potable source of supply. The required tests shall be performed in accordance with this section and Section PC 107.

312.5.1 Water service pipe. In addition to any requirements of Section 312.5, tests for water service pipes shall comply with the following:

1. In the presence of the tapper or inspector of the Department of Environmental Protection, each new service pipe or repaired service pipe shall be subjected to a water test made under the street main pressure.
2. All such pipes and appurtenances shall remain uncovered for the duration of the test and shall show no sign of leakage.
3. When any question arises as to the installation conforming with these regulations, an internal hydrostatic test as specified for materials may be applied, subject to the approval of the Department of Environmental Protection.

312.6 Gravity sewer test. Gravity sewer tests shall consist of plugging the end of the building sewer at the point of connection with the public sewer, filling the building sewer with water, testing with not less than a 10-foot (3048 mm) head of water and maintaining such pressure for 15 minutes.

312.7 Forced sewer test. Forced sewer tests shall consist of plugging the end of the building sewer at the point of connection with the public sewer and applying a pressure of 5 psi (34.5 kPa) greater than the shut off pump rating, and maintaining such pressure for 15 minutes.

312.8 Storm drainage system test. Storm drain systems within a building shall be tested by water or air in accordance with Sections 312.2 or 312.3.

312.9 Inspection and testing of backflow prevention assemblies. Inspection and testing shall comply with Sections 312.9.1 and 312.9.2.

312.9.1 Inspections. Annual inspections shall be made of all backflow prevention assemblies and air gaps to determine whether they are operable.

312.9.2 Testing. Reduced pressure principle backflow preventer assemblies, double check-valve assemblies, pressure vacuum breaker assemblies, reduced pressure detector fire protection backflow prevention assemblies, double check detector fire protection backflow prevention assemblies, hose connection backflow preventers, and spill-proof vacuum breakers shall be tested at the time of installation, immediately after repairs or relocation. Refer to Section 608.13 and the city department of environmental protection for additional testing requirements. The testing procedure shall be performed in accordance with one of the following standards: ASSE 5013, ASSE 5015, ASSE 5020, ASSE 5047, ASSE 5048, ASSE 5052, ASSE 5056, CAN/CSA, B64.10.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

312.1.2 added L.L. 8/2008 § 37, eff. July 1, 2008.

312.5.1 added L.L. 8/2008 § 37, eff. July 1, 2008.



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Chapter 3: GENERAL REGULATIONS
SECTION PC 313: EQUIPMENT EFFICIENCIES

NYC Administrative Code § 28-PC 313

313.1 General.

Equipment efficiencies shall be in accordance with the New York state energy conservation construction code.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See
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SECTION PC 314: CONDENSATE DISPOSAL

NYC Administrative Code § 28-PC 314

314.1 Fuel-burning appliances.

Liquid combustion by-products of condensing appliances shall be collected and discharged to an approved plumbing fixture or disposal area in accordance with the manufacturer's installation instructions. Condensate piping shall be of approved corrosion-resistant material and shall not be smaller than the drain connection on the appliance. Such piping shall maintain a minimum horizontal slope in the direction of discharge of not less than one-eighth unit vertical in 12 units horizontal (1-percent slope).

314.2Evaporators and cooling coils.Condensate drain systems shall be provided for equipment and appliances containing evaporators or cooling coils. Condensate drain systems shall be designed, constructed and installed in accordance with Sections 314.2.1 through 314.2.3.

314.2.1Condensate disposal.Condensate from all cooling coils and evaporators shall be conveyed from the drain pan outlet to an approved place of disposal. Condensate shall not discharge into a street, alley or other areas so as to cause a nuisance.

314.2.2Drain pipe materials and sizes.Components of the condensate disposal system shall be cast iron, galvanized steel, copper, ABS, or PVC pipe. All components shall be selected for the pressure and temperature rating of the installation. Condensate waste and drain line size shall not be less than 3/4 inch (19 mm) internal diameter and shall not decrease in size from the drain pan connection to the place of condensate disposal. Where the drain pipes from more than one unit are manifolded together for condensate drainage, the pipe or tubing shall be sized in accordance with an approved method. All horizontal sections of drain piping shall be installed in uniform alignment at a uniform slope.

314.2.3Auxiliary and secondary drain systems.In addition to the requirements of Section 314.2.1, a secondary drain or auxiliary drain pan shall be required for each cooling or evaporator coil where damage to any building components will occur as a result of overflow from the equipment drain pan or stoppage in the condensate drain piping. One of the following methods shall be used:

1. An auxiliary drain pan with a separate drain shall be provided under the coils on which condensation will occur. The auxiliary pan drain shall discharge to a conspicuous point of disposal to alert occupants in the event of a stoppage of the primary drain. The pan shall have a minimum depth of 1.5 inches (38 mm), shall not be less than 3 inches (76 mm) larger than the unit or the coil dimensions in width and length and shall be constructed of corrosion-resistant material. Metallic pans shall have a minimum thickness of not less than 0.0276 inch (0.7 mm) galvanized sheet metal. Nonmetallic pans shall have a minimum thickness of not less than 0.0625 inch (1.6 mm).

2. A separate overflow drain line shall be connected to the drain pan provided with the equipment. Such overflow drain shall discharge to a conspicuous point of disposal to alert occupants in the event of a stoppage of the primary drain. The overflow drain line shall connect to the drain pan at a higher level than the primary drain connection.

3. An auxiliary drain pan without a separate drain line shall be provided under the coils on which condensate will occur. Such pan shall be equipped with a water level detection device that will shut off the equipment served prior to overflow of the pan. The auxiliary drain pan shall be constructed in accordance with Item 1 of 314.2.3.

314.2.4Traps. Condensate drains shall be trapped as required by the equipment or appliance manufacturer.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 401: GENERAL

NYC Administrative Code § 28-PC 401

401.1 Scope.

This chapter shall govern the materials, design and installation of plumbing fixtures, faucets and fixture fittings in accordance with the type of occupancy, and shall provide for the minimum number of fixtures for various types of occupancies.

401.2 Prohibited fixtures and connections. Water closets having a concealed trap seal or an unventilated space or having walls that are not thoroughly washed at each discharge in accordance with ASME A112.19.2M shall be prohibited. Any water closet that permits siphonage of the contents of the bowl back into the tank shall be prohibited. Trough urinals shall be prohibited.

401.3 Water conservation. The maximum water flow rates and flush volume for plumbing fixtures and fixture fittings shall comply with 604.4.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 402: FIXTURE MATERIALS

NYC Administrative Code § 28-PC 402

402.1 Quality of fixtures.

Plumbing fixtures shall be constructed of approved materials, with smooth, impervious surfaces, free from defects and concealed fouling surfaces, and shall conform to standards cited in this code. All porcelain enameled surfaces on plumbing fixtures shall be acid resistant.

402.2Materials for specialty fixtures.Materials for specialty fixtures not otherwise covered in this code shall be of stainless steel, soapstone, chemical stoneware or plastic, or shall be lined with lead, copper-base alloy, nickel-copper alloy, corrosion-resistant steel or other material especially suited to the application for which the fixture is intended.

402.3Sheet copper.Sheet copper for general applications shall conform to ASTM B 152 and shall not weigh less than 12 ounces per square foot (3.7 kg/m²).

402.4Sheet lead.Sheet lead for pans shall not weigh less than 4 pounds per square foot (19.5 kg/m²) coated with an asphalt paint or other approved coating.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 403: MINIMUM PLUMBING FACILITIES

NYC Administrative Code § 28-PC 403

403.1 Minimum number of fixtures.

Plumbing fixtures shall be provided for the type of occupancy and in the minimum number shown in Table 403.1. Types of occupancies not shown in Table 403.1 shall be considered individually by the commissioner. The number of occupants shall be determined by the New York city building code. Occupancy classification shall be determined in accordance with the New York city building code.

403.1.1 Unisex toilet and bath fixtures. Fixtures located within unisex toilet and bathing rooms complying with Section 404 are permitted to be included in determining the minimum required number of fixtures for assembly and mercantile occupancies.

403.2 Separate facilities. Where plumbing fixtures are required, separate facilities shall be provided for each sex.

Exceptions:

1. Separate facilities shall not be required for private facilities.
2. Separate employee facilities shall not be required in occupancies in which 15 or less people are employed.
3. Separate facilities shall not be required in structures or tenant spaces with a total occupant load, including both employees and customers, of 15 or less.

403.3 Number of occupants of each sex. The required water closets, lavatories, and showers or bathtubs shall be distributed equally between the sexes based on the percentage of each sex anticipated in the occupant load. The occupant load shall be composed of 50 percent of each sex, unless statistical data approved by the commissioner indicate a different distribution of the sexes.

403.4 Location of employee toilet facilities in occupancies other than assembly or mercantile. Access to toilet

facilities in occupancies other than mercantile and assembly occupancies shall be from within the employees' working area. Employee facilities shall be either separate facilities or combined employee and public facilities.

Exception: Facilities that are required for employees in storage structures or kiosks, and are located in adjacent structures under the same ownership, lease or control, shall be a maximum travel distance of 500 feet (152,400 mm) from the employees' working area.

403.4.1 Travel distance. The required toilet facilities in occupancies other than assembly or mercantile shall be located not more than one story above or below the employee's working area and the path of travel to such facilities shall not exceed a distance of 500 feet (152,400 mm).

Exception: The location and maximum travel distances to required employee toilet facilities in factory and industrial occupancies are permitted to exceed that required in Section 403.4.1, provided the location and maximum travel distance are approved by the commissioner.

403.5 Location of employee toilet facilities in mercantile and assembly occupancies. Employees shall be provided with toilet facilities in building and tenant spaces utilized as restaurants, nightclubs, places of public assembly and mercantile occupancies. The employee facilities shall be either separate facilities or combined employee and public facilities. The required toilet facilities shall be located not more than one story above or below the employees' work area and the path of travel to such facilities, in other than covered malls, shall not exceed a distance of 500 feet (152,400 mm). The path of travel to required facilities in covered malls shall not exceed a distance of 300 feet (91,440 mm).

Exception: Employee toilet facilities shall not be required in tenant spaces where the travel distance from the main entrance of the tenant space to a central toilet area does not exceed 300 feet (91,440 mm) and such central toilet facilities are located not more than one story above or below the tenant space.

403.6 Public facilities. Customers, patrons and visitors shall be provided with public toilet facilities in structures and tenant spaces intended for public utilization. Public toilet facilities shall be located not more than one story above or below the space required to be provided with public toilet facilities and the path of travel to such facilities shall not exceed a distance of 500 feet (152 m).

Exception: Public utilization of toilet facilities shall not be required for establishments less than 10,000 square feet in Occupancy Groups B or M.

403.6.1 Covered malls. In covered mall buildings, the path of travel to required toilet facilities shall not exceed a distance of 300 feet (91 440 mm). Facilities shall be installed in each individual store or in a central toilet area located in accordance with this section. The maximum travel distance to the central toilet facilities in covered mall buildings shall be measured from the main entrance of any store or tenant space.

403.6.2 Pay facilities. Where pay facilities are installed, such facilities shall be in excess of the required minimum facilities. Required facilities shall be free of charge.

403.7 Signage. Required public facilities shall be designated by a legible sign for each sex. Signs shall be readily visible and located near the entrance to each toilet facility.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

403.1 Table amended L.L. 8/2008 § 38, eff. July 1, 2008.

403.1.1 added L.L. 8/2008 § 39, eff. July 1, 2008.



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SECTION PC 404: ACCESSIBLE PLUMBING FACILITIES

NYC Administrative Code § 28-PC 404

404.1 Where required.

Accessible plumbing facilities and fixtures shall be provided in accordance with the New York city building code.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See
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SECTION PC 405: INSTALLATION OF FIXTURES

NYC Administrative Code § 28-PC 405

405.1 Water supply protection.

The supply lines and fittings for every plumbing fixture shall be installed so as to prevent backflow.

405.2 Access for cleaning. Plumbing fixtures shall be installed so as to afford easy access for cleaning both the fixture and the area around the fixture.

405.3 Setting. Fixtures shall be set level and in proper alignment with reference to adjacent walls.

405.3.1 Water closets, urinals, lavatories and bidets. A water closet, urinal, lavatory or bidet shall not be set closer than 15 inches (381 mm) from its center to any side wall, partition, vanity or other obstruction, or closer than 30 inches (762 mm) center-to-center between water closets, urinals or adjacent fixtures. There shall be at least a 21 inch (533 mm) clearance in front of the water closet, urinal or bidet to any wall, fixture or door. Water closet compartments shall not be less than 30 inches (762 mm) wide or 60 inches (1524 mm) deep. There shall be at least a 21 inch (533 mm) clearance in front of a lavatory to any wall, fixture or door (see Figure 405.3.1).
[SEE graphical material in printed version]

405.3.2 Public lavatories. In employee and public toilet rooms, the required lavatory shall be located in the same room as the required water closet.

405.4 Floor and wall drainage connections. Connections between the drain and floor outlet plumbing fixtures shall be made with a floor flange. The flange shall be attached to the drain and anchored to the structure. Connections between the drain and wall-hung water closets shall be made with an approved extension nipple or horn adapter. The water closet shall be bolted to the hanger with corrosion-resistant bolts or screws. Joints shall be sealed with an approved elastomeric gasket, flange-to-fixture connection complying with ASME A112.4.3 or setting compound conforming to FS TT-P-1536A.

405.4.1Floor flanges.Floor flanges for water closets or similar fixtures shall not be less than 0.125 inch (3.2 mm) thick for brass, 0.25 inch (6.4 mm) thick for plastic, and 0.25 inch (6.4 mm) thick and not less than a 2 inch (51 mm) caulking depth for cast-iron or galvanized malleable iron.

Floor flanges of hard lead shall weigh not less than 1 pound, 9 ounces (0.7 kg) and shall be composed of lead alloy with not less than 7.75 percent antimony by weight. Closet screws and bolts shall be of brass. Flanges shall be secured to the building structure with corrosion-resistant screws or bolts.

405.4.2Securing floor outlet fixtures.Floor outlet fixtures shall be secured to the floor or floor flanges by screws or bolts of corrosion-resistant material.

405.4.3Securing wall-hung water closet bowls.Wall-hung water closet bowls shall be supported by a concealed metal carrier that is attached to the building structural members so that strain is not transmitted to the closet connector or any other part of the plumbing system. The carrier shall conform to ASME A112.6.1M or ASME A112.6.2.

405.5Water-tight joints.Joints formed where fixtures come in contact with walls or floors shall be sealed.

405.6Plumbing in mental health centers.In mental health centers, pipes or traps shall not be exposed, and fixtures shall be bolted through walls.

405.7Design of overflows.Where any fixture is provided with an overflow, the waste shall be designed and installed so that standing water in the fixture will not rise in the overflow when the stopper is closed, and no water will remain in the overflow when the fixture is empty.

405.7.1Connection of overflows.The overflow from any fixture shall discharge into the drainage system on the inlet or fixture side of the trap.

Exception: The overflow from a flush tank serving a water closet or urinal shall discharge into the fixture served.

405.8Slip joint connections.Slip joints shall be made with an approved elastomeric gasket and shall only be installed on the trap outlet, trap inlet and within the trap seal. Fixtures with concealed slip-joint connections shall be provided with an access panel or utility space at least 12 inches (305 mm) in its smallest dimension or other approved arrangement so as to provide access to the slip joint connections for inspection and repair.

405.9Design and installation of plumbing fixtures.Integral fixture fitting mounting surfaces on manufactured plumbing fixtures or plumbing fixtures constructed on site, shall meet the design requirements of ASME A112.19.2M or ASME A112.19.3M.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 406: AUTOMATIC CLOTHES WASHERS

NYC Administrative Code § 28-PC 406

406.1 Approval.

All automatic clothes washers shall conform to ASSE 1007.

406.2 Water connection. The water supply to an automatic clothes washer shall be protected against backflow by an air gap installed integrally within the machine conforming to ASSE 1007 or with the installation of a backflow preventer in accordance with Section PC 608.

406.3 Waste connection. The waste from an automatic clothes washer shall discharge through an air break into a standpipe in accordance with Section 802.4 or into a laundry sink. The trap and fixture drain for an automatic clothes washer standpipe shall be a minimum of 2 inches (51 mm) in diameter. The automatic clothes washer fixture drain shall connect to a branch drain or drainage stack a minimum of 3 inches (76 mm) in diameter.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 407: BATHTUBS

NYC Administrative Code § 28-PC 407

407.1 Approval.

Bathtubs shall conform to ANSI Z124.1, ASME A112.19.1M, ASME A112.19.4M, ASME A112.19.9M, CSA B45.2, CSA B45.3 or CSA B45.5.

407.2 Bathtub waste outlets. Bathtubs shall have waste outlets a minimum of 1.5 inches (38 mm) in diameter. The waste outlet shall be equipped with an approved stopper.

407.3 Glazing. Windows and doors within a bathtub enclosure shall conform to the safety glazing requirements of the New York city building code.

407.4 Bathtub enclosure. Doors within a bathtub enclosure shall conform to ASME A112.19.15.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 408: BIDETS

NYC Administrative Code § 28-PC 408

408.1 Approval.

Bidets shall conform to ASME A112.19.2M, ASME A112.19.9M or CSA B45.1.

408.2 Water connection. The water supply to a bidet shall be protected against backflow by an air gap or backflow preventer in accordance with Sections 608.13.1, 608.13.2, 608.13.3, 608.13.5, 608.13.6 or 608.13.8.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 409: DISHWASHING MACHINES

NYC Administrative Code § 28-PC 409

409.1 Approval.

Domestic dishwashing machines shall conform to ASSE 1006. Commercial dishwashing machines shall conform to ASSE 1004 and NSF 3.

409.2 Water connection. The water supply to a dishwashing machine shall be protected against backflow by an air gap or backflow preventer in accordance with Section PC 608.

409.3 Waste connection. The waste connection of a dishwashing machine shall comply with Sections 802.1.6 or 802.1.7, as applicable.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 410: DRINKING FOUNTAINS

NYC Administrative Code § 28-PC 410

410.1 Approval.

Drinking fountains shall conform to ASME A112.19.1M, ASME A112.19.2M or ASME A112.19.9M, and water coolers shall conform to ARI 1010. Drinking fountains and water coolers shall conform to NSF 61, Section 9. Where water is served in restaurants, drinking fountains shall not be required. In other occupancies, where drinking fountains are required, bottled water dispensers shall be permitted to be substituted for not more than 50 percent of the required drinking fountains.

410.2 Prohibited location. Drinking fountains shall not be installed in public restrooms.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 411: EMERGENCY SHOWERS AND EYEWASH STATIONS

NYC Administrative Code § 28-PC 411

411.1 Approval.

Emergency showers and eyewash stations shall conform to ISEA Z358.1.

411.2Waste connection.Waste connections shall not be required for emergency showers and eyewash stations.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 412: FLOOR AND TRENCH DRAINS

NYC Administrative Code § 28-PC 412

412.1 Approval.

Floor drains shall conform to ASME A112.6.3, ASME A112.3.1 or CSA B79. Trench drains shall comply with ASME A112.6.3.

412.2 Floor drain trap and strainer. Floor drain traps shall have removable strainers. The strainer shall have a waterway area of not less than the area of the tailpiece. The floor drain shall be constructed so that the drain is capable of being cleaned. Access shall be provided to the drain inlet.

412.3 Size of floor drains. Floor drains shall have a minimum 3 inch (76 mm) diameter drain outlet.

412.4 Public laundries and central washing facilities. In public coin-operated laundries and in the central washing facilities of multiple-family dwellings, the rooms containing automatic clothes washers shall be provided with floor drains located to readily drain the entire floor area. Such drains shall have a minimum 3 inch (76 mm) diameter drain outlet and be provided with lint strainers.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 413: FOOD WASTE GRINDER UNITS

NYC Administrative Code § 28-PC 413

413.1 Approval.

Domestic food waste grinders shall conform to ASSE 1008. Food waste grinders shall not increase the drainage fixture unit load on the sanitary drainage system.

413.2 Domestic food waste grinder waste outlets. Domestic food waste grinders shall be connected to a drain of not less than 2 inches (51 mm) in diameter.

413.3 Reserved.

413.4 Water supply required. All food waste grinders shall be provided with a supply of cold water.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 414: GARBAGE CAN WASHERS

NYC Administrative Code § 28-PC 414

414.1 Water connection.

The water supply to a garbage can washer shall be protected against backflow by an air gap or a backflow preventer in accordance with Section 608.13.1, 608.13.2, 608.13.3, 608.13.5, 608.13.6 or 608.13.8.

414.2Waste connection.Garbage can washers shall be trapped separately. The receptacle receiving the waste from the washer shall have a removable basket or strainer to prevent the discharge of large particles into the drainage system.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 415: LAUNDRY TRAYS

NYC Administrative Code § 28-PC 415

415.1 Approval.

Laundry trays shall conform to ANSI Z124.6, ASME A112.19.1M, ASME A112.19.3M, ASME A112.19.9M, CSA B45.2 or CSA B45.4.

415.2Waste outlet.Each compartment of a laundry tray shall be provided with a waste outlet a minimum of 1.5 inches (38 mm) in diameter and a strainer or crossbar to restrict the clear opening of the waste outlet.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION 416: LAVATORIES

NYC Administrative Code § 28-PC 416

416.1 Approval.

Lavatories shall conform to ANSI Z124.3, ASME A112.19.1M, ASME A112.19.2M, ASME A112.19.3M, ASME A112.19.4M, ASME A112.19.9M, CSA B45.1, CSA B45.2, CSA B45.3 or CSA B45.4. Group wash-up equipment shall conform to the requirements of Section PC 402. Every 20 inches (508 mm) of rim space shall be considered as one lavatory.

416.2 Cultured marble lavatories. Cultured marble vanity tops with an integral lavatory shall conform to ANSI Z124.3 or CSA B45.5.

416.3 Lavatory waste outlets. Lavatories shall have waste outlets not less than 1.25 inches (32 mm) in diameter. A strainer, pop-up stopper, crossbar or other device shall be provided to restrict the clear opening of the waste outlet.

416.4 Moveable lavatory systems. Moveable lavatory systems shall comply with ASME A112.19.12.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 417: SHOWERS

NYC Administrative Code § 28-PC 417

417.1 Approval.

Prefabricated showers and shower compartments shall conform to ANSI Z124.2, ASME A112.19.9M or CSA B45.5. Shower valves for individual showers shall conform to the requirements of Section 424.3.

417.2 Water supply riser. Every water supply riser from the shower valve to the shower head outlet, whether exposed or not, shall be attached to the structure in an approved manner.

417.3 Shower waste outlet. Waste outlets serving showers shall be at least 2 inches (51 mm) in diameter and, for other than waste outlets in bathtubs, shall have removable strainers not less than 3 inches (76 mm) in diameter with strainer openings not less than 0.25 inch (6.4 mm) in minimum dimension. Where each shower space is not provided with an individual waste outlet, the waste outlet shall be located and the floor pitched so that waste from one shower does not flow over the floor area serving another shower. Waste outlets shall be fastened to the waste pipe in an approved manner.

417.4 Shower compartments. All shower compartments shall have a minimum of 900 square inches (0.58 m²) of interior cross-sectional area. Shower compartments shall not be less than 30 inches (762 mm) in minimum dimension measured from the finished interior dimension of the compartment, exclusive of fixture valves, showerheads, soap dishes, and safety grab bars or rails. Except as required in Section PC 404, the minimum required area and dimension shall be measured from the finished interior dimension at a height equal to the top of the threshold and at a point tangent to its centerline and shall be continued to a height not less than 70 inches (1778 mm) above the shower drain outlet.

417.4.1 Wall area. The wall area above built-in tubs with installed shower heads and in shower compartments shall be constructed of smooth, noncorrosive and nonabsorbent waterproof materials to a height not less than 6 feet (1829 mm) above the room floor level, and not less than 70 inches (1778 mm) where measured from the compartment floor at the drain. Such walls shall form a water-tight joint with each other and with either the tub, receptor or shower floor.

417.5 Shower floors or receptors. Floor surfaces shall be constructed of impervious, noncorrosive, nonabsorbent and waterproof materials.

417.6 Glazing. Windows and doors within a shower enclosure shall conform to the safety glazing requirements of the New York city building code.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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417.1 amended L.L. 8/2008 § 40, eff. July 1, 2008.



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SECTION PC 418: SINKS

NYC Administrative Code § 28-PC 418

418.1 Approval.

Sinks shall conform to ANSI Z124.6, ASME A112.19.1M, ASME A112.19.2M, ASME A112.19.3M, ASME A112.19.4M, ASME A112.19.9M, CSA B45.1, CSA B45.2, CSA B45.3 or CSA B45.4.

418.2 Sink waste outlets. Sinks shall be provided with waste outlets a minimum of 2 inches (51mm) in diameter. A strainer or crossbar shall be provided to restrict the clear opening of the waste outlet.

418.3 Moveable sink systems. Moveable sink systems shall comply with ASME A112.19.12.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 419: URINALS

NYC Administrative Code § 28-PC 419

419.1 Approval.

Urinals shall conform to ASME A112.19.2M, CSA B45.1 or CSA B45.5. Urinals shall conform to the water consumption requirements of Section 604.4. Urinals shall conform to the hydraulic performance requirements of ASME A112.19.6, CSA B45.1 or CSA B45.5.

419.2 Substitution for water closets. In each bathroom or toilet room, urinals shall not be substituted for more than 50 percent of the required water closets.

419.3 Surrounding material. Wall and floor space to a point 2 feet (610 mm) in front of a urinal lip and 4 feet (1219 mm) above the floor and at least 2 feet (610 mm) to each side of the urinal shall be waterproofed with a smooth, readily cleanable, nonabsorbent material.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 420: WATER CLOSETS

NYC Administrative Code § 28-PC 420

420.1 Approval.

Water closets shall conform to the water consumption requirements of Section 604.4 and shall conform to ANSI Z124.4, ASME A112.19.2M, CSA B45.1, CSA B45.4 or CSA B45.5. Water closets shall conform to the hydraulic performance requirements of ASME A112.19.6. Water closet tanks shall conform to ANSI Z124.4, ASME A112.19.2, ASME A112.19.9M, CSA B45.1, CSA B45.4 or CSA B45.5. Electro-hydraulic water closets shall comply with ASME A112.19.13.

420.2 Water closets for public or employee toilet facilities. Water closet bowls for public or employee toilet facilities shall be of the elongated type.

420.3 Water closet seats. Water closets shall be equipped with seats of smooth, nonabsorbent material. All seats of water closets provided for public or employee toilet facilities shall be of the hinged open-front type. Integral water closet seats shall be of the same material as the fixture. Water closet seats shall be sized for the water closet bowl type.

420.4 Water closet connections. A 4-inch by 3-inch (102 mm by 76 mm) closet bend shall be acceptable. Where a 3-inch (76 mm) bend is utilized on water closets, a 4-inch by 3-inch (102 mm by 76 mm) flange shall be installed to receive the fixture horn.

420.5 Water closets for children's use. In nurseries, schools, and similar places where plumbing fixtures are provided for the use of children under six years of age, such water closets shall be of a size and height suitable for the children's use.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 421: WHIRLPOOL BATHTUBS

NYC Administrative Code § 28-PC 421

421.1 Approval.

Whirlpool bathtubs shall comply with ASME A112.19.7M or with CSA B45.5 and CSA B45 (Supplement 1).

421.2 Installation. Whirlpool bathtubs shall be installed and tested in accordance with the manufacturer's installation instructions. The pump shall be located above the weir of the fixture trap. Access shall be provided to the pump.

421.3 Drain. The pump drain and circulation piping shall be sloped to drain the water in the volute and the circulation piping when the whirlpool bathtub is empty.

421.4 Suction fittings. Suction fittings for whirlpool bathtubs shall comply with ASME A112.19.8M.

421.5 Whirlpool enclosure. Doors within a whirlpool enclosure shall conform to ASME A112.19.15.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 422: HEALTH CARE FIXTURES AND EQUIPMENT

NYC Administrative Code § 28-PC 422

422.1 Scope.

This section shall govern those aspects of health care plumbing systems that differ from plumbing systems in other structures. Health care plumbing systems shall conform to the requirements of this section in addition to the other requirements of this code. The provisions of this section shall apply to the special devices and equipment installed and maintained in the following occupancies: nursing homes, homes for the aged, orphanages, infirmaries, first aid stations, psychiatric facilities, clinics, professional offices of dentists and doctors, mortuaries, educational facilities, surgery, dentistry, research and testing laboratories, establishments manufacturing pharmaceutical drugs and medicines, and other structures with similar apparatus and equipment classified as plumbing.

422.2Approval. All special plumbing fixtures, equipment, devices and apparatus shall be of an approved type.

422.3Protection. All devices, appurtenances, appliances and apparatus intended to serve some special function, such as sterilization, distillation, processing, cooling, or storage of ice or foods, and that connect to either the water supply or drainage system, shall be provided with protection against backflow, flooding, fouling, contamination of the water supply system and stoppage of the drain.

422.4Materials. Fixtures designed for therapy, special cleansing or disposal of waste materials, combinations of such purposes, or any other special purpose, shall be of smooth, impervious, corrosion-resistant materials and, where subjected to temperatures in excess of 180(degrees)F (82(degrees)C), shall be capable of withstanding, without damage, higher temperatures.

422.5Access. Access shall be provided to concealed piping in connection with special fixtures where such piping contains steam traps, valves, relief valves, check valves, vacuum breakers or other similar items that require periodic inspection, servicing, maintenance or repair. Access shall be provided to concealed piping that requires periodic inspection, maintenance or repair.

422.6Clinical sink.A clinical sink shall have an integral trap in which the upper portion of a visible trap seal provides a water surface. The fixture shall be designed so as to permit complete removal of the contents by siphonic or blowout action and to reseal the trap. A flushing rim shall provide water to cleanse the interior surface. The fixture shall have the flushing and cleansing characteristics of a water closet.

422.7Prohibited usage of clinical sinks and service sinks.A clinical sink serving a soiled utility room shall not be considered as a substitute for, or be utilized as, a service sink. A service sink shall not be utilized for the disposal of urine, fecal matter or other human waste.

422.8Ice prohibited in soiled utility room.Machines for manufacturing ice, or any device for the handling or storage of ice, shall not be located in a soiled utility room.

422.9Sterilizer equipment requirements.The approval and installation of all sterilizers shall conform to the requirements of the New York city mechanical code.

422.9.1Sterilizer piping.Access for the purposes of inspection and maintenance shall be provided to all sterilizer piping and devices necessary for the operation of sterilizers.

422.9.2Steam supply.Steam supplies to sterilizers, including those connected by pipes from overhead mains or branches, shall be drained to prevent any moisture from reaching the sterilizer. The condensate drainage from the steam supply shall be discharged by gravity.

422.9.3Steam condensate return.Steam condensate returns from sterilizers shall be a gravity return system.

422.9.4Condensers.Pressure sterilizers shall be equipped with a means of condensing and cooling the exhaust steam vapors. Nonpressure sterilizers shall be equipped with a device that will automatically control the vapor, confining the vapors within the vessel.

422.10Special elevations.Control valves, vacuum outlets and devices protruding from a wall of an operating, emergency, recovery, examining or delivery room, or in a corridor or other location wherepatients are transported on a wheeled stretcher, shall be located at an elevation that prevents bumping the patient or stretcher against the device.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 423: SPECIALTY PLUMBING FIXTURES

NYC Administrative Code § 28-PC 423

423.1 Water connections.

Baptisteries, ornamental and lily pools, aquariums, ornamental fountain basins, swimming pools, and similar constructions, where provided with water supplies, shall be protected against backflow in accordance with Section PC 608.

423.2 Approval. Specialties requiring water and waste connections shall be submitted for approval.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 424: FAUCETS AND OTHER FIXTURE FITTINGS

NYC Administrative Code § 28-PC 424

424.1 Approval.

Faucets and fixture fittings shall conform to ASME A112.18.1 or CSA B125. Faucets and fixture fittings that supply drinking water for human ingestion shall conform to the requirements of NSF 61, section 9. Flexible water connectors exposed to continuous pressure shall conform to the requirements of Section 605.6.

424.1.1Faucets and supply fittings.Faucets and supply fittings shall conform to the water consumption requirements of Section 604.4.

424.1.2Waste fittings.Waste fittings shall conform to one of the standards listed in Tables 702.1 and 702.4 for above-ground drainage and vent pipe and fittings, or the waste fittings shall be constructed of tubular stainless steel with a minimum wall thickness of 0.012 inch (0.30 mm), tubular copper alloy having a minimum wall thickness of 0.027 inch (0.69 mm) or tubular plastic complying with ASTM F 409.

424.2Hand showers.Hand-held showers shall conform to ASSE 1014 or CSA B125.

424.3Shower and tub valves.Shower, tub and shower-tub combination valves shall be balanced pressure, thermostatic or combination balanced-pressure/thermostatic valves that conform to the requirements of ASSE 1016 or CSA B125. Multiple (gang) showers supplied with a single tempered water supply pipe shall have the water supply for such showers controlled by a master thermostatic mixing valve complying with ASSE 1017. Shower, tub and shower-tub combination valves and master thermostatic mixing valves required by this section shall be equipped with a means to limit the maximum setting of the valve to 120(degrees)FF (49(degrees)FC), which shall be field adjusted in accordance with the manufacturer's instructions.

424.4Hose-connected outlets.Faucets and fixture fittings with hose-connected outlets shall conform to ASME A112.18.3M.

424.5 Temperature-actuated, flow reduction valves for individual fixture fittings. Temperature-actuated, flow reduction devices, where installed for individual fixture fittings, shall conform to ASSE 1062. Such valves shall not be used alone as a substitute for the balanced pressure, thermostatic or combination shower valves required in Section 424.3.

424.6 Transfer valves. Deck-mounted bath/shower transfer valves containing an integral atmospheric vacuum breaker shall conform to the requirements of ASME A112.18.7.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

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SECTION PC 425: FLUSHING DEVICES FOR WATER CLOSETS AND URINALS

NYC Administrative Code § 28-PC 425

425.1 Flushing devices required.

Each water closet, urinal, clinical sink and any plumbing fixture that depends on trap siphonage to discharge the fixture contents to the drainage system shall be provided with a flushometer valve, flushometer tank or a flush tank designed and installed to supply water in quantity and rate of flow to flush the contents of the fixture, cleanse the fixture and refill the fixture trap.

425.1.1 Separate for each fixture. A flushing device shall not serve more than one fixture.

425.2 Flushometer valves and tanks. Flushometer valves and tanks shall comply with ASSE 1037. Vacuum breakers on flushometer valves shall conform to the performance requirements of ASSE 1001 or CAN/CSA-B64.1.1. Access shall be provided to vacuum breakers. Flushometer valves shall be of the water-conservation type and shall not be utilized where the water pressure is lower than the minimum required for normal operation. When operated, the valve shall automatically complete the cycle of operation, opening fully and closing positively under the water supply pressure. Each flushometer valve shall be provided with a means for regulating the flow through the valve. The trap seal to the fixture shall be automatically refilled after each valve flushing cycle.

425.3 Flush tanks. Flush tanks equipped for manual flushing shall be controlled by a device designed to refill the tank after each discharge and to shut off completely the water flow to the tank when the tank is filled to operational capacity. The trap seal to the fixture shall be automatically refilled after each flushing. The water supply to flush tanks equipped for automatic flushing shall be controlled with a timing device or sensor control devices.

425.3.1 Fill valves. All flush tanks shall be equipped with an antisiphon fill valve conforming to ASSE 1002 or CSA B125. The fill valve backflow preventer shall be located at least 1 inch (25 mm) above the full opening of the overflow pipe.

425.3.2 Overflows in flush tanks. Flush tanks shall be provided with overflows discharging to the water closet or

urinal connected thereto and shall be sized to prevent flooding the tank at the maximum rate at which the tanks are supplied with water according to the manufacturer's design conditions. The opening of the overflow pipe shall be located above the flood level rim of the water closet or urinal or above a secondary overflow in the flush tank.

425.3.3 Sheet copper. Sheet copper utilized for flush tank linings shall conform to ASTM B 152 and shall not weigh less than 10 ounces per square foot (0.03 kg/m²).

425.3.4 Access required. All parts in a flush tank shall be accessible for repair and replacement.

425.4 Flush pipes and fittings. Flush pipes and fittings shall be of nonferrous material and shall conform to ASME A112.19.5 or CSA B125.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

425.4 renumbered (former 425.5) L.L. 8/2008 § 41, eff. July 1, 2008.

425.4 repealed L.L. 8/2008 § 41, eff. July 1, 2008.



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SECTION PC 426: MANUAL FOOD AND BEVERAGE DISPENSING EQUIPMENT

NYC Administrative Code § 28-PC 426

426.1 Approval.

Manual food and beverage dispensing equipment shall conform to the requirements of NSF 18.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See
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SECTION PC 427: FLOOR SINKS

NYC Administrative Code § 28-PC 427

427.1 Approval.

Sanitary floor sinks shall conform to the requirements of ASME A112.6.7.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See
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Chapter 5: WATER HEATERS
SECTION PC 501: GENERAL

NYC Administrative Code § 28-PC 501

501.1 Scope.

The provisions of this chapter shall govern the materials, design and installation of water heaters and the related safety devices and ap-purtenances.

501.2Water heater as space heater.Where a combination potable water heating and space heating system requires water for space heating at temperatures higher than 140(degrees)F (60(degrees)C), a master thermostatic mixing valve complying with ASSE 1017 shall be provided to limit the water supplied to the potable hot water distribution system to a temperature of 140(degrees)F (60(degrees)C) or less. The potability of the water shall be maintained throughout the system.

501.3Drain valves.Drain valves for emptying shall be installed at the bottom of each tank-type water heater and hot water storage tank. Drain valves shall conform to ASSE 1005.

501.4Location.Water heaters and storage tanks shall be located and connected so as to provide access for observation, maintenance, servicing and replacement.

501.5Water heater labeling.All water heaters shall be third-party certified.

501.6Water temperature control in piping from tankless heaters.The temperature of water from tankless water heaters shall be a maximum of 140(degrees)F (60(degrees)C) when intended for domestic uses. This provision shall not supersede the requirement for protective shower valves in accordance with Section 424.3.

501.7Pressure marking of storage tanks.Storage tanks and water heaters installed for domestic hot water shall have the maximum allowable working pressure clearly and indelibly stamped in the metal or marked on a plate welded thereto or otherwise permanently attached. Such markings shall be in an accessible position outside of the tank so as to make inspection or reinspection readily possible.

501.8 Temperature controls. All hot water supply systems shall be equipped with automatic temperature controls capable of adjustments from the lowest to the highest acceptable temperature settings for the intended temperature operating range.



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Chapter 5: WATER HEATERS
SECTION PC 502: INSTALLATION

NYC Administrative Code § 28-PC 502

502.1 General.

Water heaters shall be installed in accordance with the manufacturer's installation instructions. Oil-fired water heaters shall conform to the requirements of this code and the New York city mechanical code. Electric water heaters shall conform to the requirements of this code and provisions of the New York city electrical code. Gas-fired water heaters shall conform to the requirements of the New York city fuel gas code.

502.2 Rooms used as a plenum. Water heaters using solid, liquid or gas fuel shall not be installed in a room containing air-handling machinery when such room is used as a plenum.

502.3 Water heaters installed in attics. Electric water heaters only shall be installed in attics. An attic containing a water heater shall be provided with an opening and unobstructed passageway large enough to allow removal of the water heater. The passageway shall not be less than 30 inches (762 mm) high and 22 inches (559 mm) wide and not more than 20 feet (6096 mm) in length when measured along the centerline of the passageway from the opening to the water heater. The passage way shall have continuous solid flooring not less than 24 inches (610 mm) wide. A level service space at least 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present at the front or service side of the water heater. The clear access opening dimensions shall be a minimum of 20 inches by 30 inches (508 mm by 762 mm) where such dimensions are large enough to allow removal of the water heater.

502.4 Seismic supports. Where earthquake loads are applicable in accordance with the New York city building code, water heater supports shall be designed and installed for the seismic forces in accordance with the New York city building code.



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Chapter 5: WATER HEATERS
SECTION PC 503: CONNECTIONS

NYC Administrative Code § 28-PC 503

503.1 Cold water line valve.

The cold water branch line from the main water supply line to each hot water storage tank or water heater shall be provided with a valve, located near the equipment and serving only the hot water storage tank or water heater. The valve shall not interfere or cause a disruption of the cold water supply to the remainder of the cold water system. The valve shall be provided with access on the same floor level as the water heater served.

503.2 Water circulation. The method of connecting a circulating water heater to the tank shall provide proper circulation of water through the water heater. The pipe or tubes required for the installation of appliances that will draw from the water heater or storage tank shall comply with the provisions of this code for material and installation.



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SECTION PC 504: SAFETY DEVICES

NYC Administrative Code § 28-PC 504

504.1 Antisiphon devices.

An approved means, such as a cold water "dip" tube with a hole at the top or a vacuum relief valve installed in the cold water supply line above the top of the heater or tank, shall be provided to prevent siphoning of any storage water heater or tank.

504.2 Vacuum relief valve. Bottom fed water heaters and bottom fed tanks connected to water heaters shall have a vacuum relief valve installed. The vacuum relief valve shall comply with ANSI Z21.22.

504.3 Shutdown. A means for disconnecting an electric hot water supply system from its energy supply shall be provided in accordance with the New York city electrical code. A separate valve shall be provided to shut off the energy fuel supply to all other types of hot water supply systems.

504.4 Relief valve. All storage water heaters operating above atmospheric pressure shall be provided with an approved, self-closing (levered) pressure relief valve and temperature relief valve or combination thereof. The relief valve shall conform to ANSI Z21.22. The relief valve shall not be used as a means of controlling thermal expansion.

504.4.1 Installation. Such valves shall be installed in the shell of the water heater tank. Temperature relief valves shall be so located in the tank as to be actuated by the water in the top 6 inches (152 mm) of the tank served. For installations with separate storage tanks, the valves shall be installed on the tank and there shall not be any type of valve installed between the water heater and the storage tank. There shall not be a check valve or shutoff valve between a relief valve and the heater or tank served.

504.5 Relief valve approval. Temperature and pressure relief valves, or combinations thereof, and energy cutoff devices shall bear the label of an approved agency and shall have a temperature setting of not more than 210(degrees)F (99(degrees)C) and a pressure setting not exceeding the tank or water heater manufacturer's rated working pressure or 150 psi (1035 kPa), whichever is less. The relieving capacity of each pressure relief valve and each temperature relief

valve shall equal or exceed the heat input to the water heater or storage tank.

504.6Relief outlet waste.The outlet of a pressure, temperature or other relief valve shall not be directly connected to the drainage system.

504.6.1Discharge.The relief valve shall discharge full size to a safe place of disposal such as the floor, outside the building, or an indirect waste receptor. The discharge pipe shall not have any trapped sections and shall have a visible air gap or air gap fitting located in the same room as the water heater. The outlet end of the discharge pipe shall not be threaded and such discharge pipe shall not have a valve or tee installed. Relief valve piping shall be piped independent of other equipment drains or relief valve discharge piping to the disposal point. Such pipe shall be installed in a manner that does not cause personal injury to occupants in the immediate area or structural damage to the building.

504.6.2Materials.Relief valve discharge piping shall be of those materials listed in Section 605.4 or shall be tested, rated and approved for such use in accordance with ASME A112.4.1. Piping from safety pan drains shall be of those materials listed in Table 605.4.

504.7Required pan.Where water heaters or hot water storage tanks are installed in locations where leakage of the tanks or connections will cause damage, the tank or water heater shall be installed in a galvanized steel pan having a minimum thickness of 24 gage, or other pans approved for such use.

504.7.1Pan size and drain.The pan shall be not less than 1.5 inches (38 mm) deep and shall be of sufficient size and shape to receive all dripping or condensate from the tank or water heater. The pan shall be drained by an indirect waste pipe having a minimum diameter of 3/4 inch (19 mm).

504.7.2Pan drain termination.The pan drain shall extend full-size and terminate over a suitably located indirect waste receptor or floor drain or extend to the exterior of the building and terminate not less than 6 inches (152 mm) and not more than 24 inches (610 mm) above the adjacent ground surface.

504.8Flow sensing switch.On copper fin tube, gas fired domestic hot water heaters, a flow switch shall be provided to interrupt the gas supply to the heater in the event water flow through the coil is interrupted.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

504.6.2 amended L.L. 8/2008 § 42, eff. July 1, 2008.



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SECTION PC 505: INSULATION

NYC Administrative Code § 28-PC 505

505.1 Unfired vessel insulation.

Unfired hot water storage tanks shall be insulated so that heat loss is limited to a maximum of 15 British thermal units per hour (Btu/h) per square foot (47 W/m²) of external tank surface area. For purposes of determining this heat loss, the design ambient temperature shall not be higher than 65(degrees)F (18(degrees)C).



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CHAPTER 6: THE NEW YORK CITY PLUMBING CODE
Chapter 6: WATER SUPPLY AND DISTRIBUTION
SECTION PC 601: GENERAL

NYC Administrative Code § 28-PC 601

601.1 Scope.

This chapter shall govern the materials, design and installation of water supply systems, both hot and cold, for utilization in connection with human occupancy and habitation and shall govern the installation of individual water supply systems.

601.2Solar energy utilization.Solar energy systems used for heating potable water or using an independent medium for heating potable water shall comply with the applicable requirements of this code. The use of solar energy shall not compromise the requirements for cross connection or protection of the potable water supply system required by this code.

601.3Existing piping used for grounding.Existing metallic water service piping used for electrical grounding shall not be replaced with nonmetallic pipe or tubing until other approved means of grounding is provided.

601.4Tests.The potable water distribution system shall be tested in accordance with Section 312.5.

601.5Water Supply.The water distribution system shall be connected to a public water main if available. Where a public water main is not available, an individual potable water supply shall be provided. Any such private system shall be provided subject to the approval of the commissioner and of any other agency or agencies having jurisdiction.

601.5.1Extensions of public water mains.Extensions of public water mains shall be made in accordance with the regulations of the Department of Environmental Protection.

601.5.2Availability of public water main to other than one- or two-family dwellings.A public water main shall be deemed available to a building, other than a one- or two-family dwelling, if a property line of such building is within 500 feet (152 m), measured along a street, alley, or right-of-way, of the public water supply system. The extension and connection shall be made in accordance with the applicable standards of the Department of Environmental Protection.

Exception: Where a substantial improvement of a building is contemplated on a tract of land, the public water supply system may be declared available thereto by the agencies having jurisdiction thereon even though the specified distance is exceeded.

601.5.3 Availability of public water main to one- or two-family dwellings. A public water main shall be deemed available to a one- and two-family dwelling if a property line of such dwelling is within 100 feet (30 480 mm), measured along a street, alley, or right-of-way, of the public water supply system. The extension and connection shall be made in accordance with the applicable standards of the Department of Environmental Protection.

Exception: Where two or more one- or two-family dwellings are to be constructed on a tract of land, the public water supply system may be declared available thereto by the agencies having jurisdiction thereon even though the specified distance is exceeded.

601.6 Destruction of abandoned corporation stops and wet connections. All driven corporation stops, when abandoned, shall be removed and replaced by plugs. All wet connections or screw corporation stops, when abandoned, shall be destroyed in place, and all exposed portions of the service pipe shall be cut and removed. Where a corporation stop or wet connection is destroyed and the connecting service pipe is one that is equipped with a curb valve and box, the curb box shall be removed. The expense in connection with the abandonment or destruction of a corporation stop or wet connection shall be chargeable to the owner of the property into which the service pipe entered.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

601.5 amended L.L. 8/2008 § 43, eff. July 1, 2008.

601.5.1 added L.L. 8/2008 § 43, eff. July 1, 2008.

601.5.2 added L.L. 8/2008 § 43, eff. July 1, 2008.

601.5.3 added L.L. 8/2008 § 43, eff. July 1, 2008.

601.6 added L.L. 8/2008 § 43, eff. July 1, 2008.



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SECTION PC 602: WATER REQUIRED

NYC Administrative Code § 28-PC 602

602.1 General.

Every structure equipped with plumbing fixtures and utilized for human occupancy or habitation shall be provided with a potable supply of water in the amounts and at the pressures specified in this chapter.

602.2 Potable water required. Only potable water shall be supplied to plumbing fixtures that provide water for drinking, bathing or culinary purposes, or for the processing of food, medical or pharmaceutical products. Unless otherwise provided in this code, potable water shall be supplied to all plumbing fixtures.

602.3 Individual water supply. Where a potable public water supply is not available, individual sources of potable water supply shall be utilized. No well or individual water supply shall be installed for any purpose without approval of the commissioner, the Department of Health and Mental Hygiene and the Department of Environmental Protection.

602.3.1 Sources. Dependent on geological and soil conditions and the amount of rainfall, individual water supplies are of the following types: drilled well, driven well, dug well, bored well, or cistern. Surface bodies of water and land cisterns shall not be sources of individual water supply unless properly treated by approved means to prevent contamination.

602.3.2 Minimum quantity. The combined capacity of the source and storage in an individual water supply system shall supply the fixtures with water at rates and pressures as required by this chapter.

602.3.3 Water quality. Water from an individual water supply shall be approved as potable by the authority having jurisdiction prior to connection to the plumbing system.

602.3.4 Disinfection of system. After construction or major repair, the individual water supply system shall be purged of deleterious matter and disinfected in accordance with Section PC 610.

602.3.5 Pumps. Pumps shall be rated for the transport of potable water. Pumps in an individual water supply system

shall be constructed and installed so as to prevent contamination from entering a potable water supply through the pump units. Pumps shall be sealed to the well casing or covered with a water-tight seal. Pumps shall be designed to maintain a prime and installed such that ready access is provided to the pump parts of the entire assembly for repairs.

602.3.5.1 Pump enclosure. The pump room or enclosure around a well pump shall be drained and protected from freezing by heating or other approved means. Where pumps are installed in basements, such pumps shall be mounted on a block or shelf not less than 18 inches (457 mm) above the basement floor. Well pits shall be prohibited.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

602.3 amended L.L. 8/2008 § 44, eff. July 1, 2008.



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Chapter 6: WATER SUPPLY AND DISTRIBUTION
SECTION PC 603: WATER SERVICE

NYC Administrative Code § 28-PC 603

603.1 Size of water service pipe.

The water service pipe shall be sized to supply water to the structure in the quantities and at the pressures required in this code. The minimum diameter of water service pipe shall be 1 inch (25mm).

603.2 Separation of water service and building sewer. Water service pipe and the building sewer shall be separated by 5 feet (1524 mm) of undisturbed or compacted earth.

Exceptions:

1. The required separation distance shall not apply where the bottom of the water service pipe within 5 feet (1524 mm) of the sewer is a minimum of 12 inches (305 mm) above the top of the highest point of the sewer and the pipe materials conform to Section 703.1.

2. Water service pipe is permitted to be located in the same trench with a building sewer, provided such sewer is constructed of materials listed in Table 702.2.

3. The required separation distance shall not apply where a water service pipe crosses a sewer pipe provided the water service pipe is sleeved to at least 5 feet (1524 mm) horizontally from the sewer pipe centerline, on both sides of such crossing with pipe materials listed in Table 605.3, Table 702.2 or Table 702.3.

603.2.1 Water service near sources of pollution. Potable water service pipes shall not be located in, under or above cesspools, septic tanks, septic tank drainage fields or seepage pits (see Section 605.1 for soil and groundwater conditions) and shall be separated by a minimum of 10 feet (3048 mm) and shall meet all NEW YORK city department of environmental protection requirements.

603.3 Installation of service pipe. Each new service pipe shall be installed in accordance with the rules of the Department of Environmental Protection.

603.4 Location of meters. The service pipe between the house control valve and the meter shall be kept exposed. All meter locations shall be subject to approval by the Department of Environmental Protection.

603.5 Connections to city water mains. Connections to city water mains shall comply with the rules of the Department of Environmental Protection.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

603.3 added L.L. 8/2008 § 45, eff. July 1, 2008.

603.4 added L.L. 8/2008 § 45, eff. July 1, 2008.

603.5 added L.L. 8/2008 § 45, eff. July 1, 2008.



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SECTION PC 604: DESIGN OF BUILDING WATER DISTRIBUTION SYSTEM

NYC Administrative Code § 28-PC 604

604.1 General.

The design of the water distribution system shall conform to accepted engineering practice. Methods utilized to determine pipe sizes shall be approved.

604.2 System interconnection. At the points of interconnection between the hot and cold water supply piping systems and the individual fixtures, appliances or devices, provisions shall be made to prevent flow between such piping systems.

604.3 Water distribution system design criteria. The water distribution system shall be designed, and pipe sizes shall be selected such that under conditions of peak demand, the capacities at the fixture supply pipe outlets shall not be less than shown in Table 604.3. The minimum flow rate and flow pressure provided to fixtures and appliances not listed in Table 604.3 shall be in accordance with the manufacturer's installation instructions.

Fixture Supply Outlet Serving	Flow Ratea (gpm)	Flow Pressureb (psi)
1] Fixture Supply Outlet Serving	Flow Ratea (gpm)	Flow Pressureb (psi)
2] Bathtub	4 8	
Bidet	2 4	
Combination fixture	4 8	
Dishwasher, residential	2.75 8	
Drinking fountain	0.75 8	
Laundry tray	4 8	
Lavatory	2 8	
Shower	3 8	
Shower, temperature controlled	3 20	
Sillcock, hose bibb	5 8	
Sink, residential	2.5 8	
Sink, service	3 8	
Urinal, valve	15 15	
Water closet, blow out, flushometer valve	35 25	
Water closet, flushometer tank	1.6 15	
Water closet, siphonic, flushometer valve	25 15	
Water closet, tank, close coupled	3 8	
Water closet, tank, one piece	6 20	

4] For SI: 1 pound per square inch = 6.895 kPa, 1 gallon per minute = 3.785 L/m.a. For additional requirements for flow rates and quantities, see Section 604.4.b. Minimum pressures as per manufacturer's recommendations.

604.4 Maximum flow and water consumption. The maximum water consumption flow rates and quantities for all plumbing fixtures and fixture fittings shall be in accordance with Table 604.4.

Exceptions:

1. Blowout design water closets (3.5 gallons (13 L) per flushing cycle).
2. Vegetable sprays.
3. Clinical sinks (4.5 gallons (17 L) per flushing cycle).
4. Service sinks.

5. Emergency showers.

Table 604.4 Maximum Flow Rates and Consumption for Plumbing Fixtures and Fixture Fittings

Plumbing Fixture or Fixture Fitting	Maximum Flow Rate or Quantity
Lavatory, private	2.2 gpm at 60 psi
Lavatory, public, (metering)	0.25 gallon per metering cycle
Lavatory, public (other than metering)	0.5 gpm at 60 psi
Shower head	2.5 gpm at 80 psi
Sink faucet	2.2 gpm at 60 psi
Urinal	1.0 gallon per flushing cycle
Water closet	1.6 gallons per flushing cycle

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. A hand-held shower spray is a shower head.

b. Consumption tolerances shall be determined from referenced standards.

604.5 Size of fixture supply. The minimum size of a fixture supply pipe shall be as shown in Table 604.5. The fixture supply pipe shall not terminate more than 24 inches (610 mm) from the point of connection to the fixture. Each fixture supply shall have a stop valve. A reduced-size flexible water connector installed between the supply pipe and the fixture shall be of an approved type. The connector shall be used singularly. Coupling of two or more connectors shall not be allowed. The supply pipe shall extend to the floor or wall adjacent to the fixture. The minimum size of individual distribution lines utilized in parallel water distribution systems shall be as shown in Table 604.5.3.]

Table 604.5 Minimum Sizes of Fixture Water Supply Pipes

Fixture	Minimum Pipe Size (inch)
1] Fixture	Minimum Pipe Size (inch)
2] Bathtub	3/4 (60" x 32" and smaller)
1/2 Bathtub	3/4 (larger than 60" x 32")
1/2 Bidet	3/8
Combination sink and tray	1/2
Dishwasher, domestic	1/2
Drinking fountain	3/8
Hose bibbs	1/2
Kitchen sink	1/2
Laundry, 1, 2 or 3 compartments	1/2
Lavatory	3/8
Shower, single head	1/2
Sinks, flushing rim	3/4
Sinks, service	1/2
Urinal, flush tank	1/2
Urinal, flush valve	3/4
Wall hydrant	1/2
Water closet, flush tank	3/8
Water closet, flush valve	1
Water closet, flushometer tank	3/8
Water closet, one piece	1/2

4] For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kPa.

604.6 Variable street pressures. Where street water main pressures fluctuate, the building water distribution system shall be designed for the minimum pressure available.

604.7 Inadequate water pressure. Wherever water pressure from the street main or other source of supply is insufficient to provide flow pressures at fixture outlets as required under Table 604.3, a water pressure booster system conforming to Section 606.5 shall be installed on the building water supply system.

604.8 Water-pressure reducing valve or regulator. Where water pressure within a building exceeds 85 psi (586 kPa) static, an approved water-pressure reducing valve conforming to ASSE 1003 with strainer shall be installed to reduce the pressure in the building water distribution piping to 85 psi (586 kPa) static or less.

Exception: Service lines to sill cocks and outside hydrants, and main supply risers where pressure from the mains is reduced to 85 psi (586 kPa) or less at individual fixtures.

604.8.1 Valve design. The pressure-reducing valve shall be designed to remain open to permit uninterrupted water flow in case of valve failure.

604.8.2 Repair and removal. All water-pressure reducing valves, regulators and strainers shall be so constructed and installed as to permit repair or removal of parts without breaking a pipeline or removing the valve and strainer from the pipeline.

604.9 Water hammer. The flow velocity of the water distribution system shall be controlled to reduce the possibility of water hammer. A water-hammer arrestor shall be installed where quick-closing valves are utilized. Water-hammer

arrestors shall be installed in accordance with the manufacturer's specifications. Water-hammer arrestors shall conform to ASSE 1010 and PDI WH201.

604.10 Parallel water distribution system manifolds. Hot water and cold water manifolds installed with parallel connected individual distribution lines to each fixture or fixture fitting shall be designed in accordance with Sections 604.10.1 through 604.10.3.

604.10.1 Manifold sizing. Hot water and cold water manifolds shall be sized in accordance with Table 604.10.1. The total gallons per minute is the demand of all outlets supplied. Table 604.10.1 Manifold Sizing

Nominal Size	Internal Diameter (inches)	Maximum Demand (gpm)	Velocity at 4 feet per second	Velocity at 8 feet per second
1/2	2	5	3/4	6
3/4	6	11	1	10
1	10	20	1 1/4	15
1 1/2	31	11	2	22
2	44	11	2	44

For SI: 1 inch = 25.4 mm, 1 gallon per minute = 3.785 L/m, 1 foot per second = 0.305 m/s.

604.10.2 Valves. Individual fixture shutoff valves installed at the manifold shall be identified as to the fixture being supplied.

604.10.3 Access. Access shall be provided to manifolds.

604.11 Individual pressure balancing in-line valves for individual fixture fittings. Where individual pressure balancing in-line valves for individual fixture fittings are installed, such valves shall comply with ASSE 1066. Such valves shall be installed in an accessible location and shall not be utilized alone as a substitute for the balanced pressure, thermostatic or combination shower valves required in Section 424.3.



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SECTION PC 605: MATERIALS, JOINTS AND CONNECTIONS

NYC Administrative Code § 28-PC 605

605.1 Soil and ground water.

The installation of a water service or water distribution pipe shall be prohibited in soil and groundwater contaminated with solvents, fuels, organic compounds or other detrimental materials causing permeation, corrosion, degradation or structural failure of the piping material. Where detrimental conditions are suspected, a chemical analysis of the soil and ground water conditions shall be required to ascertain the acceptability of the water service or water distribution piping material for the specific installation. Where detrimental conditions exist, approved alternative materials or routing shall be required.

605.2 Reserved.

605.3 Water service pipe. Water service pipe shall conform to NSF 61 and shall conform to one of the standards listed in Table 605.3. All ductile iron water pipe shall be cement mortar lined in accordance with AWWA C104.

605.3.1 Dual check-valve-type backflow preventer. Where a dual check-valve backflow preventer is installed on the water supply system, it shall comply with ASSE 1024. Table 605.3 Water Service Pipe Material Standard
Brass pipe ASTM B 43; Copper or copper-alloy pipe ASTM B 42; ASTM B 302; Copper or copper-alloy tubing (Type K) ASTM B 75; ASTM B 88; ASTM B 251; ASTM B 447; Ductile iron water pipe AWWA C151; AWWA C115; Stainless steel pipe (Type 304/304L) ASTM A 312; ASTM A 778; Stainless steel pipe (Type 316/316L) ASTM A 312; ASTM A 778

605.4 Water distribution pipe. Water distribution pipe shall conform to NSF 61 and shall conform to one of the standards listed in Table 605.4. Table 605.4 Water Distribution Pipe Material Standard
Brass pipe ASTM B 43; Copper or copper-alloy pipe ASTM B 42; ASTM B 302; Copper or copper-alloy tubing (Type K, L) ASTM B 75; ASTM B 88; ASTM B 251; ASTM B 447; Stainless steel pipe (Type 304/304L) ASTM A 312; ASTM A 778; Stainless steel pipe (Type 316/316L) ASTM A 312; ASTM A 778

605.5 Fittings. Pipe fittings shall be approved for installation with the piping material installed and shall conform to

the respective pipe standards or one of the standards listed in Table 605.5. All pipe fittings utilized in water supply systems shall also conform to NSF 61. The fittings shall not have ledges, shoulders or reductions capable of retarding or obstructing flow in the piping. Ductile and gray iron pipe fittings shall be cement mortar lined in accordance with AWWA C104.

605.5.1 Mechanically formed tee fittings. Mechanically extracted outlets shall have a height not less than three times the thickness of the branch tube wall.

605.5.1.1 Full flow assurance. Branch tubes shall not restrict the flow in the run tube. A dimple/depth stop shall be formed in the branch tube to ensure that penetration into the collar is of the correct depth. For inspection purposes, a second dimple shall be placed 0.25 inch (6.4 mm) above the first dimple. Dimples shall be aligned with the tube run.

605.5.1.2 Brazed joints. Mechanically formed tee fittings shall be brazed in accordance with Section 605.14.1. Table 605.5 Pipe Fittings Material Standard Cast-iron ASME B16.4; ASME B16.12 Copper or copper alloy ASME B16.15; ASME B16.18; ASME B16.22; ASME B16.23; ASME B16.26; ASME B16.29 Gray iron and ductile iron AWWA C 110; AWWA C 153 Stainless steel (Type 304/304L) ASTM A 312; ASTM A 778 Stainless steel (Type 316/316L) ASTM A 312; ASTM A 778 Steel ASME B16.9; ASME B16.11; ASME B16.28

605.6 Flexible water connectors. Flexible water connectors exposed to continuous pressure shall conform to IAPMO PS 74 95 and PS 48 92, shall not exceed 24 inches (610 mm), shall be used in exposed locations only and shall be used singularly, that is, two connectors can not be joined.

605.7 Valves. All valves shall be of the approved type and compatible with the type of piping material installed in the system.

605.8 Manufactured pipe nipples. Manufactured pipe nipples shall conform to the standard listed in Table 605.8. Table 605.8 Manufactured Pipe Nipples Material Standard Brass-, copper-, chromium-plated ASTM B 687

605.9 Prohibited joints and connections. The following types of joints and connections shall be prohibited:

1. Cement or concrete joints.
2. Joints made with fittings not approved for the specific installation.
3. Solvent-cement joints between different types of plastic pipe.
4. Saddle-type fittings.

605.10 and 605.11 Reserved.

605.12 Brass. Joints between brass pipe or fittings shall comply with Sections 605.12.1 through 605.12.3.

605.12.1 Brazed joints. All joint surfaces shall be cleaned. An approved flux shall be applied where required. The joint shall be brazed with a filler metal conforming to AWS A5.8.

605.12.2 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions.

605.12.3 Threaded joints. Threads shall conform to ASME B1.20.1. Pipe-joint compound or tape shall be applied on the male threads only.

605.13 Gray iron and ductile iron joints. Joints for gray and ductile iron pipe and fittings shall comply with AWWA C111 and shall be installed in accordance with the manufacturer's installation instructions.

605.14Copper pipe.Joints between copper or copper-alloy pipe or fittings shall comply with Sections 605.14.1 through 605.14.4.

605.14.1Brazed joints.All joint surfaces shall be cleaned. An approved flux shall be applied where required. The joint shall be brazed with a filler metal conforming to AWS A5.8.

605.14.2Mechanical joints.Mechanical joints shall be installed in accordance with the manufacturer's instructions.

605.14.3Soldered joints.Solder joints shall be made in accordance with the methods of ASTM B 828. All cut tube ends shall be reamed to the full inside diameter of the tube end. All joint surfaces shall be cleaned. A flux conforming to ASTM B 813 shall be applied. The joint shall be soldered with a solder conforming to ASTM B 32. The joining of water supply piping shall be made with lead-free solder and fluxes. "Lead free" shall mean a chemical composition equal to or less than 0.2-percent lead.

605.14.4Threaded joints.Threads shall conform to ASME B1.20.1. Pipe-joint compound or tape shall be applied on the male threads only.

605.15Copper tubing.Joints between copper or copper-alloy tubing or fittings shall comply with Sections 605.15.1 through 605.15.4.

605.15.1Brazed joints.All joint surfaces shall be cleaned. An approved flux shall be applied where required. The joint shall be brazed with a filler metal conforming to AWS A5.8.

605.15.2Flared joints.Flared joints for water pipe shall be made by a tool designed for that operation.

605.15.3Mechanical joints.Mechanical joints shall be installed in accordance with the manufacturer's instructions.

605.15.4Soldered joints.Solder joints shall be made in accordance with the methods of ASTM B 828. All cut tube ends shall be reamed to the full inside diameter of the tube end. All joint surfaces shall be cleaned. A flux conforming to ASTM B 813 shall be applied. The joint shall be soldered with a solder conforming to ASTM B 32. The joining of water supply piping shall be made with lead-free solders and fluxes. "Lead free" shall mean a chemical composition equal to or less than 0.2-percent lead.

605.16 through 605.21Reserved.

605.22Stainless steel.Joints between stainless steel pipe and fittings shall comply with Sections 605.22.1 and 605.22.2.

605.22.1Mechanical joints.Mechanical joints shall be installed in accordance with the manufacturer's instructions.

605.22.2Welded joints.All joint surfaces shall be cleaned. The joint shall be welded autogenously or with an approved filler metal as referenced in ASTM A 312.

605.23Joints between different materials.Joints between different piping materials shall be made with a mechanical joint of the compression or mechanical-sealing type, or as permitted in Sections 605.23.1 and 605.23.3. Connectors or adapters shall have an elastomeric seal conforming to ASTM D 1869 or ASTM F 477. Joints shall be installed in accordance with the manufacturer's instructions.

605.23.1Copper or copper-alloy tubing to galvanized steel pipe.Joints between copper or copper-alloy tubing and galvanized steel pipe shall be made with a brass fitting or dielectric fitting. The copper tubing shall be soldered to the fitting in an approved manner, and the fitting shall be screwed to the threaded pipe.

605.23.2Reserved.

605.23.3Stainless steel.Joints between stainless steel and different piping materials shall be made with a mechanical joint of the compression or mechanical sealing type or a dielectric fitting.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 6: THE NEW YORK CITY PLUMBING CODE
Chapter 6: WATER SUPPLY AND DISTRIBUTION
SECTION PC 606: INSTALLATION OF THE BUILDING WATER DISTRIBUTION SYSTEM

NYC Administrative Code § 28-PC 606

606.1 Location of full-open valves.

Full-open valves shall be installed in the following locations:

1. On the building water service pipe from the public water supply near the curb.
2. On the water distribution supply pipe at the entrance into the structure.
3. On the discharge side of every water meter.
4. On the base of every water riser pipe in occupancies other than multiple-family residential occupancies that are two stories or less in height and in one- and two-family residential occupancies.
5. On the top of every water down-feed pipe in occupancies other than one- and two-family residential occupancies.
6. On the entrance to every water supply pipe to a dwelling unit, except where supplying a single fixture equipped with individual stops.
7. On the water supply pipe to and from a gravity or pressurized water tank.
8. On the water supply pipe to every water heater.

606.2 Location of shutoff valves. Shutoff valves shall be installed in the following locations:

1. On the fixture supply to each plumbing fixture other than bathtubs and showers in one- and two-family residential occupancies, and other than in individual guestrooms that are provided with unit shutoff valves in hotels, motels, boarding houses and similar occupancies.
2. On the water supply pipe to each sillcock.

3. On the water supply pipe to each appliance or mechanical equipment.

606.3 Access to valves. Access shall be provided to all required full-open valves and shutoff valves.

606.4 Valve identification. Service and hose bibb valves shall be identified. All other valves installed in locations that are not adjacent to the fixture or appliance shall be identified, indicating the fixture or appliance served.

606.5 Water pressure booster systems. Water pressure booster systems shall be provided as required by Sections 606.5.1 through 606.5.10.

606.5.1 Water pressure booster systems required. Where the water pressure in the public water main or individual water supply system is insufficient to supply the minimum pressures and quantities specified in this code, the supply shall be supplemented by an elevated water tank, a hydropneumatic pressure booster system or a water pressure booster pump installed in accordance with 606.5.5.

606.5.2 Support. All water supply tanks shall be supported in accordance with the New York city building code.

606.5.3 Covers. All water supply tanks shall be covered to keep out unauthorized persons, dirt and vermin. The covers of gravity tanks shall be vented with a return bend vent pipe with an area not less than the area of the down-feed riser pipe, and the vent shall be screened with a corrosion-resistant screen of not less than 16 by 20 mesh per inch (6 by 8 mesh per cm).

606.5.4 Overflows. Each gravity or suction water supply tank shall be provided with an overflow not smaller than shown in Table 606.5.4(1) and/or Table 606.5.4(2). The gallons per minute listed in the tables shall be the total automatic pump capacity connected to the tank. The overflow outlet shall discharge within 6 inches (152 mm) of a roof or roof drain, or over an open water supplied fixture. The overflow discharge shall be provided with durable screening with openings of not more than 1/8 inch.

Table 606.5.4(1) Size of Overflows for Gravity and Suction Tanks (See Figure 606.5.4 (Single Orifice/Multiple Orifice))

Overflow Pipe Size (inches)	Maximum Allowable GPM for Each Orifice
2	19
2 1/2	25
3	43
3 1/2	75
4	90
4 1/2	163
5	159
6	257
6 1/2	472
8	505
10	1,020
12	1,890
14	2,967

Table 606.5.4(2) Size of Weirs for Gravity and Suction Tanks (See Figure (Overflow Weir))

Slotted Weir Opening into Tank Between Overflow Chamber and Water Compartment	Maximum GPM Allowable for Weir
3 inches x 24 inches	381
3 1/2 inches x 24 inches	475
4 1/2 inches x 24 inches	685
6 inches x 36 inches	1,037
6 inches x 48 inches	1,569

a. Bottom of the overflow chamber must be at least 6 inches below weir.

b. Bottom outlet shall be provided in the chamber of sizes based on capacities as indicated in Table 606.5.4(1). [SEE graphical material in printed version]

606.5.4.1 Water piping control and location. Water inlets to gravity house tanks shall be controlled by a ball cock or other automatic supply valve or emergency electrical cut-off so installed as to prevent the overflow of the tank in the event that the pumps filling the tanks do not shut off at the predetermined level or the street pressure rises to a point where it can fill the tank. The water inlet to a suction tank shall be controlled by a ball cock or other automatic supply valve. The inlet shall be terminated so as to provide an accepted air gap but in no case shall it be less than 4 inches (102 mm) above the top of the overflow. The outlet from a gravity tank to the distribution system shall be equipped with a strainer located at least 2 inches (51 mm) above the tank bottom to prevent solids from entering the piping system. All down-feed supplies from a tank cross-connected in any manner with distribution supply piping in a building supplied by direct street or pump pressure, shall be equipped with a check valve on the main cold water down supply to prevent backflow of water into the roof tank.

606.5.4.2 Drain pipes for emptying tanks. Each tank or tank compartment shall be provided, at its lowest point, with a valved pipe to permit emptying the tank. The drain pipe shall discharge as required for the overflow pipe, and shall be

at least 4 inches (102 mm) in diameter.

606.5.4.3 Prohibited location. Potable water gravity tanks or manholes of potable water pressure tanks shall not be located directly under any soil or waste piping.

606.5.4.4 Design. The gravity house supply tank shall be built of wood, steel, or equivalent materials. Subject to the approval of the Commissioner, additional linings may be installed in the tank, provided the lining material does not have a toxic or otherwise objectionable effect on the potable water. Steel tanks shall be painted both inside and outside. If a tank with a dividing partition is installed, the total capacity of the combined compartments shall be considered as the capacity of a single tank for the purpose of determining storage capacities of the tank.

606.5.4.5 Cleaning or painting. Water tanks shall be cleaned and painted in accordance with the following:

1. No water tank of any kind that is part of a building water supply system used for potable purposes shall be cleaned with any material or painted on the inside with any material that will have a toxic or otherwise objectionable effect on the potability of the water supply when the tank is put into service. No lead paint shall be used. The water supply connections to and from a tank shall be disconnected or plugged while the tank is being cleaned or painted to prevent any foreign fluid or substance from entering the distribution piping. Where the air in a tank may be insufficient to sustain human life, or may contain an injurious gas, adequate measures shall be taken for the protection of the workers.

2. After the tank has been cleaned or painted, it shall be disinfected according to the following procedure before it is put back in service:

- 2.1. The underside of the top, the bottom, and the walls shall be washed with a hypochlorite solution containing 100 or more parts per million of available chlorine.

- 2.2. The tank shall be filled with water to which hypochlorite solution is added during the filling in sufficient quantity so that the treated water in the tank will contain at least 10 parts per million of available chlorine.

- 2.3. The chlorinated water shall be allowed to remain in the tank for two hours.

- 2.4. Finally, the tank shall be drained completely before refilling.

3. House and suction tanks shall be drained and cleaned at least once a year.

606.5.5 Low-pressure cutoff required on booster pumps. A low-pressure cutoff shall be installed on all booster pumps in a water pressure booster system to prevent creation of a vacuum or negative pressure on the suction side of the pump when a positive pressure of 10 psi (68.94 kPa) or less occurs on the suction side of the pump.

606.5.6 and 606.5.7 Reserved.

606.5.8 Prohibited location of potable supply tanks. Potable water gravity tanks or manholes of potable water pressure tanks shall not be located directly under any soil or waste piping or any source of contamination.

606.5.9 Pressure tanks, vacuum relief. All water pressure tanks shall be provided with a vacuum relief valve at the top of the tank that will operate up to a maximum water pressure of 200 psi (1380 kPa) and up to a maximum temperature of 200(degrees)F (93(degrees)C). The minimum size of such vacuum relief valve shall be 0.50 inch (12.7 mm).

Exception: This section shall not apply to pressurized captive air diaphragm/bladder tanks.

606.5.10 Pressure relief for tanks. Every pressure tank in a hydropneumatic pressure booster system shall be

protected with a pressure relief valve. The pressure relief valve shall be set at a maximum pressure equal to the rating of the tank. The relief valve shall be installed on the supply pipe to the tank or on the tank. The relief valve shall discharge by gravity to a safe place of disposal.

606.6 Water supply system test. Upon completion of a section of or the entire water supply system, the system, or portion completed, shall be tested in accordance with Section PC 312.



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CHAPTER 6: THE NEW YORK CITY PLUMBING CODE
Chapter 6: WATER SUPPLY AND DISTRIBUTION
SECTION PC 607: HOT WATER SUPPLY SYSTEM

NYC Administrative Code § 28-PC 607

607.1 Where required.

In residential occupancies, hot water shall be supplied to all plumbing fixtures and equipment utilized for bathing, washing, culinary purposes, cleansing, laundry or building maintenance. In nonresidential occupancies, hot water shall be supplied to all plumbing fixtures and equipment utilized for culinary purposes, cleansing, laundry or building maintenance. In nonresidential occupancies, hot water or tempered water shall be supplied for bathing and washing purposes. Tempered water shall be delivered for accessible hand-washing facilities.

607.2 Hot water supply temperature maintenance. Where the developed length of hot water piping from the source of hot water supply to the farthest fixture exceeds 20 feet (6096 mm), the hot water supply system shall be provided with a method of maintaining the temperature in accordance with the New York state energy conservation construction code.

607.2.1 Piping insulation. Circulating hot water system piping shall be insulated in accordance with the New York state energy conservation construction code.

607.2.2 Hot water system controls. Automatic circulating hot water system pumps or heat trace shall be arranged to be conveniently turned off, automatically or manually, when the hot water system is not in operation.

607.2.3 Recirculating pump. Where a thermostatic mixing valve is used in a system with a hot water recirculating pump, the hot water or tempered water return line shall be routed to the cold water inlet pipe of the water heater and the cold water inlet pipe or the hot water return connection of the thermostatic mixing valve.

607.3 Thermal expansion control. A means of controlling increased pressure caused by thermal expansion shall be provided where required in accordance with Sections 607.3.1 and 607.3.2.

607.3.1 Pressure-reducing valve. For water service system sizes up to and including 2 inches (51 mm), a device for

controlling pressure shall be installed where, because of thermal expansion, the pressure on the downstream side of a pressure-reducing valve exceeds the pressure-reducing valve setting.

607.3.2 Backflow prevention device or check valve. Where a backflow prevention device, check valve or other device is installed on a water supply system utilizing storage water heating equipment such that thermal expansion causes an increase in pressure, a device for controlling pressure shall be installed.

607.4 Flow of hot water to fixtures. Fixture fittings, faucets and diverters shall be installed and adjusted so that the flow of hot water from the fittings corresponds to the left-hand side of the fixture fitting.

Exception: Shower and tub/shower mixing valves conforming to ASSE 1016, where the flow of hot water corresponds to the markings on the device.



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Chapter 6: WATER SUPPLY AND DISTRIBUTION
SECTION PC 608: PROTECTION OF POTABLE WATER SUPPLY

NYC Administrative Code § 28-PC 608

608.1 General.

A potable water supply system shall be designed, installed and maintained in such a manner so as to prevent contamination from nonpotable liquids, solids or gases being introduced into the potable water supply through cross-connections or any other piping connections to the system. Backflow preventer applications shall conform to Table 608.1, except as specifically stated in Sections 608.2 through 608.16.9.3]Table 608.1 Application of Backflow Preventers Device Degree of Hazarda Applicationb Applicable Standards 1]Device Degree of Hazarda Applicationb Applicable Standards 2]Air gapHigh or low hazardBacksiphonage or backpressureASME A112.1.2Air gap fittings for use with plumbing fixtures, appliances and appurtenancesHigh or low hazardBacksiphonage or backpressureASME A112.1.3Antisiphon-type fill valves for gravity water closet flush tanksHigh hazardBacksiphonage onlyASSE 1002, CSA B125Barometric loopHigh or low hazardBacksiphonage only (See Section 608.13.4)Reduced pressure principle backflow preventer and reduced pressure principle fire protection backflow preventerHigh or low hazardBackpressure or backsiphonage Sizes3/8" - 16"ASSE 1013, AWWA C511, CAN/CSA B64.4Reduced pressure detector fire protection backflow prevention assembliesHigh or low hazardBacksiphonage or backpressure (Fire sprinkler systems)ASSE 1047Double check backflow prevention assembly and doublecheck fire protection backflow prevention assemblyLow hazardBackpressure or backsiphonage Sizes3/8" - 16"ASSE 1015, AWWA C510Double check detector fire protection backflow prevention assembliesLow hazardBackpressure or backsiphonage (Fire sprinkler systems) Sizes2" - 16"ASSE 1048Dual-check-valve-type backflow preventerLow hazardBackpressure or backsiphonage Sizes1/4" - 1"ASSE 1024Backflow preventer with intermediate atmospheric ventsLow hazardBackpressure or backsiphonage Sizes1/4" - 3/4"ASSE 1012, CAN/CSA B64.3Backflow preventer for carbonated beverage machinesLow hazardBackpressure or backsiphonage Sizes1/4" - 3/8"ASSE 1022Pipe-applied atmospheric-type vacuum breakerHigh or low hazardBacksiphonage only Sizes 1/4" - 4"ASSE 1001, CAN/CSA B64.1.1Pressure vacuum breaker assemblyHigh or low hazardBacksiphonage only Sizes 1/2" - 2"ASSE 1020Hose-connection vacuum breakerHigh or low hazardLow head backpressure or backsiphonage Sizes1/2", 3/4", 1"ASSE 1011, CAN/CSA B64.2Vacuum breaker wall hydrants, frost-resistant, automatic draining typeHigh or low hazardLow head backpressure or backsiphonage Sizes3/4", 1"ASSE 1019, CAN/CSA B64.2.2Laboratory faucet backflow preventerHigh or low hazardLow head backpressure and

backsiphonageASSE 1035, CSA B64.7Hose connection backflow preventerHigh or low hazardLow head backpressure, rated working pressure backpressure or backsiphonage Sizes1/2" - 1"ASSE 1052Spillproof vacuum breakerHigh or low hazardBacksiphonage only Sizes 1/4" - 2"ASSE 1056For SI: 1 inch = 25.4 mm.a. Low hazard

a. High hazard-See Contamination (Section 202).b. See Backpressure (Section 202).

b. See Backpressure, lowhead (Section 202).

b. See Backsiphonage (Section 202).

608.2Plumbing fixtures.The supply lines or fittings for every plumbing fixture shall be installed so as to prevent backflow.

608.3Devices, appurtenances, appliances and apparatus.All devices, appurtenances, appliances and apparatus intended to serve some special function, such as sterilization, distillation, processing, cooling, or storage of ice or foods, and that connect to the water supply system, shall be provided with protection against backflow and contamination of the water supply system. Water pumps, filters, softeners, tanks and all other appliances and devices that handle or treat potable water shall be protected against contamination.

608.3.1Special equipment, water supply protection.The water supply for hospital fixtures shall be protected against backflow with a reduced pressure principle backflow preventer, an atmospheric or spill-proof vacuum breaker, or an air gap. Vacuum breakers for bedpan washer hoses shall not be located less than 5 feet (1524 mm) above the floor. Vacuum breakers for hose connections in health care or laboratory areas shall not be less than 6 feet (1829 mm) above the floor.

608.4Water service piping.Water service piping shall be protected in accordance with Sections 603.2 and 603.2.1.

608.5Chemicals and other substances.Chemicals and other substances that produce either toxic conditions, taste, odor or discoloration in a potable water system shall not be introduced into, or utilized in, such systems.

608.6Cross-connection control.Cross connections shall be prohibited, except where approved protective devices are installed.

608.6.1Private water supplies.Cross connections between a private water supply and a potable public supply shall be prohibited.

608.7Stop-and-waste valves prohibited.Combination stop-and-waste valves or cocks shall not be installed underground.

608.8Identification of potable and nonpotable water.In all buildings where two or more water distribution systems, one potable water and the other nonpotable water, are installed, each system shall be identified either by color marking or metal tags in accordance with Sections 608.8.1 through 608.8.3.

608.8.1Information.Pipe identification shall include the contents of the piping system and an arrow indicating the direction of flow. Hazardous piping systems shall also contain information addressing the nature of the hazard. Pipe identification shall be repeated at maximum intervals of 25 feet (7620 mm) and at each point where the piping passes through a wall, floor or roof. Lettering shall be readily observable within the room or space the piping is located.

608.8.2Color.The color of the pipe identification shall be discernable and consistent throughout the building.

608.8.3Size.The size of the background color field and lettering shall comply with Table 608.8.3.

Size of Pipe Identification	Pipe Diameter (inches)	Length Background Color Field (inches)	Size of Letters (inches)
3/4 to 1 1/4	8 to 11	2 to 8	0.5 to 1 1/2
1 1/2 to 2	8 to 12	0.75 to 1 1/2	0.75 to 2
2 1/2 to 6	12 to 24	1.25 to 8	1 to 2 1/2
8 to 10	24 to 32	2.5 to 10	2 to 3.5

For SI: 1 inch = 25.4 mm.

608.9 Reutilization prohibited. Water utilized for the cooling of equipment or other processes shall not be returned to the potable water system. Such water shall be discharged into a drainage system through an air gap or shall be utilized for nonpotable purposes.

608.10 Reuse of piping. Piping that has been utilized for any purpose other than conveying potable water shall not be utilized for conveying potable water.

608.11 Painting of water tanks. The interior surface of a potable water tank shall not be lined, painted or repaired with any material that changes the taste, odor, color or potability of the water supply when the tank is placed in, or returned to, service.

608.12 Pumps and other appliances. Water pumps, filters, softeners, tanks and all other devices that handle or treat potable water shall be protected against contamination.

608.13 Backflow protection. Means of protection against backflow shall be provided, maintained and inspected in accordance with Sections 608.13.1 through 608.13.9.

608.13.1 Air gap. The minimum required air gap shall be measured vertically from the lowest end of a potable water outlet to the flood level rim of the fixture or receptacle into which such potable water outlet discharges. Air gaps shall comply with ASME A112.1.2 and air gap fittings shall comply with ASME A112.1.3.

608.13.2 Reduced pressure principle backflow preventers. Reduced pressure principle backflow preventers shall conform to ASSE 1013, AWWA C511 or CAN/CSA B64.4. Reduced pressure detector assembly backflow preventers shall conform to ASSE 1047. These devices shall be permitted to be installed where subject to continuous pressure conditions. The relief opening shall discharge by air gap and shall be prevented from being submerged. These devices shall be tested annually by a certified tester.

608.13.3 Backflow preventer with intermediate atmospheric vent. Backflow preventers with intermediate atmospheric vents shall conform to ASSE 1012 or CAN/CSA B64.3. These devices shall be permitted to be installed where subject to continuous pressure conditions. The relief opening shall discharge by air gap and shall be prevented from being submerged.

608.13.4 Barometric loop. Barometric loops shall precede the point of connection and shall extend vertically to a height of 35 feet (10 668 mm). A barometric loop shall only be utilized as an atmospheric-type or pressure-type vacuum breaker.

608.13.5 Pressure-type vacuum breakers. Pressure-type vacuum breakers shall conform to ASSE 1020 and spillproof vacuum breakers shall comply with ASSE 1056. These devices are designed for installation under continuous pressure conditions when the critical level is installed at the required height. Pressure-type vacuum breakers shall not be installed in locations where spillage could cause damage to the structure.

608.13.6 Atmospheric-type vacuum breakers. Pipe-applied atmospheric-type vacuum breakers shall conform to ASSE 1001 or CAN/CSA B64.1.1. Hose-connection vacuum breakers shall conform to ASSE 1011, ASSE 1019, ASSE 1035, ASSE 1052, CAN/CSA B64.2, CAN/CSA B64.2.2 or CSA B64.7. These devices shall operate under normal atmospheric pressure when the critical level is installed at the required height.

608.13.7 Double check-valve assemblies. Double check-valve assemblies shall conform to ASSE 1015 or AWWA C510. Double-detector check-valve assemblies shall conform to ASSE 1048. These devices shall be capable of operating under continuous pressure conditions. These devices shall be tested annually by a certified tester.

608.13.8 Spillproof vacuum breakers. Spillproof vacuum breakers (SVB) shall conform to ASSE 1056. These devices are designed for installation under continuous-pressure conditions when the critical level is installed at the

required height.

608.13.9 Chemical dispenser backflow devices. Backflow devices for chemical dispensers shall comply with ASSE 1055 or shall be equipped with an air gap fitting.

608.14 Location of backflow preventers. Access shall be provided to backflow preventers as specified by the installation instructions of the approved manufacturer.

608.14.1 Outdoor enclosures for backflow prevention devices. Outdoor enclosures for backflow prevention devices shall comply with ASSE 1060.

608.15 Protection of potable water outlets. All potable water openings and outlets shall be protected against backflow in accordance with Section 608.15.1, 608.15.2, 608.15.3, 608.15.4, 608.15.4.1, or 608.15.4.2.

608.15.1 Protection by air gap. Openings and outlets shall be protected by an air gap between the opening and the fixture flood level rim as specified in Table 608.15.1. Openings and outlets equipped for hose connection shall be protected by means other than an air gap.

Table 608.15.1 Minimum Required Air Gaps	Fixture	Minimum Air Gap Away from a Wall (Inches)	Close to a Wall (Inches)
1	Lavatories and other fixtures with effective opening not greater than 1/2 inch in diameter	1 1/2	Sink, laundry trays, gooseneck back faucets and other fixtures with effective openings not greater than 3/4 inch in diameter
1.5	Over-rim bath fillers and other fixtures with effective openings not greater than 1 inch in diameter	2	3 Drinking water fountains, single orifice not greater than 7/16 inch in diameter or multiple orifices with a total area of 0.150 square inch (area of circle 7/16 inch in diameter)
1 1/2	Effective openings greater than 1 inch	Two times the diameter of the effective opening	Three times the diameter of the effective opening

For SI: 1 inch = 25.4 mm. a. Applicable where walls or obstructions are spaced from the nearest inside-edge of the spout opening a distance greater than three times the diameter of the effective opening for a single wall, or a distance greater than four times the diameter of the effective opening for two intersecting walls.

608.15.2 Protection by a reduced pressure principle backflow preventer. Openings and outlets shall be protected by a reduced pressure principle backflow preventer.

608.15.3 Protection by a backflow preventer with intermediate atmospheric vent. Openings and outlets shall be protected by a backflow preventer with an intermediate atmospheric vent.

608.15.4 Protection by a vacuum breaker. Openings and outlets shall be protected by atmospheric-type or pressure-type vacuum breakers. The critical level of the vacuum breaker shall be set a minimum of 6 inches (152 mm) above the flood level rim of the fixture or device. Fill valves shall be set in accordance with Section 425.3.1. Vacuum breakers shall not be installed under exhaust hoods or similar locations that will contain toxic fumes or vapors. Pipe-applied vacuum breakers shall be installed not less than 6 inches (152 mm) above the flood level rim of the fixture, receptor or device served.

608.15.4.1 Deck-mounted and integral vacuum breakers. Approved deck-mounted or equipment-mounted vacuum breakers and faucets with integral atmospheric or spillproof vacuum breakers shall be installed in accordance with the manufacturer's instructions and the requirements for labeling with the critical level not less than 1 inch (25 mm) above the flood level rim.

608.15.4.2 Hose connections. Sillcocks, hose bibbs, wall hydrants and other openings with a hose connection shall be protected by an atmospheric-type or pressure-type vacuum breaker or a permanently attached hose connection vacuum breaker.

Exceptions:

1. This section shall not apply to water heater and boiler drain valves that are provided with hose connection

threads and that are intended only for tank or vessel draining.

2. This section shall not apply to water supply valves intended for connection of clothes washing machines where backflow prevention is otherwise provided or is integral with the machine.

608.16Connections to the potable water system.Connections to the potable water system shall conform to Sections 608.16.1 through 608.16.9.

608.16.1Beverage dispensers.The water supply connection to carbonated beverage dispensers shall be protected against backflow by a backflow preventer conforming to ASSE 1022 or by an air gap. The backflow preventer device and the piping downstream therefrom shall not be affected by carbon dioxide gas.

608.16.2Connections to boilers.The potable supply to the boiler shall be equipped with a backflow preventer with an intermediate atmospheric vent complying with ASSE 1012 or CAN/CSA B64.3. Where conditioning chemicals are introduced into the system, the potable water connection shall be protected by an air gap or a reduced pressure principle backflow preventer, complying with ASSE 1013, CAN/CSA B64.4 or AWWA C511.

608.16.3Heat exchangers.Heat exchangers utilizing an essentially toxic transfer fluid shall be separated from the potable water by double-wall construction. An air gap open to the atmosphere shall be provided between the two walls. Heat exchangers utilizing an essentially nontoxic transfer fluid shall be permitted to be of single-wall construction.

608.16.4Connections to automatic fire sprinkler systems and standpipe systems.The potable water supply to automatic fire sprinkler and standpipe systems shall be protected against backflow by a double check-valve assembly or a reduced pressure principle backflow preventer.

Exceptions:

1. Where systems are installed as a portion of the water distribution system in accordance with the requirements of this code and are not provided with a fire department connection, isolation of the water supply system shall not be required.

2. Isolation of the water distribution system is not required for deluge, preaction or dry pipe systems.

608.16.4.1Additives or nonpotable source.Where systems under continuous pressure contain chemical additives or antifreeze, or where systems are connected to a nonpotable secondary water supply, the potable water supply shall be protected against backflow by a reduced pressure principle backflow preventer. Where chemical additives or antifreeze are added to only a portion of an automatic fire sprinkler or standpipe system, the reduced pressure principle backflow preventer shall be permitted to be located so as to isolate that portion of the system. Where systems are not under continuous pressure, the potable water supply shall be protected against backflow by an air gap or a pipe applied atmospheric vacuum breaker conforming to ASSE 1001or CAN/CSA B64.1.1.

608.16.5Connections to lawn irrigation systems.The potable water supply to lawn irrigation systems shall be protected against backflow by an atmospheric-type vacuum breaker, a pressure-type vacuum breaker or a reduced pressure principle backflow preventer. A valve shall not be installed downstream from an atmospheric vacuum breaker. Where chemicals are introduced into the system, the potable water supply shall be protected against backflow by a reduced pressure principle backflow preventer.

608.16.6Connections subject to backpressure.Where a potable water connection is made to a nonpotable line, fixture, tank, vat, pump or other equipment subject to back-pressure, the potable water connection shall be protected by a reduced pressure principle backflow preventer.

608.16.7Chemical dispensers.Where chemical dispensers connect to the potable water distribution system, the

water supply system shall be protected against backflow in accordance with Section 608.13.1, 608.13.2, 608.13.5, 608.13.6, 608.13.8 or 608.13.9.

608.16.8 Portable cleaning equipment. Where the portable cleaning equipment connects to the water distribution system, the water supply system shall be protected against backflow in accordance with Section 608.13.1, 608.13.2, 608.13.3, 608.13.7 or 608.13.8.

608.16.9 Dental pump equipment. Where dental pumping equipment connects to the water distribution system, the water supply system shall be protected against backflow in accordance with Section 608.13.1, 608.13.2, 608.13.5, 608.13.6 or 608.13.8.

608.17 Protection of individual water supplies. An individual water supply shall be located and constructed so as to be safeguarded against contamination in accordance with Sections 608.17.1 through 608.17.8.

608.17.1 Well locations. A potable ground water source or pump suction line shall not be located closer to potential sources of contamination than the distances shown in Table 608.17.1. In the event the underlying rock structure is limestone or fragmented shale, the local or state health department shall be consulted on well site location. The distances in Table 608.17.1 constitute minimum separation and shall be increased in areas of creviced rock or limestone, or where the direction of movement of the ground water is from sources of contamination toward the well. Table 608.17.1 Distance from Contamination to Private Water Supplies and Pump Suction Lines

Source of Contamination	Distance (feet)
Barneyard	100
Farm silo	25
Pasture	100
Pumphouse floor drain of cast iron draining to ground	

surface 2 Seepage pits 50 Septic tank 25 Sewer 10 Subsurface disposal fields 50 Subsurface pits 50 For SI: 1 foot = 304.8 mm.

608.17.2 Elevation. Well sites shall be positively drained and shall be at higher elevations than potential sources of contamination.

608.17.3 Depth. Private potable well supplies shall not be developed from a water table less than 10 feet (3048 mm) below the ground surface.

608.17.4 Water-tight casings. Each well shall be provided with a water-tight casing to a minimum distance of 10 feet (3048 mm) below the ground surface. All casings shall extend at least 6 inches (152 mm) above the well platform. The casing shall be large enough to permit installation of a separate drop pipe. Casings shall be sealed at the bottom in an impermeable stratum or extend several feet into the water-bearing stratum.

608.17.5 Drilled or driven well casings. Drilled or driven well casings shall be of steel or other approved material. Where drilled wells extend into a rock formation, the well casing shall extend to and set firmly in the formation. The annular space between the earth and the outside of the casing shall be filled with cement grout to a minimum distance of 10 feet (3048 mm) below the ground surface. In an instance of casing to rock installation, the grout shall extend to the rock surface.

608.17.6 Dug or bored well casings. Dug or bored well casings shall be of water-tight concrete, tile, or galvanized or corrugated metal pipe to a minimum distance of 10 feet (3048 mm) below the ground surface. Where the water table is more than 10 feet (3048 mm) below the ground surface, the water-tight casing shall extend below the table surface. Well casings for dug wells or bored wells constructed with sections of concrete, tile, or galvanized or corrugated metal pipe shall be surrounded by 6 inches (152 mm) of grout poured into the hole between the outside of the casing and the ground to a minimum depth of 10 feet (3048 mm).

608.17.7 Cover. Every potable water well shall be equipped with an overlapping water-tight cover at the top of the well casing or pipe sleeve such that contaminated water or other substances are prevented from entering the well through the annular opening at the top of the well casing, wall or pipe sleeve. Covers shall extend downward at least 2

inches (51 mm) over the outside of the well casing or wall. A dug well cover shall be provided with a pipe sleeve permitting the withdrawal of the pump suction pipe, cylinder or jet body without disturbing the cover. Where pump sections or discharge pipes enter or leave a well through the side of the casing, the circle of contact shall be water tight.

608.17.8 Drainage. All potable water wells and springs shall be constructed such that surface drainage will be diverted away from the well or spring.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

608.13.3 amended L.L. 8/2008 § 46, eff. July 1, 2008.



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CHAPTER 6: THE NEW YORK CITY PLUMBING CODE
Chapter 6: WATER SUPPLY AND DISTRIBUTION
SECTION PC 609: HEALTH CARE PLUMBING

NYC Administrative Code § 28-PC 609

609.1 Scope.

This section shall govern those aspects of health care plumbing Systems that differ from plumbing systems in other structures. Health care plumbing systems shall conform to the requirements of this section in addition to the other requirements of this code. The provisions of this section shall apply to the special devices and equipment installed and maintained in the following occupancies: nursing homes, homes for the aged, orphanages, infirmaries, first aid stations, psychiatric facilities, clinics, professional offices of dentists and doctors, mortuaries, educational facilities, surgery, dentistry, research and testing laboratories, establishments manufacturing pharmaceutical drugs and medicines, and other structures with similar apparatus and equipment classified as plumbing.

609.2Water service.All hospitals shall have two water service pipes installed in such a manner so as to minimize the potential for an interruption of the supply of water in the event of a water main or water service pipe failure.

609.3Hot water.Hot water shall be provided to supply all of the hospital fixture, kitchen and laundry requirements. Special fixtures and equipment shall have hot water supplied at a temperature specified by the manufacturer. The hot water system shall be installed in accordance with Section PC 607.

609.4Vacuum breaker installation.Vacuum breakers shall be installed a minimum of 6 inches (152 mm) above the flood level rim of the fixture or device in accordance with Section PC 608. The flood level rim of hose connections shall be the maximum height at which any hose is utilized.

609.5Prohibited water closet and clinical sink supply.Jet or water-supplied orifices, except those supplied by the flush connections, shall not be located in or connected with a water closet bowl or clinical sink. This section shall not prohibit an approved bidet installation.

609.6Clinical, hydrotherapeutic and radiological equipment.All clinical, hydrotherapeutic, radiological or any equipment that is supplied with water or that discharges to the waste system shall conform to the requirements of this

section and Section PC 608.

609.7 Condensate drain trap seal. A water supply shall be provided for cleaning, flushing and resealing the condensate trap, and the trap shall discharge through an air gap in accordance with Section PC 608.

609.8 Valve leakage diverter. Each water sterilizer filled with water through directly connected piping shall be equipped with an approved leakage diverter or bleed line on the water supply control valve to indicate and conduct any leakage of unsterile water away from the sterile zone.



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SECTION PC 610: DISINFECTION OF POTABLE WATER SYSTEM

NYC Administrative Code § 28-PC 610

610.1 General.

New or repaired potable water systems shall be purged of deleterious matter and disinfected prior to utilization. The method to be followed shall be that prescribed by the health authority or water purveyor having jurisdiction or, in the absence of a prescribed method, the procedure described in either AWWA C651 or AWWA C652, or as described in this section. This requirement shall apply to "on-site" or "in-plant" fabrication of a system or to a modular portion of a system.

1. The pipe system shall be flushed with clean, potable water until dirty water does not appear at the points of outlet.
2. The system or part thereof shall be filled with a water/chlorine solution containing at least 50 parts per million (50 mg/L) of chlorine, and the system or part thereof shall be valved off and allowed to stand for 24 hours; or the system or part thereof shall be filled with a water/chlorine solution containing at least 200 parts per million (200 mg/L) of chlorine and allowed to stand for 3 hours.
3. Following the required standing time, the system shall be flushed with clean potable water until the chlorine is purged from the system.
4. The procedure shall be repeated where shown by a bacteriological examination that contamination remains present in the system.



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SECTION PC 611: DRINKING WATER TREATMENT UNITS

NYC Administrative Code § 28-PC 611

611.1 Design.

Drinking water treatment units shall meet the requirements of NSF 42, NSF 44, NSF 53 or NSF 62.

611.2 Reverse osmosis systems. The discharge from a reverse osmosis drinking water treatment unit shall enter the drainage system through an air gap or an air gap device that meets the requirements of NSF 58.

611.3 Connection tubing. The tubing to and from drinking water treatment units shall be of a size and material as recommended by the manufacturer. The tubing shall comply with NSF 14, NSF 42, NSF 44, NSF 53, NSF 58 or NSF 61.



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SECTION PC 612: SOLAR SYSTEMS

NYC Administrative Code § 28-PC 612

612.1 Solar systems.

The construction, installation, alterations and repair of systems, equipment and appliances intended to utilize solar energy for space heating or cooling, domestic hot water heating, swimming pool heating or process heating shall be in accordance with the New York city mechanical code.



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SECTION PC 613: TEMPERATURE CONTROL DEVICES AND VALVES

NYC Administrative Code § 28-PC 613

613.1 Temperature-actuated mixing valves.

Temperature actuated mixing valves, which are installed to reduce water temperatures to defined limits, shall comply with ASSE 1016 and ASSE 1017.



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CHAPTER 6: THE NEW YORK CITY PLUMBING CODE
Chapter 7: SANITARY DRAINAGE
SECTION PC 701: GENERAL

NYC Administrative Code § 28-PC 701

701.1 Scope.

The provisions of this chapter shall govern the materials, design, construction and installation of sanitary drainage systems.

701.2Sewer required.Every building in which plumbing fixtures are installed and all premises having drainage piping shall be connected to a public sewer, where available and where the department determines that connection thereto is feasible. Where neither a sanitary nor a combined sewer is available to which the department determines that connection is feasible, a private sewer or private sewage disposal system shall be provided. All such private systems shall be provided subject to the approval of the Commissioner of Environmental Protection and of any other agency or agencies having jurisdiction.

701.2.1Extensions of public sewers.Extensions of public sewers shall be made in accordance with the regulations of the Department of Environmental Protection.

701.2.2Availability of public sewer to other than one- or two-family dwellings.A public sanitary or combined sewer shall be deemed available to a building if a property line of such building is within 500 feet (152 m), measured along a street, alley, or right-of-way, of the public sewer. The connection shall be made in accordance with the applicable standards of the Department of Environmental Protection.

Exception: Where a substantial improvement of a building or buildings is contemplated on a tract of land, the public sanitary or combined sewer may be declared available thereto by the agencies having jurisdiction thereon even though the specified distance is exceeded.

701.2.3Availability of public sewer to one- or two-family dwellings.A public sanitary or combined sewer shall be deemed available to a one- and two-family dwelling if a property line of such dwelling is within 100 feet (30 480 mm), measured along a street, alley, or right-of-way, of the public sewer. The extension and connection shall be made in

accordance with the applicable standards of the Department of Environmental Protection, provided, however, that such one- and two-family dwelling need not connect directly to the public sanitary or combined sewer if the common elements of an internal private drain are located in a dedicated, unobstructed right-of-way that extends to the sanitary or combined sewer with a minimum width of ten feet located entirely outside of the building footprint and outside of all overhangs and projections that are less than fourteen feet in height above grade.

Exception: Where two or more one- or two-family dwellings are to be constructed on a tract of land, the public sanitary or combined sewer may be declared available thereto by the agencies having jurisdiction thereon even though the specified distance is exceeded.

701.2.4 Feasibility of connecting to an available public sewer. The department shall determine that connection to an available public sewer is feasible if:

1. The sewer is of adequate capacity to receive all sewage flowing from the building;
2. The sewer is in adequate physical condition to receive such sewage;
3. No physical obstacles exist between the boundaries of the lot or tract of land on which the building is located and the sewer, which would make connection to the sewer impracticable;
4. The elevation of the sewer in relation to the lot or tract of land on which the building is located is such that conveyance of the sewage from the building to the sewer is not impracticable;
5. The sewer is located in the same drainage area as all or most of the lot or tract of land on which the building is located; and
6. No other factor reasonably related to the conveyance of sewage from the building to the sewer would make such connection impracticable or undesirable as a proper means of sewage disposal.

701.2.5 Where public sewers are made available to premises with private sewage disposal system. When public sewers are made available to premises with individual on site private disposal systems, such private sewage disposal system shall be abandoned in a manner prescribed by the commissioner, and the owner shall connect the building house sewer to the available public sewer within six months of the date of notification that the sewer has been accepted to receive flow by the agency or agencies having jurisdiction.

701.2.6 Abandonment of existing building sewer connections. All abandoned building sewers shall be securely sealed at a point inside the curb line and as close thereto as practicable.

701.3 Separate sewer connection. Every building having plumbing fixtures installed and intended for human habitation, occupancy or use on premises abutting on a street, alley or easement in which there is a public sewer shall have a separate connection with the sewer. Where located on the same lot, multiple buildings shall not be prohibited from connecting to a common building sewer that connects to the public sewer, provided, however, that the common elements of an internal private drain are located in a dedicated, unobstructed right-of-way that extends to the sewer with a minimum width of ten feet located entirely outside of the building footprint and outside of all overhangs and projections that are less than fourteen feet in height above grade.

701.4 Sewage treatment. Sewage or other waste shall not be discharged into surface or subsurface water unless it has been discharged by a method subject to the approval of the commissioner and of the Department of Health and Mental Hygiene and the Department of Environmental Protection.

701.5 Damage to drainage system or public sewer. Wastes detrimental to the public sewer system or to the functioning of the sewage-treatment plant shall be treated and disposed of in accordance with applicable rules of the

city department of environmental protection.

701.6Tests The sanitary drainage system shall be tested in accordance with Section PC 312.

701.7Connections. Direct connection of a steam exhaust, blowoff or drip pipe shall not be made with the building drainage system. Wastewater when discharged into the building drainage system shall be at a temperature not higher than 150(degrees)F (65.6(degrees)C). When higher temperatures exist, approved cooling methods shall be provided.

701.8Engineered systems. Engineered sanitary drainage systems shall conform to the provisions of Section 28-113.2.2 of the Administrative Code and Section 714 of this code.

701.9Drainage piping in food service areas. Exposed soil or waste piping shall not be installed above any working, storage or eating surfaces in food service establishments.

701.10Plastic pipe. Plastic piping and fittings shall not be used.

Exception: Plastic piping and fittings may be used in residential buildings five stories or less in height.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

701.2 amended L.L. 8/2008 § 47, eff. July 1, 2008.

701.2.1 added L.L. 8/2008 § 47, eff. July 1, 2008.

701.2.2 added L.L. 8/2008 § 47, eff. July 1, 2008.

701.2.3 amended L.L. 18/2008 § 2, eff. July 1, 2008.

701.2.3 added L.L. 8/2008 § 47, eff. July 1, 2008.

701.2.4 added L.L. 8/2008 § 47, eff. July 1, 2008.

701.2.5 added L.L. 8/2008 § 47, eff. July 1, 2008.

701.2.6 added L.L. 8/2008 § 47, eff. July 1, 2008.

701.3 amended L.L. 18/2008 § 3, eff. July 1, 2008.

701.4 amended L.L. 8/2008 § 48, eff. July 1, 2008.

701.8 amended L.L. 8/2008 § 48, eff. July 1, 2008.



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 SECTION PC 702: MATERIALS

NYC Administrative Code § 28-PC 702

702.1 Above-ground sanitary drainage and vent pipe.

Above-ground soil, waste and vent pipe shall conform to one of the standards listed in Table 702.1.3]Table 702.1 Above-Ground Drainage and Vent Pipe Material Standard 2]Acrylonitrile butadiene styrene (ABS) plastic pipe schedule 40ASTM D 2661; ASTM F 628; CSA B181.1Brass pipeASTM B 43Cast-iron pipeASTM A 74; CISPI 301; ASTM A 888Copper or copper-alloy pipeASTM B 42; ASTM B 302Copper or copper-alloy tubing (Type K, L)ASTM B 75; ASTM B 88; ASTM B 251; ASTM B 306Ductile ironAWWA C151Galvanized steel pipeASTM A 53Glass pipeASTM C 1053High silicon cast ironASTM A 518 A/518 MPolyolefin pipeASTM F 1412; ASTM D 2657; CAN/CSA B181.3Polyvinyl chloride (PVC) plastic pipe (Type DWV)ASTM D 2665; ASTM D 3311; ASTM F 1866Stainless steel drainage systems, Types 304 and 316LASME A112.3.1

702.2Underground building sanitary drainage and vent pipe.Underground building sanitary drainage and vent pipe shall conform to one of the standards listed in Table 702.2.Table 702.2 Underground Building Drainage and Vent Pipe Material Standard Cast-iron pipeASTM A 74; CISPI 301; ASTM A 888Copper or copper alloy tubing (Type K, L)ASTM B 75; ASTM B 88; ASTM B 251; ASTM B 306Ductile ironAWWA C151Non-asbestos fiber cement pipeASTM C 1449Polyethylene (corrugated 12 inches and larger)ASTM F 667Stainless steel drainage systems, Type 316LASME A112.3.1

702.3Building sewer pipe.Building sewer pipe shall conform to one of the standards listed in Table 702.3.3]Table 702.3 Building Sewer Pipe Material Standard 1]Material Standard 2]Cast-iron pipeASTM A 74; ASTM A 888; CISPI 301Concrete pipeASTM C14; ASTM C76; CAN/CSA A257.1M; CAN/CSA A257.2MCopper or copper-alloy tubing (Type K or L)ASTM B 75; ASTM B 88; ASTM B 251Ductile ironAWWA C151Non-asbestos fiber cement pipeASTM C 1449Stainless steel drainage systems, types 304 and 316LASME A112.3.1Vitrified clay pipeASTM C 4; ASTM C 700

702.4Fittings.Pipe fittings shall be approved for installation with the piping material installed and shall conform to the respective pipe standards or one of the standards listed in Table 702.4.Table 702.4 Pipe Fittings Material Standard

Acrylonitrile butadiene styrene (ABS) plastic pipe schedule 40 ASTM D 3311; CSA B181.1; ASTM D 2661 Cast iron ASME B16.4; ASME B16.12; ASTM A 74; ASTM A 888; CISPI 301 Copper or copper alloy ASME B16.15; ASME B16.18; ASME B16.22; ASME B16.23; ASME B16.26; ASME B16.29 Glass ASTM C 1053 Gray iron and ductile iron AWWA C110 High silicon iron ASTM A 861 Malleable iron ASME B16.3 Polyethylene (corrugated 12 inches and larger) ASTM F 667 Polyolefin CAN/CSA B181.3; F 1412; D 2657 Polyvinyl chloride (PVC) plastic ASTM D 3311; ASTM D 2665; ASTM F 1866 Stainless steel drainage systems, Types 304 and 316L ASME A112.3.1

702.5 Chemical waste system. A chemical waste system shall be completely separated from the sanitary drainage system. The chemical waste shall be treated in accordance with Section 803.2 before discharging to the sanitary drainage system. Separate drainage systems for chemical wastes and vent pipes shall be of an approved material that is resistant to corrosion and degradation for the concentrations of chemicals involved.

702.6 Lead bends and traps. Lead bends and traps shall not be less than 0.125 inch (3.2 mm) wall thickness.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

702.4 Table amended L.L. 8/2008 § 49, eff. July 1, 2008.



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SECTION PC 703: BUILDING SEWER

NYC Administrative Code § 28-PC 703

703.1 Building sewer pipe near the water service.

Where the building sewer is installed within 5 feet (1524 mm) of the water service, as provided for in Section 603.2, the building sewer pipe shall conform to one of the standards for, cast-iron pipe, copper or copper-alloy tubing, or ductile iron listed in Table 702.3.

703.2 Drainage pipe in filled ground. Where a building sewer or building drain is installed on filled or unstable ground, the drainage pipe shall conform to one of the standards for, cast-iron pipe, copper or copper-alloy tubing, ductile iron, non-asbestos fiber cement or concrete pipe listed in Table 702.3.

703.3 Sanitary and storm sewers. Where separate systems of sanitary drainage and storm drainage are installed in the same property, the sanitary and storm building sewers or drains shall be permitted to be laid side by side in one trench.

703.4 Existing building sewers and drains. Existing building sewers and drains shall connect with new building sewer and drainage systems only where found by examination and test to conform to the new system in quality of material. The commissioner shall notify the owner to make the changes necessary to conform to this code.

703.5 Cleanouts on building sewers. Cleanouts on building sewers shall be located as set forth in Section PC 708.

703.6 Building house traps. Building house traps shall be installed on all building drains near the foundation wall of the structure, inside of the street line, and on the sewer side of all connections except the connection used to receive the discharge from a sewage ejector, oil separator or leader on combined systems. If such trap is placed outside of the foundation wall or below a cellar floor, it shall be made accessible in a manhole with a cover, or by extension of the two handholes that shall be provided with cleanouts at the cellar floor or grade. Handhold extensions shall be not more than 18 inches (457 mm) above the centerline of the drain. Building (house) traps shall be the same size as the building house drain connected thereto.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See
Title 28 footnote]



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 Chapter 7: SANITARY DRAINAGE
 SECTION PC 704: DRAINAGE PIPING INSTALLATION

NYC Administrative Code § 28-PC 704

704.1 Slope of horizontal drainage piping.

Horizontal drainage piping shall be installed in uniform alignment at uniform slopes. The minimum slope of a horizontal drainage pipe shall be in accordance with Table 704.1. Table 704.1 Slope of Horizontal Drainage Pipe Size (inches) Minimum Slope (inch per foot) 2 1/2 or less 1/4 3 to 6 1/8 8 or larger 1/16 For SI: 1 inch = 25.4 mm, 1 inch per foot = 0.083.3 mm/m.

704.2 Change in size. The size of the drainage piping shall not be reduced in size in the direction of the flow. A 4 inch by 3 inch (102 mm by 76mm) water closet connection shall not be considered as a reduction in size.

704.3 Connections to offsets and bases of stacks. Horizontal branches shall connect to the bases of stacks at a point located not less than 10 times the diameter of the drainage stack downstream from the stack. Except as prohibited by Section 711.2, horizontal branches shall connect to horizontal stack offsets at a point located not less than 10 times the diameter of the drainage stack downstream from the upper stack.

704.4 Future fixtures. Drainage piping for future fixtures shall terminate with an approved cap or plug.

704.5 Dead ends. In the installation or removal of any part of a drainage system, dead ends shall be prohibited. Cleanout extensions and approved future fixture drainage piping shall not be considered as dead ends.

704.6 Suds Pressure Zones Vents. Where sinks, laundry trays, laundry washing machines, bathtubs, and similar fixtures in which detergents producing suds are normally used and discharged at an upper floor level into a soil or waste stack that also serves fixtures in other occupancy units at a lower floor level, the drainage and vent piping for such lower fixtures shall be arranged so as to avoid connection to suds pressure zones in the sanitary drainage and vent systems. If connected to the sanitary system, a suds relief vent relieving to a nonpressure zone shall be provided at each suds pressure zone where such connections are installed. The diameter of such relief vent shall be at least 3/4 the diameter of the piping in which the pressure zone occurs, but not less than 2 inches (51mm). Suds pressure zones shall

be considered to exist at the following locations in sanitary drainage and vent systems when the piping serves fixtures on two or more floors that receive wastes that contain detergents producing suds:

1. In a soil or waste stack a zone shall be considered to exist in the vertical portion within 40 stack diameters of the base fitting.

2. In the horizontal drain at the base of a soil or waste stack a zone shall be considered to exist in the horizontal portion within ten stack diameters of the base fitting. Where a 60 degree or 90 degree fitting is installed in the horizontal drain, a zone shall be considered to exist in the horizontal portion within 40 drain diameters upstream of and 10 drain diameters downstream of the fitting in accordance with Figure 704.6 (2).

3. In a soil or waste stack offset of 60 degrees or 90 degrees, a zone shall be considered to exist in the vertical portion of the stack within 40 stack diameters of the base fitting for the upper section of the stack. The zone shall be considered to exist in the horizontal offset within 10 stack diameters of such base fitting and within 40 stack diameters of the top fitting for the lower section of the stack.

4. In a vent stack that has its base connected to a suds pressure zone in the sanitary drainage system, a zone shall be considered to exist in the portion of the vent stack extending from its base connection up to the lowest branch vent fitting located above the level of the suds pressure zone in the sanitary drainage system. Figure 704.6(2)
[SEE graphical material in printed version]



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SECTION PC 705: JOINTS

NYC Administrative Code § 28-PC 705

705.1 General.

This section contains provisions applicable to joints specific to sanitary drainage piping.

705.2ABS plastic.Joints between ABS plastic pipe or fittings shall comply with Sections 705.2.1 through 705.2.3.

705.2.1Mechanical joints.Mechanical joints on drainage pipes shall be made with an elastomeric seal conforming to ASTM C 1173, ASTM D 3212 or CAN/CSA B602. Mechanical joints shall be installed only in underground systems unless otherwise approved. Joints shall be installed in accordance with the manufacturer's instructions.

705.2.2Solvent cementing.Joint surfaces shall be clean and free from moisture. Solvent cement that conforms to ASTM D 2235 or CSA B181.1 shall be applied to all joint surfaces. The joint shall be made while the cement is wet. Joints shall be made in accordance with ASTM D 2235, ASTM D 2661, ASTM F 628 or CSA B181.1. Solvent-cement joints shall be permitted above or below ground.

705.2.3Threaded joints.Threads shall conform to ASME B1.20.1. Schedule 80 or heavier pipe shall be permitted to be threaded with dies specifically designed for plastic pipe. Approved thread lubricant or tape shall be applied on the male threads only.

705.3Asbestos-cement.Joints between asbestos-cement pipe or fittings shall be made with a sleeve coupling of the same composition as the pipe, sealed with an elastomeric ring conforming to ASTM D 1869.

705.4Brass.Joints between brass pipe or fittings shall comply with Sections 705.4.1 through 705.4.4.

705.4.1Braze joints.All joint surfaces shall be cleaned. An approved flux shall be applied where required. The joint shall be brazed with a filler metal conforming to AWS A5.8.

705.4.2Mechanical joints.Mechanical joints shall be installed in accordance with the manufacturer's instructions.

705.4.3 Threaded joints. Threads shall conform to ASME B1.20.1. Pipe-joint compound or tape shall be applied on the male threads only.

705.4.4 Welded joints. All joint surfaces shall be cleaned. The joint shall be welded with an approved filler metal.

705.5 Cast iron. Joints between cast-iron pipe or fittings shall comply with Sections 705.5.1 through 705.5.3.

705.5.1 Caulked joints. Joints for hub and spigot pipe shall be firmly packed with oakum or hemp. Molten lead shall be poured in one operation to a depth of not less than 1 inch (25 mm). The lead shall not recede more than 0.125 inch (3.2 mm) below the rim of the hub and shall be caulked tight. Paint, varnish or other coatings shall not be permitted on the jointing material until after the joint has been tested and approved. Lead shall be run in one pouring and shall be caulked tight. Acid-resistant rope and acidproof cement shall be permitted.

705.5.2 Compression gasket joints. Compression gaskets for hub and spigot pipe and fittings shall conform to ASTM C 564. Gaskets shall be compressed when the pipe is fully inserted.

705.5.3 Mechanical joint coupling. Mechanical joint couplings for hubless pipe and fittings shall comply with CISPI 310 or ASTM C 1277. The elastomeric sealing sleeve shall conform to ASTM C 564 or CAN/CSA B602 and shall be provided with a center stop. Mechanical joint couplings shall be installed in accordance with the manufacturer's installation instructions.

705.6 Concrete joints. Joints between concrete pipe and fittings shall be made with an elastomeric seal conforming to ASTM C 443, ASTM C 1173, CAN/CSA A257.3M or CAN/CSA B602.

705.7 and 705.8 Reserved.

705.9 Copper pipe. Joints between copper or copper-alloy pipe or fittings shall comply with Sections 705.9.1 through 705.9.5.

705.9.1 Brazed joints. All joint surfaces shall be cleaned. An approved flux shall be applied where required. The joint shall be brazed with a filler metal conforming to AWS A5.8.

705.9.2 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions.

705.9.3 Soldered joints. Solder joints shall be made in accordance with the methods of ASTM B 828. All cut tube ends shall be reamed to the full inside diameter of the tube end. All joint surfaces shall be cleaned. A flux conforming to ASTM B 813 shall be applied. The joint shall be soldered with a solder conforming to ASTM B 32.

705.9.4 Threaded joints. Threads shall conform to ASME B1.20.1. Pipe-joint compound or tape shall be applied on the male threads only.

705.9.5 Welded joints. All joint surfaces shall be cleaned. The joint shall be welded with an approved filler metal.

705.10 Copper tubing. Joints between copper or copper-alloy tubing or fittings shall comply with Sections 705.10.1 through 705.10.3.

705.10.1 Brazed joints. All joint surfaces shall be cleaned. An approved flux shall be applied where required. The joint shall be brazed with a filler metal conforming to AWS A5.8.

705.10.2 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions.

705.10.3 Soldered joints. Solder joints shall be made in accordance with the methods of ASTM B 828. All cut tube ends shall be reamed to the full inside diameter of the tube end. All joint surfaces shall be cleaned. A flux conforming to

ASTM B 813 shall be applied. The joint shall be soldered with a solder conforming to ASTM B 32.

705.11Borosilicate glass joints.Glass-to-glass connections shall be made with a bolted compression-type stainless steel (300 series) coupling with contoured acid-resistant elastomeric compression ring and a fluorocarbon polymer inner seal ring; or with caulked joints in accordance with Section 705.11.1.

705.11.1Caulked joints.Every lead-caulked joint for hub and spigot soil pipe shall be firmly packed with oakum or hemp and filled with molten lead not less than 1 inch (25 mm) deep and not to extend more than 0.125 inch (3.2 mm) below the rim of the hub. Paint, varnish or other coatings shall not be permitted on the jointing material until after the joint has been tested and approved. Lead shall be run in one pouring and shall be caulked tight. Acid-resistant rope and acidproof cement shall be permitted.

705.12Steel.Joints between galvanized steel pipe or fittings shall comply with Sections 705.12.1 and 705.12.2.

705.12.1Threaded joints.Threads shall conform to ASME B1.20.1. Pipe-joint compound or tape shall be applied on the male threads only.

705.12.2Mechanical joints.Joints shall be made with an approved elastomeric seal. Mechanical joints shall be installed in accordance with the manufacturer's instructions.

705.13Lead.Joints between lead pipe or fittings shall comply with Sections 705.13.1 and 705.13.2.

705.13.1Burned.Burned joints shall be uniformly fused together into one continuous piece. The thickness of the joint shall be at least as thick as the lead being joined. The filler metal shall be of the same material as the pipe.

705.13.2Wiped.Joints shall be fully wiped, with an exposed surface on each side of the joint not less than 0.75 inch (19.1 mm). The joint shall be at least 0.325 inch (9.5 mm) thick at the thickest point.

705.14PVC plastic.Joints between PVC plastic pipe or fittings shall comply with Sections 705.14.1 through 705.14.3.

705.14.1Mechanical joints.Mechanical joints on drainage pipe shall be made with an elastomeric seal conforming to ASTM C 1173, ASTM D 3212 or CAN/CSA B602. Mechanical joints shall not be installed in above-ground systems, unless otherwise approved. Joints shall be installed in accordance with the manufacturer's instructions.

705.14.2Solvent cementing.Joint surfaces shall be clean and free from moisture. A purple primer that conforms to ASTM F 656 shall be applied. Solvent cement not purple in color and conforming to ASTM D 2564, CSA B137.3, CSA B181.2 or CSA B182.1 shall be applied to all joint surfaces. The joint shall be made while the cement is wet and shall be in accordance with ASTM D 2855. Solvent-cement joints shall be permitted above or below ground.

705.14.3Threaded joints.Threads shall conform to ASME B1.20.1. Schedule 80 or heavier pipe shall be permitted to be threaded with dies specifically designed for plastic pipe. Approved thread lubricant or tape shall be applied on the male threads only.

705.15Vitrified clay.Joints between vitrified clay pipe or fittings shall be made with an elastomeric seal conforming to ASTM C 425, ASTM C 1173 or CAN/CSA B602.

705.16Joints between different materials.Joints between different piping materials shall be made with a mechanical joint of the compression or mechanical-sealing type conforming to ASTM C 1173, ASTM C 1460 or ASTM C 1461. Connectors and adapters shall be approved for the application and such joints shall have an elastomeric seal conforming to ASTM C 425, ASTM C 443, ASTM C 564, ASTM C 1440, ASTM D 1869, ASTM F 477, CAN/CSA A257.3M or CAN/CSA B602, or as required in Sections 705.16.1 through 705.16.5. Joints between glass pipe and other types of materials shall be made with adapters having a TFE seal. Joints shall be installed in accordance with the manufacturer's

instructions.

705.16.1 Copper or copper-alloy tubing to cast-iron hub pipe. Joints between copper or copper-alloy tubing and cast-iron hub pipe shall be made with a brass ferrule or compression joint. The copper or copper-alloy tubing shall be soldered to the ferrule in an approved manner, and the ferrule shall be joined to the cast-iron hub by a caulked joint or a mechanical compression joint.

705.16.2 Reserved.

705.16.3 Cast-iron pipe to galvanized steel or brass pipe. Joints between cast-iron and galvanized steel or brass pipe shall be made by either caulked or threaded joints or with an approved adapter fitting.

705.16.4 Plastic pipe or tubing to other piping material. Joints between different grades of plastic pipe or between plastic pipe and other piping material shall be made with an approved adapter fitting. Joints between plastic pipe and cast-iron hub pipe shall be made by a caulked joint or a mechanical compression joint.

705.16.5 Lead pipe to other piping material. Joints between lead pipe and other piping material shall be made by a wiped joint to a caulking ferrule, soldering nipple, or bushing or shall be made with an approved adapter fitting.

705.16.6 Borosilicate glass to other materials. Joints between glass pipe and other types of materials shall be made with adapters having a TFE seal and shall be installed in accordance with the manufacturer's instructions.

705.16.7 Stainless steel drainage systems to other materials. Joints between stainless steel drainage systems and other piping materials shall be made with approved mechanical couplings.

705.17 Drainage slip joints. Slip joints shall comply with Section 405.8.

705.18 Caulking ferrules. Ferrules shall be of red brass and shall be in accordance with Table 705.18. Table 705.18
Caulking Ferrule Specifications
Pipe Sizes (inches) Inside Diameter (inches) Length (inches) Minimum Weight Each
2 1/4 4 1/2 1 pound 3 3/4 4 1/2 1 pound 12 ounces 4 1/4 4 1/2 2 pounds 8 ounces

For SI: 1 inch = 25.4 mm, 1 ounce = 28.35 g, 1 pound = 0.454 kg.

705.19 Soldering bushings. Soldering bushings shall be of red brass and shall be in accordance with Table 705.19. Table 705.19
Soldering Bushing Specifications
Pipe Sizes (inches) Minimum Weight Each
1 1/4 6 ounces 1 1/2 8 ounces 2 14 ounces 2 1/2 1 pound 6 ounces 3 2 pounds 4 3 pounds 8 ounces

For SI: 1 inch = 25.4 mm, 1 ounce = 28.35 g, 1 pound = 0.454 kg.

705.20 Stainless steel drainage systems. O-ring joints for stainless steel drainage systems shall be made with an approved elastomeric seal.



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CHAPTER 6: THE NEW YORK CITY PLUMBING CODE
Chapter 7: SANITARY DRAINAGE
SECTION PC 706: CONNECTIONS BETWEEN DRAINAGE PIPING AND FITTINGS

NYC Administrative Code § 28-PC 706

706.1 Connections and changes in direction.

All connections and changes in direction of the sanitary drainage system shall be made with approved drainage fittings. Connections between drainage piping and fixtures shall conform to Section PC 405.

706.2 Obstructions. The fittings shall not have ledges, shoulders or reductions capable of retarding or obstructing flow in the piping. Threaded drainage pipe fittings shall be of the recessed drainage type.

706.3 Installation of fittings. Fittings shall be installed to guide sewage and waste in the direction of flow. Change in direction shall be made by fittings installed in accordance with Table 706.3. Change in direction by combination fittings, side inlets or increasers shall be installed in accordance with Table 706.3 based on the pattern of flow created by the fitting.

Table 706.3 Fittings for Change in Direction	Type of Fitting	Pattern Change in Direction
Horizontal to vertical	Vertical to horizontal	Horizontal to horizontal
1]Type of Fitting	Pattern Change in Direction	Horizontal to vertical
Vertical to horizontal	Horizontal to horizontal	2]Sixteenth bend
X X X	Eighth bend	X X X
Sixth bend	X X X	Quarter bend
X X X	Xa Xa	Short sweep
X Xa,b Xa	Long sweep	X X X
Sanitary tee	Xc = = Wye	X X X
Combination wye and eighth bend	X X X	4]For SI: 1 inch = 25.4 mm.

a. The fittings shall only be permitted for a 2-inch or smaller fixture drain.
b. Three inches or larger.
c. For a limitation on double sanitary tees, see Section 706.3.



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CHAPTER 6: THE NEW YORK CITY PLUMBING CODE
Chapter 7: SANITARY DRAINAGE
SECTION PC 707: PROHIBITED JOINTS AND CONNECTIONS

NYC Administrative Code § 28-PC 707

707.1 Prohibited joints.

The following types of joints and connections shall be prohibited:

1. Cement or concrete joints.
2. Mastic or hot-pour bituminous joints.
3. Joints made with fittings not approved for the specific installation.
4. Joints between different diameter pipes made with elastomeric rollingO-rings.
5. Solvent-cement joints between different types of plastic pipe.
6. Saddle-type fittings.



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CHAPTER 6: THE NEW YORK CITY PLUMBING CODE
Chapter 7: SANITARY DRAINAGE
SECTION PC 708: CLEANOUTS

NYC Administrative Code § 28-PC 708

708.1 Scope.

This section shall govern the size, location, installation and maintenance of drainage pipe cleanouts.

708.2 Cleanout plugs. Cleanout plugs shall be brass or plastic, or other approved materials. Brass cleanout plugs shall be utilized with metallic drain, waste and vent piping only, and shall conform to ASTM A 74, ASME A112.3.1 or ASME A112.36.2M. Cleanouts with plate-style access covers shall be fitted with corrosion-resisting fasteners. Plastic cleanout plugs shall conform to the requirements of Section 702.4. Plugs shall have raised square or countersunk square heads. Countersunk heads shall be installed where raised heads are a trip hazard. Cleanout plugs with borosilicate glass systems shall be of borosilicate glass.

708.3 Where required. Cleanouts shall be located in accordance with Sections 708.3.1 through 708.3.4.

708.3.1 Horizontal drains within buildings. All horizontal drains shall be provided with cleanouts located not more than 100 feet (30 480 mm) apart.

708.3.2 Building sewers. Building sewers shall be provided with cleanouts located not more than 100 feet (30 480 mm) apart measured from the upstream entrance of the cleanout. For building sewers 8 inches (203 mm) and larger, manholes shall be provided and located not more than 200 feet (60 960 mm) from the junction of the building drain and building sewer, at each change in direction and at intervals of not more than 400 feet (122 m) apart. Manholes and manhole covers shall be of an approved type.

708.3.3 Changes of direction. Cleanouts shall be installed at each change of direction of the building drain or horizontal waste or soil lines greater than 45 degrees (0.79 rad). Where more than one change of direction occurs in a run of piping, only one cleanout shall be required for each 40 feet (12 192 mm) of developed length of the drainage piping.

708.3.4Base of stack.A cleanout shall be provided at the base of each waste or soil stack.

708.3.5Manholes.Manholes serving a building drain shall have secured gas-tight covers and shall be located in accordance with Section 708.3.2.

708.4Concealed piping.Cleanouts on concealed piping or piping under a floor slab or in a crawl space of less than 24 inches (610 mm) in height or a plenum shall be extended through and terminate flush with the finished wall, floor or ground surface or shall be extended to the outside of the building. Cleanout plugs shall not be covered with cement, plaster or any other permanent finish material. Where it is necessary to conceal a cleanout or to terminate a cleanout in an area subject to vehicular traffic, the covering plate, access door or cleanout shall be of an approved type designed and installed for this purpose.

708.5Opening direction.Every cleanout shall be installed to open to allow cleaning in the direction of the flow of the drainage pipe or at right angles thereto.

708.6Prohibited installation.Cleanout openings shall not be utilized for the installation of new fixtures, except where approved and where another cleanout of equal access and capacity is provided.

708.7Minimum size.Cleanouts shall be the same nominal size as the pipe they serve up to 4 inches (102 mm). For pipes larger than 4 inches (102 mm) nominal size, the minimum size of the cleanout shall be 4 inches (102 mm).

Exceptions:

1. "P" trap connections with slip joints or ground joint connections, or stack cleanouts that are not more than one pipe diameter smaller than the drain served, shall be permitted.
2. Cast-iron cleanout sizing shall be in accordance with referenced standards in Table 702.4, ASTM A 74 for hub and spigot fittings or ASTM A 888 or CISPI 301 for hubless fittings.

708.8Clearances.Cleanouts on 6-inch (153 mm) and smaller pipes shall be provided with a clearance of not less than 18 inches (457 mm) for rodding. Cleanouts on 8-inch (203 mm) and larger pipes shall be provided with a clearance of not less than 36 inches (914 mm) for rodding.

708.9Access.Access shall be provided to all cleanouts.



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SECTION PC 709: FIXTURE UNITS

NYC Administrative Code § 28-PC 709

709.1 Values for fixtures.

Drainage fixture unit values as given in Table 709.1 designate the relative load weight of different kinds of fixtures that shall be employed in estimating the total load carried by a soil or waste pipe, and shall be used in connection with Tables 710.1(1) and 710.1(2) of sizes for soil, waste and vent pipes for which the permissible load is given in terms of fixture units.3]Table 709.1 Drainage Fixture Units for Fixtures and Groups Fixture Type Drainage Fixture Unit Value as Load Factors Minimum Size of Trap (inches) 1]Fixture Type Drainage Fixture Unit Value as Load Factors Minimum Size of Trap (inches) 2]Automatic clothes washers, commerciala,g3 2 Automatic clothes washers, residentialg2 2 Bathroom group as defined in Section 202 (1.6 gpf water closet)f5 = Bathroom group as defined in Section 202 (water closet flushing greater than 1.6 gpf)f6 = Bathtub (with or without overhead shower or whirlpool attachments)2 11/2 Bidet1 11/4 Combination sink and tray2 11/2 Dental lavatory1 11/4 Dental unit or cuspidor1 11/4 Dishwashing machine,c domestic2 11/2 Drinking fountain1/2 11/4 Emergency floor drain0 2 Floor drains2 2 Kitchen sink, domestic2 11/2 Kitchen sink, domestic with food waste grinder and/or dishwasher2 11/2 Laundry tray (1 or 2 compartments)2 11/2 Lavatory1 11/4 Shower2 11/2 Sink2 11/2 Urinal4 Note d Urinal, 1 gallon per flush or less2e Note d Wash sink (circular or multiple) each set of faucets2 11/2 Water closet, flushometer tank, public or private4e Note d Water closet, private (1.6 gpf)3e Note d Water closet, private (flushing greater than 1.6 gpf)4e Note d Water closet, public (1.6 gpf)4e Note d Water closet, public (flushing greater than 1.6 gpf)6e Note d 4]For SI: 1 inch = 25.4 mm, 1 gallon = 3.785 L.a. For traps larger than 3 inches, use Table 709.2.b. A shower head over a bathtub or whirlpool bathtub attachment does not increase the drainage fixture unit value.c. See Sections 709.2 through 709.4 for methods of computing unit value of fixtures not listed in this table or for rating of devices with intermittent flows.d. Trap size shall be consistent with the fixture outlet size.e. For the purpose of computing loads on building drains and sewers, water closets and urinals shall not be rated at a lower drainage fixture unit unless the lower values are confirmed by testing.f. For fixtures added to a dwelling unit bathroom group, add the DFU value of those additional fixtures to the bathroom group fixture count.g. See Section 406.3 for sizing requirements for fixture drain, branch drain, and drainage stack for an automatic clothes washer standpipe.

709.2 Fixtures not listed in Table 709.1. Fixtures not listed in Table 709.1 shall have a drainage fixture unit load based on the outlet size of the fixture in accordance with Table 709.2. The minimum trap size for unlisted fixtures shall be the size of the drainage outlet but not less than 1.25 inches (32 mm). Table 709.2 Drainage Fixture Units for Fixture Drains or Traps

Fixture Drain or Trap Size (inches)	Drainage Fixture Unit Value
1 1/4	1
1 1/2	2
2	3
2 1/2	4
3	5
4	6

For SI: 1 inch = 25.4 mm.

709.3 Values for continuous and semicontinuous flow. Drainage fixture unit values for continuous and semicontinuous flow into a drainage system shall be computed on the basis that 1 gpm (0.06 L/s) of flow is equivalent to two fixture units.

709.4 Values for indirect waste receptor. The drainage fixture unit load of an indirect waste receptor receiving the discharge of indirectly connected fixtures shall be the sum of the drainage fixture unit values of the fixtures that discharge to the receptor, but not less than the drainage fixture unit value given for the indirect waste receptor in Table 709.1 or 709.2.



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 Chapter 7: SANITARY DRAINAGE
 SECTION PC 710: DRAINAGE SYSTEM SIZING

NYC Administrative Code § 28-PC 710

710.1 Maximum fixture unit load.

The maximum number of drainage fixture units connected to a given size of building sewer, building drain or horizontal branch of the building drain shall be determined using Table 710.1(1). The maximum number of drainage fixture units connected to a given size of horizontal branch or vertical soil or waste stack shall be determined using Table 710.1(2).

710.1.1 Horizontal stack offsets. Horizontal stack offsets shall be sized as required for building drains in accordance with Table 710.1(1), except as required by Section 711.4.

710.1.2 Vertical stack offsets. Vertical stack offsets shall be sized as required for straight stacks in accordance with Table 710.1(2), except where required to be sized as a building drain in accordance with Section 711.1.1.3.] Table 710.1 (1) Building Drains and Sewers Diameter of Pipe (inches) Maximum Number of Drainage Fixture Units Connected to any Portion of the Building Drain or the Building Sewer, Including Branches of the Building Drain a Slope per foot 1/16 inch 1/8 inch 1/4 inch 1/2 inch 1] Diameter of Pipe (inches) Maximum Number of Drainage Fixture Units Connected to any Portion of the Building Drain or the Building Sewer, Including Branches of the Building Drain a Slope per foot 1/16 inch 1/8 inch 1/4 inch 1/2 inch 2] 1 1/4 - - | 1 | 1 1/2 - - | 3 | 3 2 - - | 21 | 26 2 1/2 - - | 24 | 31 3 - | 36 | 42 | 50 4 - | 180 | 216 | 250 5 - 390 | 480 | 575 6 - | 700 | 840 1,000 8 1,400 1,600 1,920 2,300 10 2,500 2,900 3,500 4,200 12 3,900 4,600 5,600 6,700 15 7,000 8,300 10,000 12,000 4] For SI: 1 inch = 25.4 mm, 1 inch per foot = 83.3 mm/m.a. The minimum size of any building drain serving a water closet shall be 3 inches. Table 710.1 (2) Horizontal Fixture Branches and Stacks a Diameter of Pipe (inches) Total for horizontal branch Maximum Number of Drainage Fixture Units (dfu) Stacks b Total discharge into one branch interval Total for Stack of Three Branch Intervals or Less Total for Stack Greater than Three Branch Intervals 1 1/2 | 3 | 2 | 4 | 8 2 | 6 | 6 | 10 | 24 2 1/2 | 12 | 9 | 20 | 42 3 | 20 | 20 | 48 | 72 4 | 160 | 90 | 240 | 500 5 | 360 | 200 | 540 1,100 6 | 620 | 350 | 960 1,900 8 1,400 | 600 2,200 3,600 10 2,500 1,000 3,800 5,600 12 2,900 1,500 6,000 8,400 15 7,000 Note c Note c Note c For SI: 1 inch = 25.4 mm. Does not include branches of the building drain. Refer to Table 710.1(1). b. Stacks shall be sized based on the total accumulated connected load at each story or branch interval. As the total accumulated connected load decreases, stacks are permitted to be reduced in size. Stack diameters shall not be reduced to less than one-half of the diameter of the largest stack size required. c. Sizing load based on design criteria.

710.2Reserved.



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SECTION PC 711: OFFSETS IN DRAINAGE PIPING IN BUILDINGS OF FIVE STORIES OR MORE

NYC Administrative Code § 28-PC 711

711.1 Horizontal branch connections above or below vertical stack offsets.

If a horizontal branch connects to the stack within 2 feet (610 mm) above or below a vertical stack offset, and the offset is located more than four branch intervals below the top of the stack, the offset shall be vented in accordance with Section PC 915.

711.1.1 Omission of vents for vertical stack offsets. Vents for vertical offsets required by section 711.1 shall not be required where the stack and its offset are sized as a building drain (see Table 710.1(1), Column 5).

711.2 Horizontal branch connections to horizontal stack offsets. Where a horizontal stack offset is located more than four branch intervals below the top of the stack, a horizontal branch shall not connect within the horizontal stack offset or within 2 feet (610 mm) above or below such offset.

711.3 Horizontal stack offsets. A stack with a horizontal offset located more than four branch intervals below the top of the stack shall be vented in accordance with Section PC 915 and sized as follows:

1. The portion of the stack above the offset shall be sized as for a vertical stack based on the total number of drainage fixture units above the offset.
2. The offset shall be sized in accordance with Section 710.1.1.
3. The portion of the stack below the offset shall be sized as for the offset or based on the total number of drainage fixture units on the entire stack, whichever is larger (see Table 710.1(2), Column 4).

711.3.1 Omission of vents for horizontal stack offsets. Vents for horizontal stack offsets required by Section 711.3 shall not be required where the stack and its offset are one pipe size larger than required for a building drain (see Table 710.1(1), Column 5) and the entire stack and offset are not less in cross-sectional area than that required for a straight stack plus the area of an offset vent as provided for in Section PC 915. Omission of offset vents in accordance with this

section shall not constitute approval of horizontal branch connections within the offset or within 2 feet (610 mm) above or below the offset.

711.4Offsets below lowest branch.Where a vertical offset occurs in a soil or waste stack below the lowest horizontal branch, change in diameter of the stack because of the offset shall not be required. If a horizontal offset occurs in a soil or waste stack below the lowest horizontal branch, the required diameter of the offset and the stack below it shall be determined as for a building drain in accordance with Table 710.1(1).



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SECTION PC 712: EJECTORS

NYC Administrative Code § 28-PC 712

712.1 Building subdrains.

Building subdrains that cannot be discharged to the sewer by gravity flow shall be discharged into a tightly covered and vented ejector pit/basin from which the liquid shall be lifted and discharged into the building gravity drainage system by automatic pumping equipment or other approved method.

712.2 Valves required. A check valve and full open valve, located on the discharge side of the check valve, shall be installed in the pump or ejector discharge piping between the pump or ejector and the gravity drainage system. Access shall be provided to such valves. Such valves will be located above the sump cover required by Section 712.1 or, where the discharge pipe from the ejector is below grade, the valves shall be accessibly located outside the sump below grade in an access pit with a removable access cover.

712.3 Ejector design. The ejector, pit and discharge piping shall conform to the requirements of Sections 712.3.1 through 712.3.5.

712.3.1 Ejector pump. The ejector pump capacity and head shall be appropriate to anticipated use requirements.

712.3.2 Ejector pit. The ejector pit shall be not less than 18 inches (457 mm) in diameter and 24 inches (610 mm) deep, unless otherwise approved. The pit shall be accessible and located such that all drainage flows into the pit by gravity. The ejector pit shall be constructed of tile, concrete, steel, plastic or other approved materials. The pit bottom shall be solid and provide permanent support for the pump. The ejector pit shall be fitted with a gas-tight removable cover adequate to support anticipated loads in the area of use. The ejector pit shall be vented in accordance with Chapter 9.

712.3.3 Discharge piping. Discharge piping shall meet the requirements of Section 712.2.

712.3.4 Maximum effluent level. The effluent level control shall be adjusted and maintained to at all times prevent

the effluent from rising to within 2 inches (51 mm) of the invert of the gravity drain inlet into the sump.

712.3.5 Ejector connection to the drainage system. Pumps connected to the drainage system shall connect to the building sewer or shall connect to a wye fitting in the building drain a minimum of 10 feet (3048 mm) from the base of any soil stack, waste stack or fixture drain. Where the discharge line connects into horizontal drainage piping, the connector shall be made through a wye fitting into the top of the drainage piping.

712.4 Sewage pumps and sewage ejectors. A sewage pump or sewage ejector shall automatically discharge the contents of the pit to the building drainage system downstream of the house trap.

712.4.1 Macerating toilet systems. Macerating toilet systems shall comply with CSA B45.9 or ASME A112.3.4 and shall be installed in accordance with the manufacturer's installation instructions.

712.4.2 Capacity. A sewage pump or sewage ejector shall have the capacity and head for the application requirements. Pumps or ejectors that receive the discharge of water closets shall be capable of handling spherical solids with a diameter of up to and including 2 inches (51 mm). Other pumps or ejectors shall be capable of handling spherical solids with a diameter of up to and including 1 inch (25.4 mm). The minimum capacity of a pump or ejector based on the diameter of the discharge pipe shall be in accordance with Table 712.4.2.

Exceptions:

1. Grinder pumps or grinder ejectors that receive the discharge of water closets shall have a minimum discharge opening of 1.25 inches (32 mm).

2. Macerating toilet assemblies that serve single water closets shall have a minimum discharge opening of 0.75 inch (19 mm). Table 712.4.2 Minimum Capacity of Sewage Pump or Sewage Ejector Diameter of the Discharge Pipe (inches) Capacity of Pump or Ejector (gpm) 2 21 21/2 30 3 46 For SI: 1 inch = 25.4 mm, 1 gallon per minute = 3.785 L/m.



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CHAPTER 6: THE NEW YORK CITY PLUMBING CODE
Chapter 7: SANITARY DRAINAGE
SECTION PC 713: HEALTH CARE PLUMBING

NYC Administrative Code § 28-PC 713

713.1 Scope.

This section shall govern those aspects of health care plumbing systems that differ from plumbing systems in other structures. Health care plumbing systems shall conform to this section in addition to the other requirements of this code. The provisions of this section shall apply to the special devices and equipment installed and maintained in the following occupancies: nursing homes; homes for the aged; orphanages; infirmaries; first aid stations; psychiatric facilities; clinics; professional offices of dentists and doctors; mortuaries; educational facilities; surgery, dentistry, research and testing laboratories; establishments manufacturing pharmaceutical drugs and medicines; and other structures with similar apparatus and equipment classified as plumbing.

713.2 Bedpan washers and clinical sinks. Bedpan washers and clinical sinks shall connect to the drainage and vent system in accordance with the requirements for a water closet. Bedpan washers shall also connect to a local vent.

713.3 Indirect waste. All sterilizers, steamers and condensers shall discharge to the drainage through an indirect waste pipe by means of an air gap. Where a battery of not more than three sterilizers discharges to an individual receptor, the distance between the receptor and a sterilizer shall not exceed 8 feet (2438 mm). The indirect waste pipe on a bedpan steamer shall be trapped.

713.4 Vacuum system station. Ready access shall be provided to vacuum system station receptacles. Such receptacles shall be built into cabinets or recesses and shall be visible.

713.5 Bottle system. Vacuum (fluid suction) systems intended for collecting, removing and disposing of blood, pus or other fluids by the bottle system shall be provided with receptacles equipped with an overflow prevention device at each vacuum outlet station.

713.6 Central disposal system equipment. All central vacuum (fluid suction) systems shall provide continuous service. Systems equipped with collecting or control tanks shall provide for draining and cleaning of the tanks while the

system is in operation. In hospitals, the system shall be connected to the emergency power system. The exhausts from a vacuum pump serving a vacuum (fluid suction) system shall discharge separately to open air above the roof.

713.7 Central vacuum or disposal systems. Where the waste from a central vacuum (fluid suction) system of the barometric-lag, collection-tank or bottle-disposal type is connected to the drainage system, the waste shall be directly connected to the sanitary drainage system through a trapped waste.

713.7.1 Piping. The piping of a central vacuum (fluid suction) system shall be of corrosion-resistant material with a smooth interior surface. A branch shall not be less than 0.5 inch (12.7 mm) nominal pipe size for one outlet and shall be sized in accordance with the number of vacuum outlets. A main shall not be less than 1 inch (25 mm) nominal pipe size. The pipe sizing shall be increased in accordance with the manufacturer's instructions as stations are increased.

713.7.2 Velocity. The velocity of airflow in a central vacuum (fluid suction) system shall be less than 5,000 feet per minute (25 m/s).

713.8 Vent connections prohibited. Connections between local vents serving bedpan washers or sterilizer vents serving sterilizing apparatus and normal sanitary plumbing systems are prohibited. Only one type of apparatus shall be served by a local vent.

713.9 Local vents and stacks for bedpan washers. Bedpan washers shall be vented to open air above the roof by means of one or more local vents. The local vent for a bedpan washer shall not be less than a 2-inch-diameter (51 mm) pipe. A local vent serving a single bedpan washer is permitted to drain to the fixture served.

713.9.1 Multiple installations. Where bedpan washers are located above each other on more than one floor, a local vent stack is permitted to be installed to receive the local vent on the various floors. Not more than three bedpan washers shall be connected to a 2-inch (51 mm) local vent stack, not more than six to a 3-inch (76 mm) local vent stack and not more than 12 to a 4-inch (102 mm) local vent stack. In multiple installations, the connections between a bedpan washer local vent and a local vent stack shall be made with tee or tee-wye sanitary pattern drainage fittings installed in an upright position.

713.9.2 Trap required. The bottom of the local vent stack, except where serving only one bedpan washer, shall be drained by means of a trapped and vented waste connection to the sanitary drainage system. The trap and waste shall be the same size as the local vent stack.

713.9.3 Trap seal maintenance. A water supply pipe not less than 1/4 inch (6.4 mm) in diameter shall be taken from the flush supply of each bedpan washer on the discharge or fixture side of the vacuum breaker, shall be trapped to form not less than a 3-inch (76 mm) water seal, and shall be connected to the local vent stack on each floor. The water supply shall be installed so as to provide a supply of water to the local vent stack for cleansing and drain trap seal maintenance each time a bedpan washer is flushed.

713.10 Sterilizer vents and stacks. Multiple installations of pressure and nonpressure sterilizers shall have the vent connections to the sterilizer vent stack made by means of inverted wye fittings. Access shall be provided to vent connections for the purpose of inspection and maintenance.

713.10.1 Drainage. The connection between sterilizer vent or exhaust openings and the sterilizer vent stack shall be designed and installed to drain to the funnel or basket-type waste fitting. In multiple installations, the sterilizer vent stack shall be drained separately to the lowest sterilizer funnel or basket-type waste fitting or receptor.

713.11 Sterilizer vent stack sizes. Sterilizer vent stack sizes shall comply with Sections 713.11.1 through 713.11.4.

713.11.1 Bedpan steamers. The minimum size of a sterilizer vent serving a bedpan steamer shall be 1.50 inches (38 mm) in diameter. Multiple installations shall be sized in accordance with Table 713.11.1.3] Table 713.11.1 Stack Sizes

for Bedpan Steamers and Boiling-Type Sterilizers (Number of Connections of Various Sizes Permitted to Various-sized Sterilizer Vent Stacks) Stack Size (inches) Connection Size 1 1/2 2" 1] Stack Size (inches) Connection Size 1 1/2 2" 2] 1 1/2a 1 or 0 2a 2 or 1 2b 1 and 1 3a 4 or 2 3b 2 and 2 4a 8 or 4 4b 4 and 4 4] For SI: 1 inch = 25.4 mm. a. Total of each size. b. Combination of sizes.

713.11.2 Boiling-type sterilizers. The minimum size of a sterilizer vent stack shall be 2 inches (51 mm) in diameter where serving a utensil sterilizer and 1.5 inches (38 mm) in diameter where serving an instrument sterilizer. Combinations of boiling-type sterilizer vent connections shall be sized in accordance with Table 713.11.1.

713.11.3 Pressure sterilizers. Pressure sterilizer vent stacks shall be 2.5 inches (64 mm) minimum. Those serving combinations of pressure sterilizer exhaust connections shall be sized in accordance with Table 713.11.3. Table 713.11.3 Stack Sizes for Pressure Sterilizers (Number of Connections of Various Sizes Permitted To Various-sized Vent Stacks) Stack Size (inches) Connection Size 3/4" 1" 1 1/4" 1 1/2" 1 1/2a 3 or 2 or 1 - 1 1/2b 2 and 1 - - 2a 6 or 3 or 2 or 1 2b 3 and 2 - - 2b 2 and 1 and 1 - 2b 1 and 1 and - 1 3a 15 or 7 or 5 or 3 3b 1 and 1 and 5 and 2 and - 2 1 For SI: 1 inch = 25.4 mm. a. Total of each size. b. Combination of sizes.

713.11.4 Pressure instrument washer sterilizer sizes. The minimum diameter of a sterilizer vent stack serving an instrument washer sterilizer shall be 2 inches (51 mm). Not more than two sterilizers shall be installed on a 2-inch (51 mm) stack, and not more than four sterilizers shall be installed on a 3-inch (76 mm) stack.



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SECTION PC 714: COMPUTERIZED DRAINAGE DESIGN

NYC Administrative Code § 28-PC 714

714.1 Design of drainage system.

The sizing, design and layout of the drainage system shall be permitted to be designed by approved computer design methods.

714.2 Load on drainage system. The load shall be computed from the multaneous or sequential discharge conditions from fixtures, appurtenances and appliances or the peak usage design condition.

714.2.1 Fixture discharge profiles. The discharge profiles for flow rates versus time from fixtures and appliances shall be in accordance with the manufacturer's specifications.

714.3 Selections of drainage pipe sizes. Pipe shall be sized to prevent full-bore flow.

714.3.1 Selecting pipe wall roughness. Pipe size calculations shall be conducted with the pipe wall roughness factor (ks), in accordance with the manufacturer's specifications and as modified for aging roughness factors with deposits and corrosion.

714.3.2 Slope of horizontal drainage piping. Horizontal drainage piping shall be designed and installed at slopes in accordance with Table 704.1.



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SECTION PC 715: BACKWATER VALVES

NYC Administrative Code § 28-PC 715

715.1 Sewage backflow.

Where fixtures, floor drains, or area drains are subject to overflow as the result of backwater from the public sewer system, accessible backwater valves shall be installed in the fixture drain pipe from such fixture, in the branch drain to such area drain or group of fixtures, or in the building drain at its point of exit from the building and downstream from the building trap.

715.2Material.All bearing parts of backwater valves shall be of corrosion-resistant material. Backwater valves shall comply with ASME A112.14.1, CSA B181.1 or CSA B181.2.

715.3Seal.Backwater valves shall be so constructed as to provide a mechanical seal against backflow. The flap shall be so designed as to hang partially open when not subject to backwater pressure.

715.4Diameter.Backwater valves, when fully opened, shall have a capacity not less than that of the pipes in which they are installed.

715.5Accessibility.Backwater valves shall be installed so that access is provided to the working parts for service and repair. Masonry access manholes shall be provided when the centerline of any drain line is 18 inches (457 mm) or more below a slab on grade.



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Chapter 8: INDIRECT/SPECIAL WASTE
SECTION PC 801: GENERAL

NYC Administrative Code § 28-PC 801

801.1 Scope.

This chapter shall govern matters concerning indirect waste piping and special wastes. This chapter shall further control matters concerning food-handling establishments, sterilizers, clear-water wastes, swimming pools, methods of providing air breaks or air gaps, and neutralizing devices for corrosive wastes.

801.2 Protection. All devices, appurtenances, appliances and apparatus intended to serve some special function, such as sterilization, distillation, processing, cooling, or storage of ice or foods, and that discharge to the drainage system, shall be provided with protection against backflow, flooding, fouling, contamination and stoppage of the drain.



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SECTION PC 802: INDIRECT WASTES

NYC Administrative Code § 28-PC 802

802.1 Where required.

Food-handling equipment and clear-water waste shall discharge through an indirect waste pipe as specified in Sections 802.1.1 through 802.1.7. All health-care related fixtures, devices and equipment shall discharge to the drainage system through an indirect waste pipe by means of an air gap in accordance with this chapter and Section 713.3. Fixtures not required by this section to be indirectly connected shall be directly connected to the plumbing system in accordance with Chapter 7.

802.1.1 Food handling. Equipment and fixtures utilized for the storage, preparation and handling of food shall discharge through an indirect waste pipe by means of an air gap.

802.1.2 Floor drains in food storage areas. Floor drains located within walk-in refrigerators or freezers in food service and food establishments shall be indirectly connected to the sanitary drainage system by means of an air gap. Where a floor drain is located within an area subject to freezing, the waste line serving the floor drain shall not be trapped and shall indirectly discharge into a waste receptor located outside of the area subject to freezing.

Exception: Where protected against backflow by a backwater valve, such floor drains shall be indirectly connected to the sanitary drainage system by means of an air break or an air gap.

802.1.3 Potable clear-water waste. Where devices and equipment, such as sterilizers and relief valves, discharge potable water to the building drainage system, the discharge shall be through an indirect waste pipe by means of an air gap.

802.1.4 Swimming pools. Where wastewater from swimming pools, backwash from filters and water from pool deck drains discharge to the building drainage system, the discharge shall be through an indirect waste pipe by means of an air gap.

802.1.5 Nonpotable clear-water waste. Where devices and equipment such as process tanks, filters, drips and boilers discharge nonpotable water to the building drainage system, the discharge shall be through an indirect waste pipe by means of an air break or an air gap.

802.1.6 Domestic Dishwashing machines. Domestic dishwashing machines shall discharge indirectly through an air gap or air break into a standpipe or waste receptor in accordance with Section 802.2, or discharge into a wye-branch fitting on the tailpiece of the kitchen sink or the dishwasher connection of a food waste grinder. The waste line of a domestic dishwashing machine discharging into a kitchen sink tailpiece or food waste grinder shall connect to a deck-mounted air gap or the waste line shall rise and be securely fastened to the underside of the sink rim or counter.

802.1.7 Commercial dishwashing machines. The discharge from a commercial dishwashing machine shall be through an air gap or air break into a standpipe or waste receptor in accordance with Section 802.2.

802.2 Installation. All indirect waste piping shall discharge through an air gap or air break into a waste receptor or standpipe. Waste receptors and standpipes shall be trapped and vented and shall connect to the building drainage system. All indirect waste piping that exceeds 2 feet (610 mm) in developed length measured horizontally, or 4 feet (1219 mm) in total developed length, shall be trapped.

802.2.1 Air gap. The air gap between the indirect waste pipe and the flood level rim of the waste receptor shall be a minimum of twice the effective opening of the indirect waste pipe.

802.2.2 Air break. An air break shall be provided between the indirect waste pipe and the trapseal of the waste receptor or standpipe.

802.3 Waste receptors. Every waste receptor shall be of an approved type. A removable strainer or basket shall cover the waste outlet of waste receptors. Waste receptors shall be installed in ventilated spaces. Waste receptors shall not be installed in bathrooms or toilet rooms or in any inaccessible or unventilated space such as a closet or storeroom. Ready access shall be provided to waste receptors.

802.3.1 Size of receptors. A waste receptor shall be sized for the maximum discharge of all indirect waste pipes served by the receptor. Receptors shall be installed to prevent splashing or flooding.

802.3.2 Open hub waste receptors. Waste receptors shall be permitted in the form of a hub or pipe extending not less than 1 inch (25.4 mm) above a water-impervious floor and are not required to have a strainer.

802.4 Standpipes. Standpipes shall be individually trapped. Standpipes shall extend a minimum of 18 inches (457 mm) and a maximum of 42 inches (1067 mm) above the trap weir. Access shall be provided to all standpipes and drains for rodding.



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SECTION PC 803: SPECIAL WASTES

NYC Administrative Code § 28-PC 803

803.1 Wastewater temperature.

Steam pipes shall not connect to any part of a drainage or plumbing system and water above 150(degrees)F (66(degrees)C) shall not be discharged into any part of a drainage system. Such pipes shall discharge into an indirect waste receptor connected to the drainage system.

803.2Neutralizing device required for corrosive wastes.Corrosive liquids, spent acids or other harmful chemicals that destroy or injure a drain, sewer, soil or waste pipe, or create noxious or toxic fumes or interfere with sewage treatment processes shall not be discharged into the plumbing system without being thoroughly neutralized or treated in accordance with the requirements of the New York city department of environmental protection.

803.3System design.A chemical drainage and vent system shall be designed and installed in accordance with this code. Chemical drainage and vent systems shall be completely separated from the sanitary systems. Chemical waste shall not discharge to a sanitary drainage system until such waste has been treated in accordance with Section 803.2.



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SECTION PC 804: MATERIALS, JOINTS AND CONNECTIONS

NYC Administrative Code § 28-PC 804

804.1 General.

The materials and methods utilized for the construction and installation of indirect waste pipes and systems shall comply with the applicable provisions of Chapter 7.



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Chapter 9: VENTS
SECTION PC 901: GENERAL

NYC Administrative Code § 28-PC 901

901.1 Scope.

The provisions of this chapter shall govern the materials, design, construction and installation of vent systems.

901.2 Trap seal protection. The plumbing system shall be provided with a system of vent piping that will permit the admission or emission of air so that the seal of any fixture trap shall not be subjected to a pneumatic pressure differential of more than 1 inch of water column (249 Pa).

901.2.1 Venting required. Every trap and trapped fixture shall be vented in accordance with one of the venting methods specified in this chapter.

901.3 Chemical waste vent system. The vent system for a chemical waste system shall be independent of the sanitary vent system and shall terminate separately through the roof to the open air.

901.4 Use limitations. The plumbing vent system shall not be utilized for purposes other than the venting of the plumbing system.

901.5 Tests. The vent system shall be tested in accordance with Section PC 312.

901.6 Engineered systems. Engineered venting systems shall conform to the provisions of Section PC 918.



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SECTION PC 902: MATERIALS

NYC Administrative Code § 28-PC 902

902.1 Vents.

The materials and methods utilized for the construction and installation of venting systems shall comply with the applicable provisions of Section PC 702.

902.2 Sheet copper. Sheet copper for vent pipe flashings shall conform to ASTM B 152 and shall weigh not less than 8 ounces per square foot (2.5 kg/m²).

902.3 Sheet lead. Sheet lead for vent pipe flashings shall weigh not less than 3 pounds per square foot (15 kg/m²) for field-constructed flashings and not less than 2.5 pounds per square foot (12 kg/m²) for prefabricated flashings.



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SECTION PC 903: VENT STACKS AND STACK VENTS

NYC Administrative Code § 28-PC 903

903.1 Stack required.

Every building in which plumbing is installed shall have at least one 4 inch vent stack (or stack vent). Such stack shall run undiminished in size and as directly as possible from the building drain through to the open air above the roof.

903.1.1 Connection to drainage system. A vent stack shall connect to the building drain or to the base of a drainage stack in accordance with Section 903.4. A stack vent shall be an extension of the drainage stack.

903.2 Vent stack required. A vent stack shall be required for every drainage stack that is three branch intervals or more.

903.3 Vent termination. Every vent stack or stack vent shall terminate outdoors above the roof or to the stack vent portion of the soil or waste stack, at least 6 inches (152 mm) above the flood level of the highest fixture connection discharging into the soil or waste stack.

903.4 Vent connection at base. Every vent stack shall connect to the base of the drainage stack. The vent stack shall connect at or below the lowest horizontal branch. Where the vent stack connects to the building drain, the connection shall be located downstream of the drainage stack and within a distance of 10 times the diameter of the drainage stack.

903.5 Vent headers. Stack vents and vent stacks connected into a common vent header at the top of the stacks and extending to the open air above the roof at one point shall be sized in accordance with the requirements of Section 916.1, but shall not be smaller than the smallest stack vent. The number of fixture units shall be the sum of all fixture units on all stacks connected thereto, and the developed length shall be the longest vent length from the intersection at the base of the most distant stack to the vent terminal in the open air, as a direct extension of one stack.

903.6 Sub stack connections. Where it is desired to terminate stacks at a point below the roof terminus of the main vent stack, the sub-stack may connect to the main vent stack provided the portion of the main vent stack above the

connection is sized for the total fixture unit load connected thereto, and for the maximum developed length of the stack or sub-stack.



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SECTION PC 904: VENT TERMINALS

NYC Administrative Code § 28-PC 904

904.1 Roof extension.

All open vent pipes that extend through a roof shall be terminated at least 24 inches (610 mm) above the roof, except that where a roof is to be used for any purpose other than weather protection or maintenance, the vent extensions shall be run at least 7 feet (2134 mm) above the roof. Approved vandal resistant vent caps may be used.

904.2Frost closure.Where the 97.5-percent value for outside design temperature is 0(degrees)F (ms18(degrees)C) or less, every vent extension through a roof shall be a minimum of 4 inches (102 mm) in diameter. Any increase in the size of the vent shall be made inside the structure directly below the roof.

904.3Flashings.The juncture of each vent pipe with the roof line shall be made water tight by an approved flashing.

904.4Prohibited use.Vent terminals shall not be used as a flag pole or to support flag poles, television aerials or similar items.

904.5Location of vent terminal.Locations of vent terminals shall comply with Sections 904.5.1 and 904.5.2.

904.5.1New vent terminals.An open vent terminal from a drainage system of the new or altered building shall not be located directly beneath any door, operable window, or other air intake opening of the building or of an adjacent building, and any such vent terminal shall not be within 10 feet (3048 mm) horizontally of such an opening unless it is at least 3 feet (914 mm) above the top of such opening. When the consent of the owner of an adjoining taller building is obtained, the owner of the new or altered building shall be permitted to carry the new vent stack, with adequate support, to a level above the higher existing roof.

904.5.2New openings.A door, operable window, or other air intake opening of the new or altered building shall not be located within 10 feet (3048 mm) horizontally from an open vent terminal from a drainage system of an existing adjacent building unless the existing terminal is at least 3 feet (914 mm) above such opening. Whenever necessary, the

owner of the new building shall at his or her own expense, and with approval of the adjoining owner, offset the vent stack of the adjacent existing building to a distance of 10 feet (3048 mm) or more from such openings, or shall extend such vent stack to a height of at least 3 feet (924 mm) above the topmost opening.

904.6 and 904.7 Reserved.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

904.5 amended L.L. 8/2008 § 50, eff. July 1, 2008.

904.5.1 so designated and amended (formerly part of 904.5) L.L. 8/2008 § 50,

eff. July 1, 2008.

904.5.2 added L.L. 8/2008 § 50, eff. July 1, 2008.



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SECTION PC 905: VENT CONNECTIONS AND GRADES

NYC Administrative Code § 28-PC 905

905.1 Connection.

All individual, branch and circuit vents shall connect to a vent stack, stack vent, or extend to the open air above the roof.

905.2Grade.All vent and branch vent pipes shall be so graded and connected as to drain back to the drainage pipe by gravity.

905.3Vent connection to drainage system.Every dry vent connecting to a horizontal drain shall connect above the centerline of the horizontal drain pipe.

905.4Reserved.

905.5Height above fixtures.A connection between a vent pipe and a vent stack or stack vent shall be made at least 6 inches (152 mm) above the flood level rim of the highest fixture served by the vent. Horizontal vent pipes forming branch vents, relief vents or loop vents shall be at least 6 inches (152 mm) above the flood level rim of the highest fixture served.

905.6Vent for future fixtures.Where the drainage piping has been roughed-in for future fixtures, a rough-in connection for a vent shall be installed. The vent size shall be not less than one half the diameter of the rough-in drain to be served. The vent rough-in shall connect to the vent system, or shall be vented by other means as provided for in this chapter. The connection shall be identified to indicate that it is a vent.



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SECTION PC 906: FIXTURE VENTS

NYC Administrative Code § 28-PC 906

906.1 Reserved.

906.2 Venting of fixture drains. The vent for a fixture drain, except where serving a fixture with integral traps, such as water closets, shall connect above the weir of the fixture trap being vented.

906.3 Crown vent. A vent shall not be installed within two pipe diameters of the trap weir.



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Chapter 9: VENTS
SECTION PC 907: INDIVIDUAL VENT

NYC Administrative Code § 28-PC 907

907.1 Individual vent permitted.

Each trap and trapped fixture is permitted to be provided with an individual vent. The individual vent shall connect not more than 4 feet (1219 mm) to the fixture drain of the trap or trapped fixture being vented.

907.2 Floor drain vents. No vents will be required for piping serving floor drains when the floor drain is located not more than 15 feet (4572 mm) from a vented line.



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SECTION PC 908: COMMON VENT

NYC Administrative Code § 28-PC 908

908.1 Individual vent as common vent.

An individual vent is permitted to vent two traps or trapped fixtures as a common vent. The traps or trapped fixtures being common vented shall be located on the same floor level.

908.2 Connection at the same level. Where the fixture drains being common vented connect at the same level, the vent connection shall be at the interconnection of the fixture drains.

908.3 Connection at different levels. Where the fixture drains connect at different levels, the vent shall connect as a vertical extension of the vertical drain. The vertical drain pipe connecting the two fixture drains shall be considered the vent for the lower fixture drain, and shall be sized in accordance with Table 908.3. The upper fixture shall not be a water closet. Table 908.3 Common Vent Sizes Pipe Size (inches) Maximum Discharge from Upper Fixture Drain (dfu)
1 1/2 1 2 4 2 1/2 to 3 6 For SI: 1 inch = 25.4 mm.



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SECTION PC 909: WET VENTING

NYC Administrative Code § 28-PC 909

909.1 Wet vent permitted.

Any combination of fixtures within one bathroom group located in the same room are permitted to be vented by a wet vent. The wet vent shall be considered the vent for the fixtures and shall extend from the connection of the dry vent along the direction of the flow in the drain pipe to the most downstream fixture drain connection to the horizontal branch drain. Only the fixtures within the bathroom groups shall connect to the wet-vented horizontal branch drain. Any additional fixtures shall discharge downstream of the wet vent.

909.2 Vent connection. The dry vent connection to the wet vent shall be an individual vent or common vent to the lavatory, bidet, shower or bathtub. The dry vent shall be sized based on the largest required diameter of pipe within the wet vent system served by the dry vent.

909.3 Size. The wet vent shall be a minimum size of 2 inches (50.8 mm).



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SECTION PC 911: CIRCUIT VENTING

NYC Administrative Code § 28-PC 911

911.1 Circuit vent permitted.

A maximum of eight fixtures connected to a horizontal branch drain shall be permitted to be circuit vented. Each fixture drain shall connect horizontally to the horizontal branch being circuit vented. The horizontal branch drain shall be classified as a vent from the most downstream fixture drain connection to the most upstream fixture drain connection to the horizontal branch.

911.1.1 Multiple circuit-vented branches. Circuit-vented horizontal branch drains are permitted to be connected together. Each group of a maximum of eight fixtures shall be considered a separate circuit vent and shall conform to the requirements of this section.

911.2 Vent connection. The circuit vent connection shall be located between the two most upstream fixture drains. The vent shall connect to the horizontal branch and shall be installed in accordance with Section 905. The circuit vent pipe shall not receive the discharge of any soil or waste.

911.3 Slope and size of horizontal branch. The maximum slope of the vent section of the horizontal branch drain shall be one unit vertical in 12 units horizontal (8 percent slope). The entire length of the vent section of the horizontal branch drain shall be sized for the total drainage discharge to the branch.

911.3.1 Size of multiple circuit vent. Each separate circuit-vented horizontal branch that is interconnected shall be sized independently in accordance with Section 911.3. The downstream circuit-vented horizontal branch shall be sized for the total discharge into the branch, including the upstream branches and the fixtures within the branch.

911.4 Relief vent. A relief vent shall be provided for circuit vented horizontal branches receiving the discharge of four or more water closets and connecting to a drainage stack that receives the discharge of soil or waste from upper horizontal branches.

911.4.1 Connection and installation. The relief vent shall connect to the horizontal branch drain between the stack and the most downstream fixture drain of the circuit vent. The relief vent shall be installed in accordance with Section PC 905.

911.4.2 Fixture drain or branch. The relief vent is permitted to be a fixture drain or fixture branch for fixtures located within the same branch interval as the circuit-vented horizontal branch. The maximum discharge to a relief vent shall be four fixture units.

911.5 Additional fixtures. Fixtures, other than the circuit-vented fixtures, are permitted to discharge to the horizontal branch drain. Such fixtures shall be located on the same floor as the circuit-vented fixtures and shall be either individually or common vented.



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 SECTION PC 912: COMBINATION DRAIN AND VENT SYSTEM

NYC Administrative Code § 28-PC 912

912.1 Permitted Combination Waste and Vent System.

A combination waste and vent piping system, limited for use as a means of venting the traps of floor drains and laboratory sinks, shall be permitted in conjunction with horizontal branch waste piping of an independent flammable oil waste system or acid waste systems, and as described under indirect wastes and special wastes.

912.2 Installation. Combination drain and vent system shall comply with this section.

912.2.1 Slope. The horizontal combination drain and vent pipe shall have a maximum slope of one-half unit vertical in 12 units horizontal (4-percent slope). The minimum slope shall be in accordance with Table 704.1.

912.2.2 Connection. The combination drain and vent system shall be provided with a dry vent connected at any point within the system or the system shall connect to a horizontal drain that is vented in accordance with one of the venting methods specified in this chapter. Combination drain and vent systems connecting to building drains receiving only the discharge from a stack or stacks shall be provided with a dry vent. The vent connection to the combination drain and vent pipe shall extend vertically a minimum of 6 inches (152 mm) above the flood level rim of the highest fixture being vented before offsetting horizontally.

912.2.3 Vent size. The vent shall be sized for the total drainage fixture unit load in accordance with Section 916.2.

912.3 Size. The minimum size of a combination drain and vent pipe shall be in accordance with Table 912.3. Table 912.3 Size of Combination Drain and Vent Pipe Diameter Pipe (inches) Maximum Number of Drainage Fixture Units (dfu) Connecting to a horizontal branch or stack Connecting to a building drain or building subdrain 2 3 4 2 1/2 6 26 3 12 31 4 20 50 5 160 250 6 360 575 SI: 1 inch = 25.4 mm.



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SECTION PC 913: ISLAND FIXTURE VENTING

NYC Administrative Code § 28-PC 913

913.1 Limitation.

Island fixture venting shall not be permitted for fixtures other than sinks and lavatories. Residential kitchen sinks with a dishwasher waste connection, a food waste grinder, or both, in combination with the kitchen sink waste, shall be permitted to be vented in accordance with this section.

913.2 Vent connection. The island fixture vent shall connect to the fixture drain as required for an individual or common vent. The vent shall rise vertically to above the drainage outlet of the fixture being vented before offsetting horizontally or vertically downward. The vent or branch vent for multiple island fixture vents shall extend to a minimum of 6 inches (152 mm) above the highest island fixture being vented before connecting to the outside vent terminal.

913.3 Vent installation below the fixture flood level rim. The vent located below the flood level rim of the fixture being vented shall be installed as required for drainage piping in accordance with Chapter 7, except for sizing. The vent shall be sized in accordance with Section 916.2. The lowest point of the island fixture vent shall connect full size to the drainage system. The connection shall be to a vertical drain pipe or to the top half of a horizontal drain pipe. Cleanouts shall be provided in the island fixture vent to permit rodding of all vent piping located below the flood level rim of the fixtures. Rodding in both directions shall be permitted through a cleanout.



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SECTION PC 914: RELIEF VENTS-STACKS OF MORE THAN 10 BRANCH INTERVALS

NYC Administrative Code § 28-PC 914

914.1 Where required.

Soil and waste stacks in buildings having more than 10 branch intervals shall be provided with a yoke relief vent at each tenth interval installed, beginning with the top floor.

914.2 Size and connection. The size of the relief yoke vent shall be equal to the size of the vent stack to which it connects. The lower end of each relief vent shall connect to the soil or waste stack through a wye below the horizontal branch serving the floor, and the upper end shall connect to the vent stack through a tee or inverted wye not less than 3 feet (914 mm) above the floor.



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SECTION PC 915: VENTS FOR STACK OFFSETS

NYC Administrative Code § 28-PC 915

915.1 Vent for horizontal offset of drainage stack.

Horizontal offsets of drainage stacks shall be vented where five or more branch intervals are located above the offset. The offset shall be vented by venting the upper section of the drainage stack and the lower section of the drainage stack.

915.2Upper section.The upper section of the drainage stack shall be vented as a separate stack with a vent stack connection installed in accordance with Section 903.4. The offset shall be considered the base of the stack.

915.3Lower section.The lower section of the drainage stack shall be vented by a yoke vent connecting between the offset and the next lower horizontal branch. The yoke vent connection shall be permitted to be a vertical extension of the drainage stack. The size of the yoke vent and connection shall be a minimum of the size required for the vent stack of the drainage stack.



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 SECTION PC 916: VENT PIPE SIZING

NYC Administrative Code § 28-PC 916

916.1 Size of stack vents and vent stacks.

The minimum required diameter of stack vents and vent stacks shall be determined from the developed length and the total of drainage fixture units connected thereto in accordance with Table 916.1, but in no case shall the diameter be less than one-half the diameter of the drain served or less than 1 1/2 inches (38 mm).3]Table 916.1 Size and Developed Length of Stack Vents and Vent Stacks Diameter of Soil or Waste Stack (inches) Total Fixture Units Being Vented (dfu)

Maximum Developed Length of Vent (feet)a Diameter of Vent (inches) 1 1/2 2 2 1/2 3 4 5 6 8 10 12 1]Diameter of Soil or Waste Stack (inches) Total Fixture Units Being Vented (dfu)

Maximum Developed Length of Vent (feet)a Diameter of Vent (inches) 1 1/2 2 2 1/2 3 4 5 6 8 10 12 2]1 1/2
 8 150-----1 1/2 10 100 2 12 75 200 2 20 50 150-----2 1/2 4 230 100 300 3 10 4 215 036 01,040 3 21 32 110 270 810-----3
 53 279 423 068 03 10 22 58 62 106 204 43 35 85 250 980-----4 14 027 652 007 504 32 023 551 706 404 540-21 501 505 80-----5
 190 288 232 099 05 49 02 163 250 760 5 940--18 532 106 70-----5 1,400 164 919 059 06 500 331 304 001,000 6
 1,100---26 100 310 780---6 2,000 228 426 066 06 2,900 207 724 060 08 1,800---31 952 409 40--8 3,400 247 319 072 08
 5,600 206 216 061 08 7,600---18 561 405 60-10 4,000 317 831 096 010 7,200 246 024 074 010 11,000---20 512 006 30-10
 15,000 184 618 057 012 7,300 311 203 809 401 2 13,000-----24 943 007 201 2 20,000 207 925 061 012 26,000 187 223 050 015
 15,000-----40 130 310 15 25,000 319 624 015 38,000 268 120 015 50,000 247 418 04]For SI: 1 inch = 25.4 mm, 1 foot = 304.8
 mm.a. The developed length shall be measured from the vent connection to the open air.

916.2 Vents other than stack vents or vent stacks. The diameter of individual vents, branch vents, circuit vents and relief vents shall be at least one-half the required diameter of the drain served. The required size of the drain shall be determined in accordance with Table 710.1(2). Vent pipes shall not be less than 1 1/2 inches (38 mm) in diameter. Vents shall be sized in accordance with Table 916.1 utilizing the drainage fixture units and the corresponding developed length. Relief vents for soil and waste stacks in buildings having more than 10 branch intervals shall be sized in

accordance with Section 914.2.

916.3Developed length.The developed length of individual, branch, circuit and relief vents shall be measured from the farthest point of vent connection to the drainage system to the point of connection to the vent stack, stack vent or termination outside of the building.

916.4Multiple branch vents.Where multiple branch vents are connected to a common branch vent, the common branch vent shall be sized in accordance with this section based on the size of the common horizontal drainage branch that is or would be required to serve the total drainage fixture unit (dfu) load being vented.

916.5Ejector vents.Ejector vent sizes shall be determined in accordance with Sections 916.5.1 and 916.5.2.

916.5.1Sewage pumps and sewage ejectors other than pneumatic.Drainage piping below sewer level shall be vented in a similar manner to that of a gravity system. Building sump vent sizes for sumps with sewage pumps or sewage ejectors, other than pneumatic, shall be determined in accordance with Table 916.5.1.

916.5.2Pneumatic sewage ejectors.The air pressure relief pipe from a pneumatic sewage ejector shall be connected to an independent vent stack terminating as required for vent extensions through the roof. The relief pipe shall be sized to relieve air pressure inside the ejector to atmospheric pressure, but shall not be less than 1 1/2 inches (38 mm) in size.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

916.5.1 Table, second line 20...no limit amended L.L. 8/2008 § 51, eff. July 1,

2008.

INSERT TABLE 916.5.1 HERE



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SECTION PC 918: ENGINEERED VENT SYSTEMS

NYC Administrative Code § 28-PC 918

918.1 General.

Engineered vent systems shall comply with this section and Section 28-113.2.2 of the Administrative Code.

918.2 Individual branch fixture and individual fixture header vents. The maximum developed length of individual fixture vents to vent branches and vent headers shall be determined in accordance with Table 918.2 for the minimum pipe diameters at the indicated vent airflow rates. The individual vent airflow rate shall be determined in accordance with the following:

[SEE graphical material in printed version]

INSERT TABLE 918.2 HERE

918.3A Licensed Professional Engineer shall certify design. An engineer shall also inspect and certify the system upon completion of the system.

HISTORICAL NOTES:

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See

Title 28 footnote]

918.1 amended L.L. 8/2008 § 52, eff. July 1, 2008.



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SECTION PC 919: COMPUTERIZED VENT DESIGN

NYC Administrative Code § 28-PC 919

919.1 Design of vent system.

The sizing, design and layout of the vent system shall be permitted to be determined by approved computer program design methods.

919.2 System capacity. The vent system shall be based on the air capacity requirements of the drainage system under a peak load condition.

919.3 Design shall be certified by a Licensed Professional Engineer. An engineer shall also inspect and certify the system upon completion of the system.



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CHAPTER 6: THE NEW YORK CITY PLUMBING CODE
Appendix C Water Conservation Systems
SECTION PC C101: WATER RECYCLING SYSTEMS

NYC Administrative Code § 28-PC C101

C101.1 General.

Water recycling systems shall receive storm water captured from roofs and balconies, condensate reclamation systems, gray water discharge only of lavatories from public restrooms in commercial office buildings, and the treated effluent from an approved black water treatment system as regulated by Department of Health and Mental Hygiene. Recycled water shall be utilized only for flushing water closets and urinals, cooling tower makeup and irrigation systems that are located in the same lot as the water recycling system. Recycled water shall be considered non-potable. Such systems shall comply with sections C101.2 through C101.12.

C101.2 Definitions. The following terms shall have the meanings shown herein.

BLACK WATER. Waste water discharged from water closets, urinals and any other fixtures discharging animal or vegetable matter in suspension or solution.

GRAY WATER. Waste water discharged from lavatories, bathtubs, showers, clothes washers and laundry sinks.

C101.3 Installation. All drain, waste and vent piping associated with gray or black water recycling systems shall be installed in full compliance with this code.

C101.4 Reservoir. Water captured for recycling purposes shall be collected in an approved reservoir constructed of durable, nonabsorbent and corrosion-resistant materials. The reservoir shall be a closed and gas-tight vessel. Access openings shall be provided to allow inspection and cleaning of the reservoir interior. The holding capacity of the reservoir shall be a minimum of twice the volume of water required to meet the daily flushing requirements of the fixtures supplied with recycled water, but not less than 50 gallons (189 L).

C101.5 Filtration. All water entering the reservoir shall pass through an approved filter such as a media, sand or diatomaceous earth filter. Filter may be installed in a sidestream arrangement sized to filter the entire volume of the tank

at a rate equal to four times the recycled water in a one-hour period.

C101.6Disinfection.Recycled water shall be disinfected by an approved method that employs ultraviolet or one or more disinfectants such as chlorine, iodine or ozone.

C101.7Makeup water.Potable water shall be supplied as a source of makeup water for the recycled water system. The potable water supply shall be protected against backflow in accordance with Section PC 608. There shall be a full-open valve on the makeup water supply line to the reservoir.

C101.8Overflow.The collection reservoir shall be equipped with an overflow pipe of the same diameter as the influent pipe for the captured water. The overflow shall be directly connected to the building house drainage system.

C101.9Drain.A drain shall be located at the lowest point of the collection reservoir and shall be directly connected to the sanitary drainage system. The drain shall be a minimum of 4 inch (102 mm) diameter and shall be provided with a full-open valve.

C101.10Vent required.The reservoir shall be provided with a vent sized in accordance with Chapter 9 based on the size of the reservoir influent pipe.

C101.11Coloring.The recycled water shall be dyed blue or green with a food grade vegetable dye before such water is supplied to the fixtures.

C101.12Identification.All recycled water distribution piping and reservoirs shall be identified as containing nonpotable water. Piping identification shall be in accordance with Section 608.8.



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Appendix C Water Conservation Systems
SECTION PC C102: WATERLESS URINALS

NYC Administrative Code § 28-PC C102

C102.1 Waterless urinals.

Approved waterless urinals may be utilized only as part of an approved building water conservation plan.

HISTORICAL NOTES:

Appendix added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10. [See
Title 28 footnote]



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Appendix E Sizing Of Water Piping System
SECTION PC E101: GENERAL

NYC Administrative Code § 28-PC E101

E101.1 Scope.

E101.1.1 This appendix outlines two procedures for sizing a water piping system (see Section E103.3). The design procedures are based on the minimum static pressure available from the supply source, the head charges in the system caused by friction and elevation, and the rates of flow necessary for operation of various fixtures.



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Appendix E Sizing Of Water Piping System
SECTION PC E102: INFORMATION REQUIRED

NYC Administrative Code § 28-PC E102

E102.1 Preliminary.

Obtain the necessary information regarding the minimum daily static service pressure in the area where the building is to be located. If the building supply is to be metered, obtain information regarding friction loss relative to the rate of flow for meters in the range of sizes likely to be used. Friction loss data can be obtained from most manufacturers of water meters.

E102.2 Demand load.

E102.2.1 Estimate the supply demand of the building main and the principal branches and risers of the system by totaling the corresponding demand from the applicable part of Table E 103.3(3).

E102.2.2 Estimate continuous supply demands in gallons per minute (L/m) for lawn sprinklers, air conditioners, etc., and add the sum to the total demand for fixtures. The result is the estimated supply demand for the building supply.



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Appendix E Sizing Of Water Piping System
SECTION PC E103: SELECTION OF PIPE SIZE

NYC Administrative Code § 28-PC E103

E103.1 General.

Decide from Table 604.3 what is the desirable minimum residual pressure that should be maintained at the highest fixture in the supply system. If the highest group of fixtures contains flush valves, the pressure for the group should not be less than 15 psi (103.4 kPa) flowing. For flush tank supplies, the available pressure should not be less than 8 psi (55.2 kPa) flowing, except blowout action fixtures must not be less than 25 psi (172.4 kPa) flowing.

E103.2 Pipe sizing.

E103.2.1 Pipe sizes can be selected according to the following procedure or by other design methods conforming to acceptable engineering practice and approved by the department. The sizes selected must not be less than the minimum required by this code.

E103.2.2 Water pipe sizing procedures are based on a system of pressure requirements and losses, the sum of which must not exceed the minimum pressure available at the supply source. These pressures are as follows:

1. Pressure required at fixture to produce required flow. See Section 604.3 and Section 604.5.
2. Static pressure loss or gain (due to head) is computed at 0.433 psi per foot (9.8 kPa/m) of elevation change.

Example: Assume that the highest fixture supply outlet is 20 feet (6096 mm) above or below the supply source. This produces a static pressure differential of 8.66 psi (59.8 kPa) loss.

3. Loss through water meter. The friction or pressure loss can be obtained from meter manufacturers.
4. Loss through taps in water main. (See Table E103.3.4(4))
5. Losses through special devices such as filters, softeners, backflow prevention devices and pressure regulators.

These values must be obtained from the manufacturers.

6. Loss through valves and fittings. Losses for these items are calculated by converting to equivalent length of piping and adding to the total pipe length. (See Tables E103.3(5) and E103.3(6))

7. Loss due to pipe friction can be calculated when the pipe size, the pipe length and the flow through the pipe are known. With these three items, the friction loss can be determined using Figures E103.3(2) through E103.3(7). For piping flow charts not included, use manufacturers' tables and velocity recommendations.

Note: For the purposes of all examples, the following metric conversions are applicable: 1 cubic foot per minute = 0.4719 L/s 1 square foot = 0.0929 m² 1 degree = 0.0175 rad 1 pound per square inch = 6.895 kPa 1 inch = 25.4 mm 1 foot = 304.8 mm 1 gallon per minute = 3.785 L/m

E103.3 Segmented loss method. The size of water service mains, branch mains and risers by the segmented loss method, must be determined according to water supply demand gpm (L/m), available water pressure psi (kPa) and friction loss caused by the water meter and developed length of pipe feet (m), including equivalent length of fittings. This design procedure is based on the following parameters:

;tb Calculate the friction loss through each length of the pipe.

;tb Based on a system of pressure losses, the sum of which must not exceed the minimum pressure available at the street main or other source of supply.

;tb Pipe sizing shall be based on (1) estimated peak demand, (2) total pressure losses caused by difference in elevation, equipment, developed length and pressure required at most remote fixture, (3) loss through taps in water main, (4) losses through fittings, filters, backflow prevention devices, valves and pipe friction.

Because of the variable conditions encountered in hydraulic design, it is impractical to specify definite and detailed rules for sizing of the water piping system. Current sizing methods do not address the differences in the probability of use and flow characteristics of fixtures between types of occupancies. Creating an exact model of predicting the demand for a building is impossible and final studies assessing the impact of water conservation on demand are not yet complete. The following steps are necessary for the segmented loss method.

1. Preliminary. Obtain the necessary information regarding the minimum daily static service pressure in the area where the building is to be located. If the building supply is to be metered, obtain information regarding friction loss relative to the rate of flow for meters in the range of sizes to be used. Friction loss data can be obtained from manufacturers of water meters. It is essential that enough pressure be available to overcome all system losses caused by friction and elevation so that plumbing fixtures operate properly. Section 604.6 requires the water distribution system to be designed for the minimum pressure available taking into consideration pressure fluctuations. The lowest pressure must be selected to guarantee a continuous, adequate supply of water. The lowest pressure in the public main usually occurs in the summer because of lawn sprinkling and supplying water for air-conditioning cooling towers. Future demands placed on the public main as a result of large growth or expansion should also be considered. The available pressure will decrease as additional loads are placed on the public system.

2. Demand load. Estimate the supply demand of the building main and the principal branches and risers of the system by totaling the corresponding demand from the applicable part of Table E103.3(3). When estimating peak demand sizing methods typically use water supply fixture units (see Table E103.3(2)). This numerical factor measures the load-producing effect of a single plumbing fixture of a given kind. The use of such fixture units can be applied to a single basic probability curve (or table), found in the various sizing methods (Table E103.3(3)). The fixture units are then converted into gallons per minute (L/m) flow rate for estimating demand.

2.1. Estimate continuous supply demand in gallons per minute (L/m) for lawn sprinklers, air conditioners, etc., and

add the sum to the total demand for fixtures. The result is the estimated supply demand for the building supply. Fixture units cannot be applied to constant use fixtures such as hose bibbs, lawn sprinklers and air conditioners. These types of fixtures must be assigned the gallon per minute (L/m) value.

3. Selection of pipe size. This water pipe sizing procedure is based on a system of pressure requirements and losses, the sum of which must not exceed the minimum pressure available at the supply source. These pressures are as follows:

3.1. Pressure required at the fixture to produce required flow. See Section 604.3 and Section 604.5.

3.2. Static pressure loss or gain (due to head) is computed at 0.433 psi per foot (9.8 kPa/m) of elevation change.

3.3. Loss through a water meter. The friction or pressure loss can be obtained from the manufacturer.

3.4. Loss through taps in water main (See Table E103.3(4)).

3.5. Losses through special devices such as filters, softeners, backflow prevention devices and pressure regulators. These values must be obtained from the manufacturers.

3.6. Loss through valves and fittings. Losses for these items are calculated by converting to equivalent length of piping and adding to the total pipe length. (See Tables E103.3(5) and E103.3(6)).

3.7. Loss due to pipe friction can be calculated when the pipe size, the pipe length and the flow through the pipe are known. With these three items, the friction loss can be determined using Figures E103.3(2) through E103.3(7). When using charts, use pipe inside diameters. For piping flow charts not included, use manufacturers' tables and velocity recommendations. Before attempting to size any water supply system, it is necessary to gather preliminary information which includes available pressure, piping material, select design velocity, elevation differences and developed length to most remote fixture. The water supply system is divided into sections at major changes in elevation or where branches lead to fixture groups. The peak demand must be determined in each part of the hot and cold water supply system which includes the corresponding water supply fixture unit and conversion to gallons per minute (L/m) flow rate to be expected through each section. Sizing methods require the determination of the "most hydraulically remote" fixture to compute the pressure loss caused by pipe and fittings. The hydraulically remote fixture represents the most downstream fixture along the circuit of piping requiring the most available pressure to operate properly. Consideration must be given to all pressure demands and losses, such as friction caused by pipe, fittings and equipment, elevation and the residual pressure required by Table 604.3. The two most common and frequent complaints about the water supply system operation are lack of adequate pressure and noise.

Problem: What size Type L copper water pipe, service and distribution will be required to serve a two-story factory building having on each floor, back-to-back, two toilet rooms each equipped with hot and cold water? The highest fixture is 21 feet (6401 mm) above the street main, which is tapped with a 2-inch (51 mm) corporation cock at which point the minimum pressure is 55 psi (379.2 kPa). In the building basement, a 2-inch (51 mm) meter with a maximum pressure drop of 11 psi (75.8 kPa) and 3-inch (76 mm) reduced pressure principle backflow preventer with a maximum pressure drop of 9 psi (621 kPa) are to be installed. The system is shown by Figure E103.3(1). To be determined are the pipe sizes for the service main and the cold and hot water distribution pipes.

Solution: A tabular arrangement such as shown in Table E103.3(1) should first be constructed. The steps to be followed are indicated by the tabular arrangement itself as they are in sequence, columns 1 through 10 and lines A through L.

Step 1

Columns 1 and 2: Divide the system into sections breaking at major changes in elevation or where branches lead to fixture groups. After point B (see Figure E103.3(1)), separate consideration will be given to the hot and cold water

pipng. Enter the sections to be considered in the service and cold water piping in Column 1 of the tabular arrangement. Column 1 of Table E103.3(1) provides a line-by-line recommended tabular arrangement for use in solving pipe sizing.

The objective in designing the water supply system is to ensure an adequate water supply and pressure to all fixtures and equipment. Column 2 provides the pounds per square inch (psi) to be considered separately from the minimum pressure available at the main. Losses to take into consideration are the following: the differences in elevations between the water supply source and the highest water supply outlet, meter pressure losses, the tap in main loss, special fixture devices such as water softeners and prevention devices and the pressure required at the most remote fixture outlet. The difference in elevation can result in an increase or decrease in available pressure at the main. Where the water supply outlet is located above the source, this results in a loss in the available pressure and is subtracted from the pressure at the water source. Where the highest water supply outlet is located below the water supply source, there will be an increase in pressure that is added to the available pressure of the water source.

Column 3: According to Table E103.3(3), determine the gpm (L/m) of flow to be expected in each section of the system. These flows range from 28.6 to 108 gpm. Load values for fixtures must be determined as water supply fixture units and then converted to a gallon-per-minute (gpm) rating to determine peak demand. When calculating peak demands, the water supply fixture units are added and then converted to the gallon-per-minute rating. For continuous flow fixtures such as hose bibbs and lawn sprinkler systems, add the gallon-per-minute demand to the intermittent demand of fixtures. For example, a total of 120 water supply fixture units is converted to a demand of 48 gallons per minute. Two hose bibbs x 5 gpm demand = 10 gpm. Total gpm rating = 48.0 gpm ;pl 10 gpm = 58.0 gpm demand.

Step 2

Line A: Enter the minimum pressure available at the main source of supply in Column 2. This is 55 psi (379.2 kPa). The local water authorities generally keep records of pressures at different times of day and year. The available pressure can also be checked from nearby buildings or from fire department hydrant checks.

Line B: Determine from Section 604.3 the highest pressure required for the fixtures on the system, which is 15 psi (103.4 kPa), to operate a flushometer valve. The most remote fixture outlet is necessary to compute the pressure loss caused by pipe and fittings, and represents the most downstream fixture along the circuit of piping requiring the available pressure to operate properly as indicated by Table 604.3.

Line C: Determine the pressure loss for the meter size given or assumed. The total water flow from the main through the service as determined in Step 1 will serve to aid in the meter selected. There are three common types of water meters; the pressure losses are determined by the American Water Works Association Standards for displacement type, compound type and turbine type. The maximum pressure loss of such devices takes into consideration the meter size, safe operating capacity (gpm) and maximum rates for continuous operations (gpm). Typically, equipment imparts greater pressure losses than piping.

Line D: Select from Table E103.3(4) and enter the pressure loss for the tap size given or assumed. The loss of pressure through taps and tees in pounds per square inch (psi) are based on the total gallon-per-minute flow rate and size of the tap.

Line E: Determine the difference in elevation between the main and source of supply and the highest fixture on the system. Multiply this figure, expressed in feet, by 0.43 psi (2.9 kPa). Enter the resulting psi loss on Line E. The difference in elevation between the water supply source and the highest water supply outlet has a significant impact on the sizing of the water supply system. The difference in elevation usually results in a loss in the available pressure because the water supply outlet is generally located above the water supply source. The loss is caused by the pressure required to lift the water to the outlet. The pressure loss is subtracted from the pressure at the water source. Where the highest water supply outlet is located below the water source, there will be an increase in pressure which is added to the available pressure of the water source.

Lines F, G and H: The pressure losses through filters, backflow prevention devices or other special fixtures must be obtained from the manufacturer or estimated and entered on these lines. Equipment such as backflow prevention devices, check valves, water softeners, instantaneous or tankless water heaters, filters and strainers can impart a much greater pressure loss than the piping. The pressure losses can range from 8 psi to 30 psi.

Step 3

Line I: The sum of the pressure requirements and losses that affect the overall system (Lines B through H) is entered on this line. Summarizing the steps, all of the system losses are subtracted from the minimum water pressure. The remainder is the pressure available for friction, defined as the energy available to push the water through the pipes to each fixture. This force can be used as an average pressure loss, as long as the pressure available for friction is not exceeded. Saving a certain amount for available water supply pressures as an area incurs growth, or because of aging of the pipe or equipment added to the system is recommended.

Step 4

Line J: Subtract Line I from Line A. This gives the pressure that remains available from overcoming friction losses in the system. This figure is a guide to the pipe size that is chosen for each section, incorporating the total friction losses to the most remote outlet (measured length is called developed length).

Exception: When the main is above the highest fixture, the resulting psi must be considered a pressure gain (static head gain) and omitted from the sums of Lines B through H and added to Line J.

The maximum friction head loss that can be tolerated in the system during peak demand is the difference between the static pressure at the highest and most remote outlet at no-flow conditions and the minimum flow pressure required at that outlet. If the losses are within the required limits, then every run of pipe will also be within the required friction head loss. Static pressure loss is the most remote outlet in feet $\times 0.433$ = loss in psi caused by elevation differences.

Step 5

Column 4: Enter the length of each section from the main to the most remote outlet (at Point E). Divide the water supply system into sections breaking at major changes in elevation or where branches lead to fixture groups.

Step 6

Column 5: When selecting a trial pipe size, the length from the water service or meter to the most remote fixture outlet must be measured to determine the developed length. However, in systems having a flush valve or temperature controlled shower at the top most floors the developed length would be from the water meter to the most remote flush valve on the system. A rule of thumb is that size will become progressively smaller as the system extends farther from the main source of supply. Trial pipe size may be arrived at by the following formula:

Line J (Pressure available to overcome pipe friction) $\times 100$ / equivalent length of run total developed length to most remote fixture $\times$ percentage factor of 1.5 (note: a percentage factor is used only as an estimate for friction losses imposed for fittings for initial trial pipe size) = psi (average pressure drops per 100 feet of pipe).

For trial pipe size see Figure E 103.3(3) (Type L copper) based on 2.77 psi and a 108 gpm = 2 1/2 inches. To determine the equivalent length of run to the most remote outlet, the developed length is determined and added to the friction losses for fittings and valves. The developed lengths of the designated pipe sections are as follows:

A-B

54 Feet

B-C

8 feet

C-D

13 feet

D-E

150 feet

Total developed length = 225 feet

The equivalent length of the friction loss in fittings and valves must be added to the developed length (most remote outlet). Where the size of fittings and valves is not known, the added friction loss should be approximated. A general rule that has been used is to add 50 percent of the developed length to allow for fittings and valves. For example, the equivalent length of run equals the developed length of run ($225 \text{ ft} \times 1.5 = 338 \text{ feet}$). The total equivalent length of run for determining a trial pipe size is 338 feet.

Example: 9.36 (pressure available to overcome pipe friction) $\times 100 / 338$ (Equivalent length of run = 225×1.5) = 2.77 psi (average pressure drop per 100 feet of pipe).

Step 7

Column 6: Select from Table E103.3(6) the equivalent lengths for the trial pipe size of fittings and valves on each pipe section. Enter the sum for each section in Column 6. (The number of fittings to be used in this example must be an estimate.) The equivalent length of piping is the developed length plus the equivalent lengths of pipe corresponding to friction head losses for fittings and valves. Where the size of fittings and valves is not known, the added friction head losses must be approximated. An estimate for this example is as follows:

Cold Water Pipe Section	Fittings/ Valves	Pressure Loss Expressed as Equivalent Length of Tube (Feet)
A-B	3-21/2" Gate valves	3
A-B	3-21/2" Gate valves	3
A-B	1-21/2" Side branch tee	12
A-B	1-21/2" Side branch tee	12
B-C	1-21/2" Straight run tee	0.5
B-C	1-2" Straight run tee	7
B-C	1-2" 90-degree ell	0.5
C-F	1-21/2" Side branch tee	12
C-F	1-11/2" Side branch tee	7
C-D	1-21/2" 90-degree ell	7
C-D	1-1/2" 90-degree ell	4
D-E	1-21/2" Side branch tee	12
D-E	1-11/2" Side branch tee	7

Step 8

Column 7: Add the figures from Column 4 and Column 6, and enter in Column 7. Express the sum in hundreds of feet.

Step 9

Column 8: Select from Figure E103.3(3) the friction loss per 100 feet (30 480 mm) of pipe for the gallon-per-minute flow in a section (Column 3) and trial pipe size (Column 5). Maximum friction head loss per 100 feet is determined on the basis of total pressure available for friction head loss and the longest equivalent length of run. The

selection is based on the gallon-per-minute demand, the uniform friction head loss, and the maximum design velocity. Where the size indicated by hydraulic table indicates a velocity in excess of the selected velocity, a size must be selected which produces the required velocity.

Step 10

Column 9: Multiply the figures in Columns 7 and 8 for each section and enter in Column 9.

Total friction loss is determined by multiplying the friction loss per 100 feet (30 480 mm) for each pipe section in the total developed length by the pressure loss in fittings expressed as equivalent length in feet. Note: section C-F should be considered in the total pipe friction losses only if greater loss occurs in section C-F than in pipe section D-E. Section C-F is not considered in the total developed length. Total friction loss in equivalent length is determined as follows: Pipe Sections

Friction Loss Equivalent Length (feet) Cold Water Hot Water A-B $0.69 \times 3.2 = 2.21$ $0.69 \times 3.2 = 2.21$ B-C $0.085 \times 3.1 = 0.26$ $0.16 \times 1.4 = 0.22$ C-D $0.20 \times 1.9 = 0.38$ $0.17 \times 3.2 = 0.54$ D-E $1.62 \times 1.9 = 3.08$ $1.57 \times 3.2 = 5.02$ Total pipe friction losses (Line K) 5.93 7.99

Step 11

Line K: Enter the sum of the values in Column 9. The value is the total friction loss in equivalent length for each designated pipe section.

Step 12

Line L: Subtract Line J from Line K and enter in Column 10.

The result should always be a positive or plus figure. If it is not, repeat the operation using Columns 5, 6, 8 and 9 until a balance or near balance is obtained. If the difference between Lines J and K is a high positive number, it is an indication that the pipe sizes are too large and should be reduced, thus saving materials. In such a case, the operations using Columns 5, 6, 8 and 9 should again be repeated.

The total friction losses are determined and subtracted from the pressure available to overcome pipe friction for trial pipe size. This number is critical as it provides a guide to whether the pipe size selected is too large and the process should be repeated to obtain an economically designed system.

Answer: The final figures entered in Column 5 become the design pipe size for the respective sections. Repeating this operation a second time using the same sketch but considering the demand for hot water, it is possible to size the hot water distribution piping. This has been worked up as a part of the overall problem in the tabular arrangement used for sizing the service and water distribution piping. Note that consideration must be given to the pressure losses from the street main to the water heater (section A-B) in determining the hot water pipe sizes.

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SECTION PC E201 SELECTION OF PIPE SIZE RESERVED



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
Chapter 1: ADMINISTRATION*
ARTICLE 101: GENERAL

NYC Administrative Code § 28-101.1

§ 28-101.1 Title.

The provisions of this chapter shall apply to the administration of the codes set forth in this title and the 1968 building code. The codes set forth in this title shall be known and may be cited as the "New York city construction codes" and shall consist of:

The New York city plumbing code.

The New York city building code.

The New York city mechanical code.

The New York city fuel gas code.



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NYC Administrative Code § 28-101.2

§ 28-101.2 Intent.

The purpose of this code is to provide reasonable minimum requirements and standards, based upon current scientific and engineering knowledge, experience and techniques, and the utilization of modern machinery, equipment, materials, and forms and methods of construction, for the regulation of building construction in the city of New York in the interest of public safety, health and welfare, and with due regard for building construction and maintenance costs.



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NYC Administrative Code § 28-101.3

§ 28-101.3 Codes.

Any reference in this title to "this code" or "the code" shall be deemed to be a reference to this title and all of the codes comprising the New York city construction codes unless the context or subject matter requires otherwise. Whenever a section or subsection of this code is cited or referred to, subordinate consecutively numbered sections and subsections of the cited provision are deemed to be included in such reference unless the context or subject matter requires otherwise.

HISTORICAL NOTES:

Section amended L.L. 8/2008 § 2, eff. July 1, 2008.
Section added L.L. 33/2007 § 11, eff. July 1, 2008.



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NYC Administrative Code § 28-101.4

§ 28-101.4 Effective date.

Except as otherwise provided in sections 28-101.4.1, 28-101.4.2, 28-101.4.3 and 28-101.4.4 on and after the effective date of this code, all work shall be performed in accordance with the provisions of this code.



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NYC Administrative Code § 28-101.4.1

§ 28-101.4.1 Permit issued or work commenced prior to effective date.

If a permit for work was issued prior to the effective date of this code or, if no permit was necessary, work was commenced prior to such effective date, all of the provisions of chapter 1 of title 27 of the administrative code as heretofore in effect shall apply to such work.



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NYC Administrative Code § 28-101.4.2

§ 28-101.4.2 Applications for construction document approval submitted prior to and within twelve months after the effective date of this code.

Any work for which an application for construction document approval was submitted to the department prior to the effective date of this code and not thereafter abandoned, or for which an application for construction document approval is submitted to the department within a period of twelve months after such date may, at the option of the owner, be performed in its entirety in accordance with the provisions of this code, or in accordance with the 1968 building code, provided that such work is commenced within twelve months after the date of issuance of a permit therefore and is diligently carried on to completion. The commissioner may, for good cause, extend the time period for commencement of the work beyond 12 months. Where the owner elects to perform the work in compliance with the 1968 building code, the following conditions shall apply:

1. Except as otherwise limited by the commissioner, administration and enforcement of the 1968 building code shall be in accordance with this code, including but not limited to approval of construction documents, issuance of permits and certificates of occupancy, tests and inspections, penalties and enforcement. Controlled inspections and semi-controlled inspections as referenced in the 1968 building code shall be deemed to be special inspections and shall comply with the provisions of this code relating to special inspections. Materials regulated in their use by the 1968 building code shall be subject to applicable provisions of this code.

2. Safety of public and property during construction operations including demolition shall be governed by chapter 33 of the New York city building code.



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NYC Administrative Code § 28-101.4.3

§ 28-101.4.3 Optional use of the 1968 building code for alteration of existing buildings.

At the option of the owner, and subject to appropriate approval, a permit may be issued after the effective date of this code authorizing work on existing buildings constructed in accordance with the 1968 building code or with the building laws in effect prior to the effective date of the 1968 building code, to be performed in accordance with the requirements and standards set forth in the 1968 building code, subject to the following conditions:

1. The installation and alteration of all appliances, equipment and systems regulated by the New York city fuel gas code, the New York city plumbing code and the New York city mechanical code shall be governed by applicable provisions of those codes relating to new and existing installations.
2. The installation, alteration and additions to fire protection systems regulated by Chapter 9 of the New York city building code, including a change of occupancy group that would require such systems, shall be governed by applicable provisions of such chapter and related referenced standards. With respect to existing buildings, references to occupancy classifications in Chapter 9 of the New York city building code shall be deemed to refer to the equivalent occupancy classification of the 1968 building code.
3. The installation and alteration of elevators, conveyors, and amusement rides shall be governed by chapter 30, appendix K of the New York city building code and the rules of the department.
4. Safety of public and property during construction operations including demolition shall be governed by chapter 33 of the New York city building code.
5. Where the estimated cost of such alteration in any twelve-month period exceeds fifty percent of the cost of replacement of the building or where there is a change in the main use or dominant occupancy of the building, facilities for people with physical disabilities shall be provided in accordance with chapter 11 of the New York city building code as if the building were hereafter erected.

6. Encroachments onto the public right of way shall be governed by chapter 32 of the New York city building code.

7. Except as otherwise limited by the commissioner, administration and enforcement of the 1968 building code shall be in accordance with this code, including but not limited to approval of construction documents, issuance of permits and certificates of occupancy, tests and inspections, penalties and enforcement. Controlled inspections and semi-controlled inspections as referenced in the 1968 building code shall be deemed to be special inspections and shall comply with the provisions of this code relating to special inspections. Materials regulated in their use by the 1968 building code shall be subject to applicable provisions of this code.



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NYC Administrative Code § 28-101.4.4

§ 28-101.4.4 Alterations that reduce the fire safety or structural safety of existing buildings.

Notwithstanding any other provision of this code, where the alteration of any existing building in accordance with a provision of this code would result in a reduction of the fire safety or structural safety of such building, relevant provisions of the 1968 building code shall apply to such alteration unless there is full compliance with those provisions of this code that would mitigate or offset such reduction of fire protection or structural safety.



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NYC Administrative Code § 28-101.5

§ 28-101.5 Definitions.

As used in this chapter and elsewhere in this title, the following terms shall have the following meanings unless the context or subject matter requires otherwise:

1968 BUILDING CODE. Chapter 1 of title 27 of the administrative code as hereafter in effect.

ACCEPTANCE OR ACCEPTED. In reference to construction documents, the endorsement by the department of construction documents with less than full examination by the department based on the professional certification of a registered design professional in accordance with a program established by the commissioner.

ADDITION. An alteration of a building in existence that increases its exterior dimensions including but not limited to an extension or increase in floor area or height (including an increase in height or area resulting from the construction of a rooftop structure for mechanical equipment) of the building.

ADMINISTRATIVE CODE. The administrative code of the city of New York.

ALTERATION. Any construction, addition, change of use or occupancy, or renovation to a building or structure in existence.

APPROVAL OR APPROVED. In reference to construction documents, the determination by the department after full examination that submitted construction documents comply with this code and other applicable laws and rules. In reference to materials, the determination by the commissioner that material is acceptable for its intended use.

APPROVED AGENCY. An established and recognized agency, or other qualified person, regularly engaged in conducting tests or furnishing inspection services, when approved pursuant to department rules as qualified to perform or witness identified testing or inspection services.

APPROVED FABRICATOR. An established and qualified person, firm or corporation approved by the

commissioner to custom manufacture or build products or assemblies regulated by this code.

APPROVED INSPECTION AGENCY. An approved agency that is approved by the department as qualified to perform one or more of the inspections required by this code.

APPROVED TESTING AGENCY. An approved agency that is approved by the department as qualified to test and evaluate the performance of one or more of the materials regulated in their use by this code. Such term shall include, when approved pursuant to department rules, a third party testing or certification agency, evaluation agency, testing laboratory, testing service or other entity concerned with product evaluation.

ARCHITECT. A person licensed and registered to practice the profession of architecture under the education law of the state of New York.

BUILDING. Any structure used or intended for supporting or sheltering any use or occupancy. The term shall be construed as if followed by the phrase "structure, premises, lot or part thereof" unless otherwise indicated by the text.

CHARTER. The New York city charter.

CERTIFICATE OF COMPLIANCE. A certificate stating that materials meet specified standards or that work was done in compliance with approved construction documents and other applicable provisions of law and with respect to specified service equipment, a certificate issued by the department authorizing the operation of such equipment.

CITY. The city of New York.

COMMISSIONER. The commissioner of buildings of the city of New York, or his or her duly authorized representative.

CONSTRUCTION DOCUMENTS. Plans and specifications and other written, graphic and pictorial documents, prepared or assembled for describing the design, location and physical characteristics of the elements of the project necessary for obtaining a building permit.

DEFERRED SUBMITTAL. Those portions of the design that are not submitted at the time of the application for construction document approval and that are to be submitted to the department within a specified period of time after the issuance of a permit.

DEMOLITION. Full or partial demolition.

DEMOLITION, FULL: The dismantling, razing, or removal of all of a building or structure, including all operations incidental thereto.

DEMOLITION, PARTIAL: The dismantling, razing, or removal of structural members, floors, interior bearing walls, and/or exterior walls or portions thereof, including all operations incidental thereto.

DEPARTMENT. The department of buildings of the city of New York.

ENGINEER. A person licensed and registered to practice the profession of engineering under the education law of the state of New York.

ENLARGEMENT. An addition.

EXISTING BUILDING OR STRUCTURE. (i) A building or structure in existence prior to the effective date of this code or one for which a lawful building permit was issued for the erection of such building or structure prior to the effective date of this code. (ii) A building or structure erected in accordance with the 1968 building code under a lawful

building permit issued for the erection of such building or structure after the effective date of this code in accordance with section 28-101.4.2 of this code.

FABRICATED ITEM. Products and assemblies regulated by this code, that are custom manufactured, or built prior to their incorporation into the work at the job site. Fabricated items shall not include listed, labeled or approved products or assemblies.

FIRE PROTECTION PLAN. A report containing a narrative description of the life and fire safety systems and evacuation system for a structure.

HEREAFTER. On or after the effective date of this code.

HERETOFORE. Before the effective date of this code.

INSPECTION CERTIFICATE. Identification applied to a product by an approved agency containing the name of the manufacturer, the function and performance characteristics, and the name and identification of the approved agency that indicates that the product or material has been inspected and evaluated by such approved agency. An inspection certificate shall also mean a certificate issued by the department upon satisfactory completion of an inspection or test.

LABEL. Identification applied to material by the manufacturer or an approved agency that contains the name of the manufacturer, the function and performance characteristics of the material, and the name and identification of the approved agency that conducted the evaluation of a representative sample of such material.

LABELED. Material to which has been attached a label, symbol or other identifying mark of the manufacturer that contains the name of the manufacturer, the function and performance characteristics of the product or material, and the name and identification of an approved agency and that indicates that a representative sample of the material has been tested and evaluated by an approved agency for compliance with nationally recognized standards or tests to determine suitable usage in a specified manner.

LAND SURVEYOR. A person licensed and registered to practice the profession of land surveying under the education law of the state of New York.

LISTED. Material identified in a list published by an approved agency that maintains periodic inspection of production of listed material or periodic evaluation services and whose listing states either that the material meets identified nationally recognized standards or has been tested and found suitable for a specified purpose when installed in accordance with the manufacturer's installation instructions.

LETTER OF COMPLETION. A document issued by the department indicating that permitted work has been completed, including satisfactory final inspection in accordance with this code. A letter of completion is issued only in circumstances where a certificate of occupancy is not required upon completion of the permitted work.

LIMITED PLUMBING ALTERATIONS. An alteration to a plumbing system where the total cost of the proposed work in the building does not exceed twenty five thousand dollars in any 12 month period and the proposed work is limited to the following:

1. The installation of new plumbing or gas piping, or the rerouting of existing plumbing or gas piping;
2. The addition of not more than two plumbing fixtures or fixture connections;
3. The mounting of new plumbing fixtures on existing roughings, other than the mere replacement of existing fixtures constituting a minor alteration or ordinary repair under this code; and
4. The installation or replacement of backflow preventers.

LIMITED SPRINKLER ALTERATIONS. An alteration to an existing sprinkler system where the total cost of the proposed work in the building does not exceed twenty five thousand dollars in any 12-month period and the proposed work is limited to the following:

1. Replacement of parts required for the operation of a sprinkler system;
2. Replacement of sprinkler heads, provided that orifice sizes, type and deflector positions remain the same;
3. Changes that do not alter the type of sprinkler system;
4. Relocation of piping that does not affect the operation of the sprinkler system; and

5. Rearrangement of not more than 20 sprinkler heads in areas presently sprinklered in light hazard occupancy, as such term is defined in reference standards, which will remain in such occupancy, provided that the addition of sprinkler heads in existing systems shall be limited to light hazard occupancies in rooms or spaces not exceeding 800 square feet (74.3 m²) requiring only one head with the maximum spacing allowed by the code, and provided that the number of new heads does not exceed a total of five.

LIMITED STANDPIPE ALTERATIONS. An alteration to an existing standpipe system where the total cost of the proposed work in the building does not exceed twenty five thousand dollars in any 12-month period and the proposed work is limited to the following:

1. Replacement of parts required for the operation of a combined standpipe system; and
2. Relocation of combined standpipe auxiliary hose sources and cabinets within 10 feet (3048 mm) of their original location, provided that the existing covered area is not affected and provided that such relocation complies with this code for a new installation.

MAIN USE OR DOMINANT OCCUPANCY (OF A BUILDING). Refers to a single occupancy classification assigned to a structure by the department according to such structure's main use or dominant occupancy.

MANUFACTURER'S DESIGNATION. Identification applied to material by the manufacturer indicating that the material complies with a specified standard or set of rules.

MARK. Identification applied to a product by the manufacturer indicating the name of the manufacturer and the function of a product or material.

MATERIALS. Materials, assemblies, appliances, equipment, devices, systems, products and methods of construction regulated in their use by this code or regulated in their use by the 1968 building code.

OCCUPANCY. The purpose or activity for which a building or space is used or is designed, arranged or intended to be used.

OWNER. Any person, agent, firm, partnership, corporation or other legal entity having a legal or equitable interest in, or control of the premises.

PARTY WALL. A fire division on an interior lot line common to two adjoining buildings.

PERMIT. An official document or certificate issued by the commissioner that authorizes performance of specified work or activity.

PERSON. An individual, partnership, corporation, or other legal entity.

PREMISES. Land, improvements thereon, or any part thereof.

PROFESSIONAL CERTIFICATION. A personal verification of a registered design professional made under such professional's signature and seal that accompanies construction documents and other submittal documents filed with the department and that attests that such documents do not contain false information and are in compliance with all applicable provisions of law.

REGISTERED DESIGN PROFESSIONAL. An architect or engineer.

REGISTERED DESIGN PROFESSIONAL OF RECORD. The registered design professional who prepared or supervised the preparation of applicable construction documents filed with the department.

REQUIRED. Shall mean required by the provisions of this code.

RETAINING WALL. A wall designed to prevent the lateral displacement of soil or other materials.

SIGN-OFF. The issuance by the department of a letter of completion or certificate of occupancy for permitted work indicating the satisfactory completion of all required inspections and receipt by the department of all required submittal documents.

SERVICE EQUIPMENT. Equipment or systems, and all components thereof, that provide sanitation, power, light, heat, ventilation, air conditioning, refuse disposal, fire-fighting, transportation or other facilities for buildings.

SINGLE ROOM OCCUPANCY MULTIPLE DWELLING. See section 28-107.2.

SPECIAL INSPECTION. Inspection of selected materials, equipment, installation, fabrication, erection or placement of components and connections, to ensure compliance with approved construction documents and referenced standards as required by chapter 17 of the New York city building code or elsewhere in this code or its referenced standards.

SPECIAL INSPECTOR. An individual having required qualifications and authorized by the department to perform or witness particular special inspections required by this code or by the rules of the department, including but not limited to a qualified registered design professional so authorized.

SUPERINTENDENT OF CONSTRUCTION (CONSTRUCTION SUPERINTENDENT). An individual, when authorized pursuant to department rules as qualified to superintend permitted construction work on behalf of the owner.

STRUCTURE. That which is built or constructed, including among others: buildings, stadia, tents, reviewing stands, platforms, stagings, observation towers, radio towers, tanks, trestles, open sheds, shelters, fences, and display signs.

SUBMITTAL DOCUMENTS. Completed application forms, construction documents, reports and any other required documents submitted in compliance with this code or other applicable laws and rules including but not limited to special inspection reports, certifications or approvals from other governmental agencies and other data required by this code or by the department.

USE (USED). The purpose for which a building, structure, or space is occupied or utilized, unless otherwise indicated by the text. Use (used) shall be construed as if followed by the words "or is intended, arranged, or designed to be used."

UTILITY COMPANY OR PUBLIC UTILITY COMPANY. The term shall be construed to have the same meaning as that contained in section two of the New York state public service law.

UTILITY CORPORATION OR PUBLIC UTILITY CORPORATION. The term shall be construed to have the same meaning as that contained in section two of the New York state public service law.

WORK NOT CONSTITUTING MINOR ALTERATIONS OR ORDINARY REPAIRS. See section 28-105.4.2.1.

WRITING (WRITTEN). The term shall be construed to include handwriting, typewriting, printing, photo-offset, or any other form of reproduction in legible symbols or characters, including, in the discretion of the commissioner, electronic media.

WRITTEN NOTICE. A notification in writing delivered by hand to the person or parties intended, or delivered at or sent by mail or in the discretion of the commissioner by electronic media to the last address known to the party giving such notice.

ZONING RESOLUTION. The zoning resolution of the city of New York, adopted December fifteenth, nineteen hundred sixty-one, including all amendments thereto.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 11, eff. July 1, 2008.

MAIN USE OR DOMINANT OCCUPANCY (OF A BUILDING) added L.L.

8/2008 § 3, eff. July 1, 2008.



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NYC Administrative Code § 28-102.1

§ 28-102.1 General.

Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where a general requirement conflicts with a specific requirement, the specific requirement shall govern. Where British and metric units of measurement conflict, the British units shall govern.



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§ 28-102.2 Other laws.

The provisions of this code do not presumptively provide for matters that are contained in the charter, the labor law, the multiple dwelling law, the zoning resolution, or the general city law. Where there is conflict or inconsistency between the requirements of this code and other applicable laws and rules, unless otherwise required, such conflict shall be resolved in favor of the more restrictive requirement.



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NYC Administrative Code § 28-102.3

§ 28-102.3 Separability.

If any clause, sentence, paragraph, section or part of this code shall be adjudged to be invalid, such judgment shall not affect, impair or invalidate the remainder thereof, but shall be confined in its operation to the clause, sentence, paragraph, or part thereof directly involved in the controversy in which such judgment shall have been rendered.



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NYC Administrative Code § 28-102.4

§ 28-102.4 Existing buildings.

The lawful use or occupancy of any existing building or structure, including the use of any service equipment therein, may be continued unless a retroactive change is specifically required by the provisions of this code or other applicable laws or rules. The continuation of the unlawful use or occupancy of a building or structure after the effective date of this code contrary to the provisions of this code or other applicable law or rule shall be a violation of this code.



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NYC Administrative Code § 28-102.4.1

§ 28-102.4.1 Existing buildings must comply with the applicable retroactive requirements of the 1968 building code.

Existing buildings must comply with the applicable retroactive requirements of the 1968 building code including those requiring the installation of fire safety and building safety systems and the filing of verifying reports with the department of such installations by the dates specified in section 27-228.5 of the administrative code or in other applicable provisions of such 1968 building code. A violation of such provisions shall be a violation of this code.



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NYC Administrative Code § 28-102.4.2

§ 28-102.4.2 Change in use or occupancy.

Except as otherwise provided in sections 28-101.4.1, 28-101.4.2 28-101.4.3 or 28-101.4.4 changes in the use or occupancy of any building or structure made after the effective date of this code shall comply with the provisions of this code. Any changes made in the use or occupancy of a building or structure not in compliance with this code shall be prohibited and shall be a violation of this code. After a change in use or occupancy has been made in a building, the re-establishment of a prior use or occupancy that would not be lawful in a new building of the same construction class shall be prohibited unless and until all the applicable provisions of this code and other applicable laws and rules for such reestablished use or occupancy shall have been complied with. A change from a use prohibited by the provisions of this code, but which was permitted prior to the effective date of this code, to another use prohibited by the provisions of this code shall be deemed a violation of this code.



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NYC Administrative Code § 28-102.4.3

§ 28-102.4.3 Alteration of existing structures.

Except as otherwise provided in sections 28-101.4.1, 28-101.4.2, 28-101.4.3 and 28-101.4.4, existing structures altered after the effective date of this code shall comply with the provisions of this code. In accordance with subdivision eleven of section three of the multiple dwelling law and article 4 of subchapter 1 of the 1968 building code, at the option of the owner, multiple dwellings erected prior to December 6, 1969 may be altered and buildings erected prior to December 6, 1969 may be converted to multiple dwellings in accordance with applicable provisions of the multiple dwelling law and the building laws and regulations in effect prior to December 6, 1968, provided the general safety and public welfare are not thereby endangered.



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NYC Administrative Code § 28-102.4.4

§ 28-102.4.4 Occupancy classifications.

With regard to existing buildings, references to occupancy classifications in this code shall be deemed to refer to the equivalent occupancy classification under the 1968 building code.



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NYC Administrative Code § 28-102.5

§ 28-102.5 Grading of lots.

The regulation of lots, in conformity with the street on which they are situated, shall be calculated at curb level. Where a lot has more than one street frontage, and is so situated that the street frontages intersect, the curb of the longest street frontage shall be used. When the street frontages do not intersect, the curb along each frontage shall be used to one-half the depth of the lot between street frontages. A lot as referred to in this section 28-102.5 shall mean a parcel of land twenty-five feet by one hundred feet, or less, in one ownership whether adjacent land be in the same or other ownership; but, for this purpose, no land in the same ownership may be divided into lots smaller than twenty-five feet by one hundred feet.



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NYC Administrative Code § 28-102.6

§ 28-102.6 Appendices.

All enacted appendices are a part of the provisions of this code.



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NYC Administrative Code § 28-102.7

§ 28-102.7 References in other laws.

References to provisions of the building code of the city of New York or to chapter 1 of title 27 of the administrative code in other laws shall be deemed to refer to equivalent provisions of the 1968 building code or the New York city construction codes as the context in which such references appear may require.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 4, eff. July 1, 2008.



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NYC Administrative Code § 28-103.1

§ 28-103.1 Jurisdiction.

This code shall be enforced by the commissioner of buildings, pursuant to the provisions of section six hundred forty-three of the New York city charter. However, the commissioner of small business services may also enforce all of the provisions of this code with respect to buildings under the jurisdiction of the department of small business services and the fire commissioner may also enforce all the provisions of this code relating to:

1. The approved number of persons in places of assembly (overcrowding);
2. Obstruction of aisles, corridors, and exits;
3. The posting and availability for inspection of certificates of occupancy or other authorization of lawful occupancy, certificates of compliance and place of assembly certificates of operation;
4. The maintenance of fire, smoke and carbon monoxide detection and alarm systems, fire extinguishing systems, refrigerating systems, storage tanks and auxiliary storage tanks for oil burning equipment, exit signs and path markings, and any fire or life safety system, equipment or device intended for use by fire fighting personnel or whose use or operation is subject to the New York city fire code or other law or rule enforced by the New York city fire department, and any related installation and signage; and
5. The installation and testing of fire alarm systems, smoke-detecting and carbon monoxide detecting devices that are interconnected with a fire alarm system or monitored by a central station, and fire extinguishing systems for commercial cooking appliances.
6. Fire fighting equipment, access to and within premises upon or in which construction and demolition work is being conducted, and the conduct of all construction or demolition work affecting fire prevention and fire fighting.



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NYC Administrative Code § 28-103.1.1

§ 28-103.1.1 Installation of equipment required by the New York city fire code.

Where the installation of exit signs, emergency means of egress illumination, special mechanical ventilation and sprinkler and fire alarm systems is required by the New York city fire code, the fire commissioner shall require such installations to be in accordance with this code.



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NYC Administrative Code § 28-103.1.2

§ 28-103.1.2 Enforcement of New York city construction codes on property within the jurisdiction of the department of small business services.

This code and the 1968 building code shall apply to property within the jurisdiction of the department of small business services pursuant to the New York city charter including, but not limited to, structures on waterfront property used in conjunction with and in furtherance of waterfront commerce and/or navigation. It shall be administered and enforced by the department of small business services in the same manner as property within the jurisdiction of the department.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 11, eff. July 1, 2008.
28-103.1 Item 6 added L.L. 26/2008 § 5, eff. July 1, 2008.



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NYC Administrative Code § 28-103.2

§ 28-103.2 Interpretation.

This code shall be liberally interpreted to secure the beneficial purposes thereof.



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NYC Administrative Code § 28-103.3

§ 28-103.3 Variations.

The requirements and standards prescribed in this code shall be subject to variation in specific cases by the commissioner, or by the board of standards and appeals, under and pursuant to the provisions of paragraph two of subdivision (b) of section six hundred forty-five and section six hundred sixty-six of the New York city charter, as amended.



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NYC Administrative Code § 28-103.4

§ 28-103.4 Appeals.

An appeal from any decision or interpretation of the commissioner may be taken to the board of standards and appeals pursuant to the procedures of the board, except as provided in section 25-204 of the administrative code or as otherwise provided in this code.

HISTORICAL NOTES:

Section amended L.L. 8/2008 § 5, eff. July 1, 2008.

Section added L.L. 33/2007 § 11, eff. July 1, 2008.



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NYC Administrative Code § 28-103.5

§ 28-103.5 Seal; judicial notice.

The commissioner may design and adopt a seal for the department for use in the authentication of the orders and proceedings of the department, and for such other purposes as the commissioner may prescribe. The courts shall take judicial notice of such seal, and of the signature of the commissioner, the deputy commissioners, and the borough superintendents of the department.



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NYC Administrative Code § 28-103.6

§ 28-103.6 Proofs, affidavits and oaths.

Proofs, affidavits and examinations as to any matter arising in connection with the performance of any of the duties of the department may be taken by or before the commissioner, or a deputy commissioner, or such other person as the commissioner may designate; and such commissioner, deputy or other person may administer oaths in connection therewith.



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NYC Administrative Code § 28-103.7

§ 28-103.7 Cooperation of other departments.

Upon request of the commissioner, it shall be the duty of all departments to cooperate with the department of buildings at all times, and to furnish to such department such information, reports and assistance as the commissioner may require.



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NYC Administrative Code § 28-103.8

§ 28-103.8 Matters not provided for.

Any matter or requirement essential for fire or structural safety or essential for the safety or health of the occupants or users of a structure or the public, and which is not covered by the provisions of this code or other applicable laws and rules, shall be subject to determination and requirements by the commissioner in specific cases.



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NYC Administrative Code § 28-103.9

§ 28-103.9 Additional tests.

Whenever there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method of construction does not conform to the requirements of this code, or in order to substantiate claims for alternative materials or methods, the commissioner shall have the authority to require tests as evidence of compliance to be made at no expense to the city. Test methods shall be as specified in this code, or by other recognized test standards approved by the commissioner. In the absence of recognized and accepted test methods, the commissioner shall approve the testing procedures. Tests shall be performed as directed by the commissioner. Reports of such tests shall be retained by the department for the period required for retention of public records.



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NYC Administrative Code § 28-103.10

§ 28-103.10 Supporting documentation for materials.

Whenever this code or the rules of the department permits the use of material regulated in its use by this code or the 1968 building code without the prior approval of the commissioner, the commissioner may, in the interest of public safety, require the submittal of supporting documentation that any material used or proposed to be used complies with the applicable code standard for such use. Such supporting documentation may consist of but shall not be limited to certification documents of an approved agency, test reports, analysis, computations or other evidence of such compliance.



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NYC Administrative Code § 28-103.11

§ 28-103.11 Applications and permits.

The department shall receive and review applications, construction documents, and other submittal documents and shall issue permits, in accordance with the provisions of this code.



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NYC Administrative Code § 28-103.12

§ 28-103.12 Identification.

Department personnel shall carry metal badges with suitable inscriptions thereon or other prescribed identification when inspecting structures or premises or otherwise in the performance of their duties under this code.



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NYC Administrative Code § 28-103.13

§ 28-103.13 Right of entry.

The commissioner or his or her authorized representatives, in the discharge of their duties, shall have the right to enter upon and inspect, at all reasonable times, any buildings, enclosure, premises, or any part thereof, or any signs or service equipment contained therein or attached thereto for the purpose of determining compliance with the provisions of this code and other applicable building laws and rules. Officers and employees of the department shall identify themselves by exhibiting the official badge or other identification prescribed by the department; and other authorized representatives of the commissioner shall identify themselves by producing and exhibiting their authority in writing signed by the commissioner. If access is not obtained, the commissioner shall have recourse to remedies provided by law to secure entry.



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NYC Administrative Code § 28-103.14

§ 28-103.14 Department records.

The department shall keep official records of applications received, permits and certificates issued, fees collected, reports of inspections, and notices and orders issued. Such records shall be retained in the official records for the period required for retention of public records.



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NYC Administrative Code § 28-103.14.1

§ 28-103.14.1 List of permits for cellular antenna.

The commissioner shall maintain a separate list of alteration permits issued for the erection or placement of antennae used to provide cellular telephone or similar service or any structure related to such service which shall, at a minimum, set forth the name, business address and business telephone number of the applicant, the date of the application, the date the permit was issued, the location for which the permit was issued, including the premises address and the zoning district, whether residential, commercial, or manufacturing, and the number of permits issued for such purpose at the same location. Such list shall be made available to the public upon request between regular business hours and shall be available to the public in electronic format on a 24-hour basis on the department's website.



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NYC Administrative Code § 28-103.15

§ 28-103.15 Insurance.

The commissioner may require applicants for permits to obtain and furnish proof of workers' compensation, disability and general liability insurance in such amounts and in accordance with such specifications as shall be set forth in the rules of the department or as otherwise required by law.



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NYC Administrative Code § 28-103.16

§ 28-103.16 Inspections of completed buildings, structures, signs, service equipment and construction machinery and equipment.

In addition to other required inspections, the commissioner may make or require inspections of completed buildings, structures, signs, service equipment installations and construction machinery and equipment to ascertain compliance with the provisions of this code and other laws that are enforced by the department. Such inspections may be made on behalf of the department by officers and employees of the department and other city departments and governmental agencies; and by approved agencies, special inspectors or other persons when the commissioner is satisfied as to their qualifications and reliability. The commissioner may accept inspection and test reports from persons authorized by this code or by the commissioner to perform such inspections. Such reports shall be filed with the department.



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NYC Administrative Code § 28-103.17

§ 28-103.17 Certain outside work, employment and financial interests of department employees prohibited.

It shall be unlawful for any officer or employee of the department to be engaged in conducting or carrying on business as an architect, engineer, carpenter, plumber, iron worker, mason or builder, or any other profession or business concerned with the construction, alteration, sale, rental, development, or equipment of buildings. It shall also be unlawful for such employees to be engaged in the manufacture or sale of automatic sprinklers, fire extinguishing apparatus, fire protection devices, fire prevention devices, devices relating to the means or adequacy of exit from buildings, or articles entering into the construction or alteration of buildings, or to act as agent for any person engaged in the manufacture or sale of such articles, or own stock in any corporation engaged in the manufacture or sale of such articles.



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NYC Administrative Code § 28-103.18

§ 28-103.18 Investigation of complaints.

The commissioner shall cause all complaints to be investigated. For purposes of investigating complaints of violations of law enforced by the department, the commissioner may by rule establish a program to classify structures based on their enforcement history and may create criteria for such classification and assign enforcement resources accordingly.



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NYC Administrative Code § 28-103.18.1

§ 28-103.18.1 Complaint records.

The department shall keep records of complaints made by any person in reference to any building or other matter under the jurisdiction of the department. Recorded complaints shall include the name and residence of the complainant, the name of the person complained of, the date of the entry of the complaint and any suggested remedies. Except for entries of names and residences of the complainants, such records shall be made available for public examination.



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NYC Administrative Code § 28-103.19

§ 28-103.19 Addition, modification, and deletion of referenced standards.

The standards referenced in this code may be added to, deleted or modified pursuant to local law or by rule of the department. Every such rule adding, deleting or modifying a referenced standard shall indicate the promulgating agency of the standard, the standard identification, the effective date and title and the section or sections of this code to which such standard applies. The commissioner shall act in consultation with the fire commissioner on matters relating to fire safety.

Exception: Referenced standards in the New York city plumbing code, other than referenced national standards contained in chapter 13 of such code, shall not be added to, deleted, or modified by rule.



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NYC Administrative Code § 28-103.20

§ 28-103.20 Existing rules continued.

Rules promulgated by the department in accordance with the law in effect prior to the effective date of this code shall remain in effect for the matters covered to the extent that such rules are not inconsistent with this code unless and until such rules are amended or repealed by the department.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 6, eff. July 1, 2008.



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NYC Administrative Code § 28-103.21

§ 28-103.21 Incident lists.

The commissioner shall post on the department's website a list of every incident that occurred on every construction site within the city of New York that resulted in an injury and/or a fatality, either or both of which were reported to the department or of which the department otherwise became aware. Such list shall be updated monthly. Such list shall identify the owner and the general contractor of the site where the incident occurred, the nature of the work being performed at the time of the incident, violations issued as a result of the incident and to whom such violations were issued, and the number of persons injured and/or killed. Such list shall also set forth the total number of injuries and fatalities reported to the department or of which the department otherwise became aware that occurred on construction sites within each borough and within the entire city for each of the previous five calendar years.

HISTORICAL NOTES:

Section added L.L. 29/2008 § 1, eff. Sept. 28, 2008.



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NYC Administrative Code § 28-104.1

§ 28-104.1 General.

The department shall not issue a permit pursuant to this code, or a place of assembly operation certificate pursuant to this code unless and until it approves all required construction documents for such work. The department shall not issue an electrical work permit pursuant to the New York city electrical code for fire and emergency alarm systems, solar panels and wind turbines unless and until it approves all required construction documents for such work. Such construction documents shall be prepared by or under the supervision of a registered design professional as required by this code. An application for an associated work permit shall not be submitted to the department until all required construction documents have been approved.



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NYC Administrative Code § 28-104.1.1

§ 28-104.1.1 Construction documents subject to the New York city fire code.

Except as the New York city fire code may otherwise provide, the construction documents for facilities and systems for which the fire code provides design and installation requirements, including but not limited to fire alarm systems, flammable and combustible liquids, compressed gases, explosives and other hazardous materials; flammable spraying systems and facilities; automatic water sprinkler systems for hazardous material and combustible material storage, and non-water fire extinguishing systems, shall be subject to the review and approval of the fire commissioner in accordance with the New York city fire code. Approval by the department of construction documents for new or existing buildings containing such facilities and systems shall not be construed as approval of such systems and facilities.



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NYC Administrative Code § 28-104.2

§ 28-104.2 Application for approval of construction documents.

The department shall assign a job number to and docket all applications for approval of construction documents and any amendments thereto filed with it. The department shall examine the construction documents promptly after their submission. The examination shall be made under the direction of the commissioner for compliance with the provisions of this code and other applicable laws and rules. The personnel employed for the examination of construction documents shall be qualified registered design professionals, experienced in building construction and design.



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NYC Administrative Code § 28-104.2.1

§ 28-104.2.1 Less than full examination of construction documents.

The commissioner may, in the commissioner's discretion, establish a program whereby construction documents may be accepted with less than full examination by the department based on the professional certification of an applicant who is a registered design professional.



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NYC Administrative Code § 28-104.2.1.1

§ 28-104.2.1.1 Effect of acceptance.

Except as otherwise specified in this code or in the rules of the department, for the purposes of this code, the acceptance of construction documents in accordance with such program shall have the same force and effect as the approval of construction documents after full examination by the department. Except as otherwise specified in this code or in the rules of the department, references in this code to approved construction documents or to the approval of construction documents shall also be deemed to refer to accepted construction documents or to the acceptance of construction documents, as applicable.



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NYC Administrative Code § 28-104.2.1.2

§ 28-104.2.1.2 Program requirements.

The commissioner may establish qualifications and requirements for registered design professionals to participate in such program and may exclude, suspend or otherwise sanction participants for cause.



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NYC Administrative Code § 28-104.2.1.3

§ 28-104.2.1.3 Mandatory program requirements.

Registered design professionals participating in such program shall be subject to sections 28-104.2.1.3 .1 through 28-104.2.1.3.2.



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NYC Administrative Code § 28-104.2.1.3.1

§ 28-104.2.1.3.1 Probation.

A registered design professional shall not be eligible to participate in the program during any period of probation imposed as a sanction by the board of regents pursuant to section 6511 of the education law.



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NYC Administrative Code § 28-104.2.1.3.2

§ 28-104.2.1.3.2 Mandatory sanctions.

The commissioner shall, after the opportunity for a hearing before the office of administrative trials and hearings in accordance with department rules, exclude, suspend or otherwise condition the participation of a registered design professional who (i) knowingly or negligently submits a professional certification of an application and/or construction documents that contains false information or is not in compliance with all applicable provisions of law, or (ii) submits two professionally certified applications for construction document approval within any 12-month period containing errors that result in revocation of an associated permit or that otherwise demonstrate incompetence or a lack of knowledge of applicable laws. The term "otherwise condition" shall mean limitations on such professional's participation in the program, such as, but not limited to, audits and monitoring of the registered design professional's applications and other submissions.



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NYC Administrative Code § 28-104.2.1.4

§ 28-104.2.1.4 Database.

The department shall create and maintain a database of all registered design professionals who have been excluded, suspended or otherwise sanctioned by the department. Within 7 business days of the date a sanction is imposed, the department shall post on its website and shall make available upon request, the name of the registered design professional, a description of the sanction, the initial date of the sanction, the reinstatement date, if applicable, the address of the premises for which the application associated with the sanction was submitted, and whether the sanction was imposed after a hearing or a settlement. The department shall provide requested information concerning the exclusion, suspension or other sanction of a specific registered design professional within 30 days of such request.



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NYC Administrative Code § 28-104.2.1.5

§ 28-104.2.1.5 Applicant requirement.

The program shall include a condition that the applicant remain with the job until it is signed-off by the department and that if the applicant withdraws from the job before the issuance of a letter of completion or certificate of occupancy, as applicable, all work shall stop and no permit, letter of completion or certificate of occupancy shall be issued until a successor registered design professional is designated as applicant and such person submits (i) a professional certification indicating his or her concurrence with the construction documents as accepted by the department or (ii) new construction documents are approved or accepted by the department.



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NYC Administrative Code § 28-104.2.1.6

§ 28-104.2.1.6 Notice to the state department of education.

The department shall provide written notice to the New York state department of education of any professional engineer or registered architect who was the subject of any disciplinary proceeding where there has been an adverse determination or sanction by the department including any settlement agreement that is reached between the parties that resulted in a sanction of privileges being imposed by the department. Such notice shall be sent within ten business days after a determination is made in any such disciplinary proceeding or after a settlement of such proceeding has been reached, and shall include the name, and business firm name and address of such professional engineer or registered architect, as well as any supporting documentation for the sanction imposed. The department shall also provide such notice to the state department of education of any professional engineer or registered architect that has been the subject of any disciplinary proceeding where there has been an adverse determination or sanction by the department within the five calendar years immediately preceding the effective date of this section.



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NYC Administrative Code § 28-104.2.2

§ 28-104.2.2 Approval or acceptance to be indicated on construction documents.

All construction documents, when approved, shall be stamped or endorsed "approved" under the official method of the department, followed by a notation of the date except that construction documents accepted with less than full examination by the department shall be stamped or endorsed "accepted" instead of "approved". One set of "approved" or "accepted" construction documents shall be retained by the department and another set shall be maintained at the job site until the work authorized by the permit is completed and signed-off by the department.



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NYC Administrative Code § 28-104.2.3

§ 28-104.2.3 Time limitation of application.

An application for approval of construction documents shall be deemed to have been abandoned 12 months after the date of its submission, unless such application has been diligently prosecuted after rejection in whole or in part, or unless a permit shall have been issued pursuant to this code, except that the commissioner may upon application, for reasonable cause, grant extensions of time for additional 12-month periods.



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NYC Administrative Code § 28-104.2.4

§ 28-104.2.4 Conditions of approval.

All construction documents approved by the commissioner shall be conditioned upon and subject to compliance with the requirements of this code and other applicable laws and rules in effect at the time of issuance of the associated work permit or place of assembly certificate of operation.



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NYC Administrative Code § 28-104.2.5

§ 28-104.2.5 Phased or partial approval.

In the case of construction documents for the construction of new buildings or the alteration of buildings, the commissioner may grant partial approval of construction documents for the issuance of foundation and earthwork permits before the construction documents for the entire building or structure have been submitted. The approval of such partial applications will be subject to the submittal and approval of construction documents, filed together or separately, comprising:

1. The lot diagram showing the exact location of the lot and dimensions to the nearest corner;
2. A complete zoning analysis showing compliance of the proposed work with the zoning resolution;
3. The foundation plans, as provided for in this code; and
4. The floor and roof plans showing compliance with exit requirements, as provided for in this code.

The issuance of such foundation and earthwork permit is subject to submission of required submittal documents. The owner and the holder of such foundation and earthwork permit shall proceed at their own risk with the construction operation and without assurance that a permit for the entire structure will be granted.



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NYC Administrative Code § 28-104.2.6

§ 28-104.2.6 Deferred submittal.

With the prior approval of the department, the applicant may defer submittal of portions of the design until a specified period of time after the issuance of a permit. The applicant shall list the deferred submittal items on the initial application for construction document approval. The deferred submittal items shall not be constructed or installed until the design and submittal documents for the item have been approved by the department.



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NYC Administrative Code § 28-104.2.7

§ 28-104.2.7 Time period for review.

Completed construction documents complying with the provisions of this code and other applicable laws and rules shall be approved by the commissioner and written notice of approval shall be given the applicant promptly and no later than 40 calendar days after the submission of a complete application.

Exceptions:

1. On or before the fortieth day, the commissioner may, for good cause shown and upon notification to the applicant, extend such time for an additional 20 calendar days.
2. Such time period for review shall commence in accordance with article 107 for single room occupancy multiple dwellings.



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NYC Administrative Code § 28-104.2.8

§ 28-104.2.8 Notification of rejection.

Applications failing to comply with the provisions of this code and other applicable laws and rules shall be rejected and written notice of rejection, stating the grounds of rejection, shall be given the applicant promptly and not later than the date required in section 28-104.2.7.



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NYC Administrative Code § 28-104.2.9

§ 28-104.2.9 Resubmission.

Whenever an application has been rejected and is thereafter revised and resubmitted to meet the stated grounds of rejection, the revised application and construction documents shall be approved if they meet the stated grounds of rejection and otherwise comply with the provisions of this code and other applicable laws and rules or shall be rejected if they fail to meet the stated grounds of rejection or otherwise fail to so comply. Written notice of approval or written notice of rejection, stating the grounds of rejection, shall be given the applicant promptly and not later than 20 calendar days after the resubmission of such documents.



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NYC Administrative Code § 28-104.2.10

§ 28-104.2.10 Revocation of approval.

The commissioner may, on notice to the applicant, revoke the approval of construction documents for failure to comply with the provisions of this code or other applicable laws or rules; or whenever there has been any false statement or any misrepresentation as to a material fact in the submittal documents upon the basis of which such approval was issued; or whenever an approval has been issued in error and conditions are such that approval should not have been issued. Such notice shall inform the applicant of the reasons for the proposed revocation and that the applicant has the right to present to the commissioner or his or her representative within 10 business days of personal service or 15 calendar days of the posting of service by mail, information as to why the approval should not be revoked.



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NYC Administrative Code § 28-104.2.10.1

§ 28-104.2.10.1 Effect on work permit.

The effect of revocation of approval of construction documents is the automatic revocation of all associated work permits that may have been issued.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 11, eff. July 1, 2008.

28-104.2.1.3.2.2 added L.L. 8/2008 § 7, eff. July 1, 2008.

28-104.2.1.3.2.3 renumbered (former 28-104.2.1.3.2.2) L.L. 8/2008 § 7, eff.

July 1, 2008.

28-104.2.1.4 amended L.L. 8/2008 § 8, eff. July 1, 2008.

28-104.2.1.6 added L.L. 27/2008 § 1, eff. June 30, 2008.



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NYC Administrative Code § 28-104.3

§ 28-104.3 Amended construction documents.

Subject to the time limitations set forth in this code, amendments to approved construction documents shall be submitted, reviewed and approved before the final inspection of the work or equipment is completed; and such amendments when approved shall be deemed part of the original construction documents. The department may allow minor revisions of construction documents to be made and submitted to the department after the completion of work but prior to sign-off of the work in accordance with department rules.



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NYC Administrative Code § 28-104.4

§ 28-104.4 Place of filing.

Except as otherwise provided by rule, applications for construction document approval shall be filed in the department office in the borough in which the work or equipment is located or at the discretion of the commissioner shall be submitted electronically.



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NYC Administrative Code § 28-104.5

§ 28-104.5 Fees.

Filing fees shall be paid as required by article 112.



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NYC Administrative Code § 28-104.6

§ 28-104.6 Applicant.

The applicant for approval of construction documents shall be the registered design professional who prepared or supervised the preparation of the construction documents on behalf of the owner.

Exception: The applicant may be other than a registered design professional for:

1. Limited plumbing alterations, limited sprinkler alterations, and limited standpipe alterations, where the applicant is licensed to perform such work pursuant to this code;
2. Demolition applications other than those specified in section 3306.5 of the New York city building code, where the applicant is the demolition contractor performing such demolition. In such cases, the commissioner may require structural plans designed by a registered design professional to address any critical structural, sequencing or site safety items;
3. Elevator applications;
4. Other categories of work consistent with rules promulgated by the commissioner.



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NYC Administrative Code § 28-104.6.1

§ 28-104.6.1 Verification of professional qualification required.

The department shall not accept construction documents or other documents submitted in connection with applications for construction document approval or work permits under this code by any person representing that he or she is an architect or engineer without verifying, by means of lists compiled and made available by the New York state department of education pursuant to paragraph e-1 of subdivision four of section sixty-five hundred seven of the education law, that such person meets the qualifications established by law to practice as an architect or engineer in New York state.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 11, eff. July 1, 2008.
28-104.6.1 added L.L. 8/2008 § 9, eff. July 1, 2008.



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NYC Administrative Code § 28-104.7

§ 28-104.7 Submittal of construction documents.

All construction documents submitted to the department shall contain such information and shall be in such form as shall be set forth in this section 28-104.7 and the rules of the department. Construction documents shall also conform to standards as may be prescribed in the applicable sections of the construction codes.



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NYC Administrative Code § 28-104.7.1

§ 28-104.7.1 Scope.

Construction documents shall be complete and of sufficient clarity to indicate the location and entire nature and extent of the work proposed, and shall show in detail that they conform to the provisions of this code and other applicable laws and rules; if there exist practical difficulties in the way of carrying out the strict letter of the code, laws or rules, the applicant shall set forth the nature of such difficulties.



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NYC Administrative Code § 28-104.7.2

§ 28-104.7.2 Forms.

The applicant shall submit construction documents on or accompanied by forms provided by the department.



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NYC Administrative Code § 28-104.7.3

§ 28-104.7.3 Media.

Construction documents shall be printed upon suitable material, or presented as electronic media documents as determined by the commissioner. Plans shall be drawn to suitable scale.



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NYC Administrative Code § 28-104.7.4

§ 28-104.7.4 Quantities.

The applicant shall submit the number of copies of construction documents as the commissioner shall require.



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NYC Administrative Code § 28-104.7.5

§ 28-104.7.5 Citations to code sections required.

In no case shall terms such as "code compliant", "approved", "legal" or similar terms be used in the construction documents as a substitute for specific reference to a particular code section, approval or standard in order to show compliance with code requirements or other applicable laws and rules.



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ARTICLE 104: CONSTRUCTION DOCUMENTS

NYC Administrative Code § 28-104.7.6

§ 28-104.7.6 City Datum.

All elevations noted in the construction documents shall be referred to and clearly identified as the United States coast and geodetic survey mean sea level datum of 1929 (national geodetic vertical datum, "NGVD"), which is hereby established as the city datum. By way of examples, tables 104.7.6.1 through 104.7.6.5 shall be used to convert borough elevations to their corresponding equivalent NGVD elevations. Table 104.7.6.1 BRONX Elevations To obtain equivalency: NGVD Elevations 10.000 \$ add 2.608 \$ 12.608 7.392 \$ add 2.608 \$ 10.000 Table 104.7.6.2 BROOKLYN Elevations To obtain equivalency: NGVD Elevations 10.000 \$ add 2.547 \$ 12.547 7.453 \$ add 2.547 \$ 10.000 Table 104.7.6.3 MANHATTAN Elevations To obtain equivalency: NGVD Elevations 10.000 \$ add 2.752 \$ 12.752 7.248 \$ add 2.752 \$ 10.000 Table 104.7.6.4 QUEENS Elevations To obtain equivalency: NGVD Elevations 10.000 \$ add 2.725 \$ 12.725 7.275 \$ add 2.725 \$ 10.000 Table 104.7.6.5 STATEN ISLAND Elevations To obtain equivalency: NGVD Elevations 10.000 \$ add 3.192 \$ 13.192 6.808 \$ add 3.192 \$ 10.000



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NYC Administrative Code § 28-104.7.7

§ 28-104.7.7 Identification of special inspections.

Whenever materials are subject to special inspection, as provided in this code, such materials shall be listed on the title sheet of the construction documents, or the sheet immediately following, as subject to special inspection.



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NYC Administrative Code § 28-104.7.8

§ 28-104.7.8 Identification of materials.

Construction documents shall identify all materials proposed to be used, including identification of the test standard to which they conform, and where applicable, supporting information or test data from the manufacturer attesting to such conformance.



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NYC Administrative Code § 28-104.7.9

§ 28-104.7.9 Energy conservation construction code.

The application shall contain all information required to demonstrate compliance with the energy conservation construction code of New York state.



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NYC Administrative Code § 28-104.7.10

§ 28-104.7.10 Preparer.

Each plan or drawing shall contain the license number, seal, signature (or equivalent as approved by the commissioner) and address of the registered design professional who prepared or supervised the preparation of the plans.



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NYC Administrative Code § 28-104.7.11

§ 28-104.7.11 Additional information.

In addition to the data and information specified in this code and the rules of the department, the commissioner is authorized to require the submission of additional plans, surveys, computations, analyses, test reports, photographs, special inspection and such other data and information as may be necessary to determine compliance with this code and other applicable laws and rules.



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NYC Administrative Code § 28-104.7.12

§ 28-104.7.12 Waiver of certain documents.

The commissioner is authorized to waive the submission of any of the required construction documents and other data if review of such documents is not necessary to ascertain compliance with this code or not required for the phase of work for which a permit is sought.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 11, eff. July 1, 2008.
28-104.7.10 amended L.L. 8/2008 § 10, eff. July 1, 2008.



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NYC Administrative Code § 28-104.8

§ 28-104.8 Applications.

All applications shall comply with sections 28-104.8.1 through 28-104.8.4.



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NYC Administrative Code § 28-104.8.1

§ 28-104.8.1 Applicant statements.

The application shall contain the following signed and sealed statements by the applicant:

1. A statement certifying that the applicant is authorized by the owner to make the application and certifying that, to the best of the applicant's knowledge and belief, the construction documents comply with the provisions of this code or the 1968 building code, if applicable, and other applicable laws and rules; if there exist practical difficulties in the way of carrying out the strict letter of the code, laws or rules, the applicant shall set forth the nature of such difficulties in such signed statement; and

2. A statement certifying (i) that the site of the building to be altered or demolished, or the site of the new building to be constructed, contains no occupied housing accommodations subject to rent control or rent stabilization under chapters 3 and 4 of title 26 of the administrative code, or (ii) that the owner has notified the New York state division of housing and community renewal of the owner's intention to file such plans and has complied with all requirements imposed by the regulations of such agency as preconditions for such filing; or (iii) that the owner has not notified such agency of the owner's intention to file because the nature and scope of the work proposed, pursuant to such regulations, does not require notification.

3. A professional certification.

4. A statement certifying compliance with the energy conservation construction code of New York state.



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NYC Administrative Code § 28-104.8.2

§ 28-104.8.2 Owner statement.

The application shall contain a signed statement by the owner, cooperative owners' corporation, or condominium owners' association stating that the applicant is authorized to make the application and, if applicable, acknowledging that construction documents will be accepted with less than full examination by the department based on the professional certification of the applicant. Such statement shall list the owner's full name and address, as well as the names of the principal officers, partners or other principals if a corporation, partnership or other entity. Principal officers of a corporation shall be deemed to include the president, vice presidents, secretary and treasurer.



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NYC Administrative Code § 28-104.8.3

§ 28-104.8.3 Information of applicant, filing representative, and owner.

The application shall set forth the full names, addresses, telephone numbers, and where available, e-mail addresses of the following persons and where any of such persons are corporations, partnerships or other business entities, the names and addresses of the principal officers, partners or other principals of such entity:

1. The applicant;
2. The filing representative;
3. The owner, cooperative owners' corporation, or condominium owners' association; and
4. Where a person other than the owner has engaged the applicant, such cooperative unit shareholder, condominium unit owner, lessee, or mortgagee.



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NYC Administrative Code § 28-104.8.4

§ 28-104.8.4 Tenant protection plan.

Construction documents for alterations of buildings in which any dwelling unit will be occupied during construction shall include a tenant protection plan. Such plan shall contain a statement that the building contains dwelling units that will be occupied during construction and shall indicate in sufficient detail the specific units that are or may be occupied during construction, the means and methods to be employed to safeguard the safety and health of the occupants, including, where applicable, details such as temporary fire-rated assemblies, opening protectives, or dust containment procedures. The elements of the tenant protection plan may vary depending on the nature and scope of the work but at a minimum shall make detailed and specific provisions for:

1. Egress. At all times in the course of construction provision shall be made for adequate egress as required by this code and the tenant protection plan shall identify the egress that will be provided. Required egress shall not be obstructed at any time except where approved by the commissioner.

2. Fire safety. All necessary laws and controls, including those with respect to occupied dwellings, as well as additional safety measures necessitated by the construction shall be strictly observed.

3. Health requirements. Specification of methods to be used for control of dust, disposal of construction debris, pest control and maintenance of sanitary facilities, and limitation of noise to acceptable levels shall be included.

3.1. There shall be included a statement of compliance with applicable provisions of law relating to lead and asbestos.

4. Compliance with housing standards. The requirements of the New York city housing maintenance code, and, where applicable, the New York state multiple dwelling law shall be strictly observed.

5. Structural safety. No structural work shall be done that may endanger the occupants.

6. Noise restrictions. Where hours of the day or the days of the week in which construction work may be

undertaken are limited pursuant to the New York city noise control code, such limitations shall be stated.



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NYC Administrative Code § 28-105.1

§ 28-105.1 General.

It shall be unlawful to construct, enlarge, alter, repair, move, demolish, remove or change the use or occupancy of any building or structure in the city, or to erect, install, alter, repair, or use or operate any sign or service equipment in or in connection therewith, or to erect, install, alter, repair, remove, convert or replace any gas, mechanical, plumbing or fire suppression system in or in connection therewith or to cause any such work to be done unless and until a written permit therefore shall have been issued by the commissioner in accordance with the requirements of this code, subject to such exceptions and exemptions as may be provided in section 28-105.4.



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NYC Administrative Code § 28-105.1.1

§ 28-105.1.1 Notification to fire department.

The commissioner, in consultation with the fire commissioner, shall establish a procedure for notifying the fire department of the issuance of any permit that will result in the issuance of a new or amended certificate of occupancy or other change in the use or occupancy of the premises. In no instance shall the required notice be given to the fire department more than one business day after the date of the issuance of the permit.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 11, eff. July 1, 2008.
28-105.1.1 added L.L. 8/2008 § 11, eff. July 1, 2008.



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NYC Administrative Code § 28-105.2

§ 28-105.2 Classification of work permits.

For the purposes of this code, work permits shall be classified as follows:

1. New building permits: for the construction of new buildings.
2. Alteration permits: for the alteration of buildings or structures, including partial demolition in conjunction therewith.
3. Foundation and earthwork permits: for the construction or alteration of foundations, including earthwork, excavation, and fill.
4. Full demolition permits: for the full demolition of buildings or structures.
5. Plumbing permits: for the installation or alteration of plumbing and plumbing systems, including gas piping. Such permits shall include permits for limited plumbing alterations.
6. Sign permits: for the erection or alteration of signs and sign structures.
7. Service equipment permits: for the installation or alteration of service equipment, including but not limited to air conditioning and ventilating systems, boilers, elevators, escalators, moving walkways and dumbwaiters.
8. Temporary construction equipment permits: for the erection, installation and use of temporary structures to facilitate construction and/or for public or worker safety during construction, including but not limited to temporary fences, railings, catch platforms, over-the-sidewalk chutes, footbridges, sidewalk sheds, and scaffolds.
9.
Fire suppression system permits: for the installation and alteration of fire suppression systems, including but not

limited to sprinkler systems, standpipe systems, and non-water systems. Such permits shall include permits for limited sprinkler alterations and limited standpipe alterations.

10. Crane and derrick permits: for the use of power operated cranes and derricks during construction.



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NYC Administrative Code § 28-105.3

§ 28-105.3 Separate permits required.

Separate work permits shall be required, as provided above, except that separate permits for foundations and earthwork, or for the installation or alteration of air conditioning systems, ventilation systems, and heating systems shall not be required whenever such work is included in and forms a part of the construction documents filed for the construction of a new building or the alteration of a building or structure.



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NYC Administrative Code § 28-105.4

§ 28-105.4 Work exempt from permit.

Exemptions from permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code, the zoning resolution or any other law or rules enforced by the department. Such exemptions shall not relieve any owner of the obligation to comply with the requirements of or file with other city agencies. Unless otherwise indicated, permits shall not be required for the following:

1. Emergency work, as set forth in section 28-105.4.1.
2. Minor alterations and ordinary repairs, as described in section 28-105.4.2.
3. Certain work performed by a public utility company or public utility corporation, as set forth in section 28-105.4.3.
4. Ordinary plumbing work, as set forth in section 28-105.4.4.
5. Permits for the installation of certain signs, as set forth in section 28-105.4.5.
6. Other categories of work as described in department rules, consistent with public safety.



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NYC Administrative Code § 28-105.4.1

§ 28-105.4.1 Emergency work.

Work that would otherwise require a permit may be performed without a permit to the extent necessary to relieve an emergency condition. An application for a permit shall be submitted within 2 business days after the commencement of the emergency work and shall include written description of the emergency condition and the measures undertaken to mitigate the hazard. Emergency work may include but shall not be limited to:

1. Erection of sidewalk sheds, fences, or other similar structures to protect the public from an unsafe condition.
2. Stabilization of unsafe structural conditions.
3. Repair of gas leaks.
4. Repair or replacement of heating or hot water equipment servicing residential occupancies during the heating season as established by the New York city housing maintenance code.
5. Replacement of parts required for the operation of a combined standpipe or sprinkler system.



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NYC Administrative Code § 28-105.4.2

§ 28-105.4.2 Minor alterations and ordinary repairs.

A permit shall not be required for minor alterations and ordinary repairs.



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NYC Administrative Code § 28-105.4.2.1

§ 28-105.4.2.1 Definitions.

The following words and terms shall, for the purposes of this section 28-105.4.2 and as used elsewhere in this code, have the meanings shown herein.

MINOR ALTERATIONS. Minor changes or modifications in a building or any part thereof, excluding additions thereto, that do not in any way affect health or the fire or structural safety of the building or the safe use and operation of the service equipment therein. Minor alterations shall not include any of the work described as "work not constituting minor alterations or ordinary repairs."

ORDINARY REPAIRS. Replacements or renewals of existing work in a building, or of parts of the service equipment therein, with the same or equivalent materials or equipment parts, that are made in the ordinary course of maintenance and that do not in any way affect health or the fire or structural safety of the building or the safe use and operation of the service equipment therein. Ordinary repairs shall include the repair or replacement of any plumbing fixture, piping or faucets from any exposed stop valve to the inlet side of a trap. Ordinary repairs shall not include any of the work described as "work not constituting minor alterations or ordinary repairs."

WORK NOT CONSTITUTING MINOR ALTERATIONS OR ORDINARY REPAIRS. Minor alterations or ordinary repairs shall not include:

1. The cutting away of any load bearing or required fire rated wall, floor, or roof construction, or any portion thereof.
2. The removal, cutting, or modification of any beams or structural supports;
3. The removal, change, or closing of any required exit;
4. The addition, rearrangement, relocation, removal or replacement of any parts of the building affecting loading or exit requirements, or light, heat, ventilation, or elevator requirements or accessibility requirements or any fire

suppression system;

5. Additions to, alterations of, or rearrangement, relocation, replacement, repair or removal of any portion of a standpipe or sprinkler system, water distribution system, house sewer, private sewer, or drainage system, including leaders, or any soil, waste or vent pipe, or any gas distribution system;

6. Any plumbing work other than the repair or replacement of plumbing fixtures, piping or faucets from the exposed stop valve to the inlet side of a trap;

7. The alteration or repair of a sign for which a permit is required; or

8. Any other work affecting health or the fire or structural safety of the building or the safe use and operation of the service equipment therein.



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NYC Administrative Code § 28-105.4.3

§ 28-105.4.3 Public utility company or public utility corporation.

A permit shall not be required for:

1. The installation or alteration of gas service piping or gas meter piping including meters, valves, regulators, and related equipment, when such work is to be performed and serviced and maintained by utility corporations subject to the jurisdiction of the New York state public service commission;
2. The emergency repair of gas distribution piping when such work is performed by licensed master plumbers or by utility corporations subject to the jurisdiction of the New York state public service commission, in order to alleviate hazardous conditions, provided that a written report describing the details of such repairs shall be filed with the commissioner upon completion of the work.



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NYC Administrative Code § 28-105.4.4

§ 28-105.4.4 Ordinary plumbing work.

The following ordinary plumbing work may be performed without a permit, provided that the licensed plumber performing such work: (i) provides a monthly report listing completed work and work in progress during the preceding month, including the block, lot and address of each job, a description of the work performed or in progress at each address, and the location in each building where the work was performed or is in progress; (ii) pays the fees for such work in accordance with this code; and (iii) submits to the department a certification that the work was performed in accordance with this code and all applicable laws and rules. Ordinary plumbing work shall include:

1. The removal of a domestic plumbing system not connected to a fire suppression system, or the removal of a portion of such system.
2. The relocation of up to two plumbing fixtures within the same room to a maximum of 10 feet (3048 mm) distant from the original location, except in health care facilities.
3. The installation, replacement or repair of a food waste grinder (food waste disposal) or back flow preventer and the replacement or repair of a sump pump.
4. The replacement of closet bends.
5. In buildings in occupancy group R2 occupied by fewer than six families or in buildings in occupancy group R3, the replacement of a gas water heater or a gas fired boiler with a capacity of 350,000 BTU or less where the existing appliance gas cock is not moved, provided that the plumber has inspected the chimney and found it to be in good operational condition.
6. The repair or replacement of any non-gas, non-fire suppression piping not longer than 10 feet (3048 mm) inside a building, or connected piping previously repaired or replaced under this provision.
7. The repair or replacement of non-fire suppression branch piping after the riser shutoff valve, including the

replacement of fixtures, limited to two bathrooms and one kitchen per building per monthly reporting period.



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NYC Administrative Code § 28-105.4.5

§ 28-105.4.5 Sign permits.

A sign permit shall not be required where the sign is:

1. Painted directly on the exterior wall surface of a building or on the surface of a fence;
2. A wall sign of not more than six square feet (0.56 m²) in area;
3. Erected by employees of a city agency, including traffic and other similar signs;
- 4 A ground sign advertising the sale or rental of the premises on which it is erected, provided the sign does not exceed 12 square feet (1.1 m²) in area;
5. Temporary and erected during construction work and related thereto; or
6. Temporary for special decorative display use for holidays, public demonstrations, or the promotion of civic, welfare or charitable purposes, except that signs that utilize streets or cross streets shall be subject to the requirements of the department of transportation.
7. Temporary signs announcing the sale or rental of real property.



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NYC Administrative Code § 28-105.5

§ 28-105.5 Application for permit.

All applications for permits shall be submitted on forms furnished by the department. Applications shall include all information required by this code, other applicable law or the rules of the department. The applicant shall list any portions of the design that have been approved for deferred submittal in accordance with section 28-104.2.6. The application shall set forth an inspection program for the job. An application for a permit shall be submitted no later than 12 months after the approval of all required construction documents (other than those documents approved for deferred submittal).



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NYC Administrative Code § 28-105.6

§ 28-105.6 Fees.

Applications for permits shall be accompanied by the payment of appropriate fees as provided for in article 112.



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§ 28-105.7 Time limitation of applications.

An application for a permit shall be deemed to have been abandoned 12 months after the date of its submission, unless such application has been diligently prosecuted after rejection in whole or in part, or a permit shall have been issued except that the commissioner may, for reasonable cause, and upon payment of all reinstatement fees as provided for in this code, grant extensions of time for additional 12-month periods.



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NYC Administrative Code § 28-105.8

§ 28-105.8 Validity of permit.

The issuance or granting of a permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other law or rule. Permits presuming to give authority to violate or cancel the provisions of this code or other law or rule shall not be valid. The issuance of a permit based on construction documents and other data shall not prevent the commissioner from requiring the correction of errors in the construction documents and other data. The commissioner is authorized to prevent any occupancy, use or work in violation of this code, the zoning resolution or other law or rule enforced by the department.



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NYC Administrative Code § 28-105.8.1

§ 28-105.8.1 Duration of permit.

Permits may be issued for a period of up to two years unless otherwise limited by law.



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NYC Administrative Code § 28-105.8.2

§ 28-105.8.2 Signature of commissioner on permit.

Every permit issued by the commissioner shall have his or her signature affixed thereto; but the commissioner may authorize any subordinate to affix such signature, including by the use of electronic means.



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NYC Administrative Code § 28-105.9

§ 28-105.9 Expiration.

All permits issued by the commissioner shall expire by limitation and become invalid if the permitted work or use is not commenced within 12 months from the date of issuance of the permit or, if commenced, is suspended or abandoned for a period of 12 months thereafter. All permits for work in an area of special flood hazard pursuant to Appendix G of the New York city building code shall expire if the actual start of permanent construction has not occurred within 180 days from the date on which such permit is issued. The commissioner may, however, upon good cause shown, reinstate a work permit at any time within a period of two years from the date of issuance of the original permit, provided that the work shall comply with all the requirements of this code and other applicable laws and rules in effect at the time application for reinstatement is made, and provided further that the applicant shall pay all reinstatement fees as required by article 112. The permit shall automatically expire upon the expiration of required insurance or if the applicant holds a license issued by the department upon the expiration or revocation of such license during the term of the permit.



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NYC Administrative Code § 28-105.10

§ 28-105.10 Suspension or revocation of permit.

The commissioner is authorized to suspend or revoke a permit issued under the provisions of this code.



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NYC Administrative Code § 28-105.10.1

§ 28-105.10.1 Notice of proposed revocation.

The commissioner may, on written notice to the permit holder, revoke any permit for failure to comply with the provisions of this code or other applicable laws or rules; or whenever there has been any false statement or any misrepresentation as to a material fact in the application or submittal documents upon the basis of which such approval was issued; or whenever a permit has been issued in error and conditions are such that the permit should not have been issued. Such notice shall inform the permit holder of the reasons for the proposed revocation and that the applicant has the right to present to the commissioner or his or her representative within 10 business days of delivery of the notice by hand or 15 calendar days of the posting of notice by mail, information as to why the permit should not be revoked.



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NYC Administrative Code § 28-105.10.2

§ 28-105.10.2 Immediate suspension in cases of imminent peril.

The commissioner may immediately suspend any permit without prior notice to the permit holder when the commissioner has determined that an imminent peril to life or property exists. The commissioner shall forthwith notify the permit holder that the permit has been suspended and the reasons therefore, that it is proposed to be revoked, and that the permit holder has the right to present to the commissioner or his or her representative within 10 business days of delivery of the notice by hand or 15 calendar days of the posting of notice by mail information as to why the permit should not be revoked.



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NYC Administrative Code § 28-105.11

§ 28-105.11 Posting of permit.

The building permit or copy shall be posted in a conspicuous place at the work site, visible to the public for the duration of the work or the use and operation of the equipment, or until the expiration of the permit. No such permit shall be posted or displayed at any location other than the location of the premises or equipment for which the permit was issued.



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NYC Administrative Code § 28-105.12

§ 28-105.12 Conditions of permit.

Permits shall be subject to the following conditions:



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NYC Administrative Code § 28-105.12.1

§ 28-105.12.1 Compliance with code.

Permits shall be deemed to incorporate the provisions that the applicant, the owner, their agents, employees, and contractors shall carry out the permitted work in accordance with the provisions of this code and other applicable laws or rules, whether specified or not, except as variations have been legally permitted or authorized.



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NYC Administrative Code § 28-105.12.2

§ 28-105.12.2 Compliance with construction documents.

All work shall conform to the approved construction documents, and any approved amendments thereto. Changes and revisions during the course of construction shall conform to the amendment requirements of this code.



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NYC Administrative Code § 28-105.12.3

§ 28-105.12.3 Adherence to lot diagram.

All work shall be strictly located in accordance with the lot diagram approved in accordance with this code and no lot or plot shall be changed, increased or diminished in area from that shown on the approved lot diagram, unless and until a revised diagram showing such changes, accompanied by the necessary statement of the owner or applicant, shall have been submitted to and approved by the commissioner.



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NYC Administrative Code § 28-105.12.4

§ 28-105.12.4 Compliance with safety requirements.

All work shall be conducted in accordance with and subject to the safety requirements of this code and other applicable laws or rules, including any order or requirement of the commissioner that the building or structure under construction or alteration be vacated, in whole or in part, during the progress of the work and until the issuance of a certificate of occupancy. Adjoining lots and properties shall be protected in accordance with this code.



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NYC Administrative Code § 28-105.12.5

§ 28-105.12.5 Compliance with noise control code required.

All work shall be performed in compliance with the provisions of the New York city noise control code as set forth in chapter 2 of title 24 of the administrative code. Failure to comply with sections 24-222 and 24-223 of the administrative code shall be a violation of this code.



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NYC Administrative Code § 28-105.12.6

§ 28-105.12.6 Deferred submittals.

Where permits are issued subject to deferred submittal of portions of the design as provided for in section 28-104.2.6, the deferred submittal items shall not be installed until the construction and submittal documents for such portions have been approved by the department and, where applicable, new or amended permits have been issued.



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NYC Administrative Code § 28-105.12.7

§ 28-105.12.7 Insurance.

Where workers compensation, employee disability or liability insurance is required by law or department rule, the applicant for the work permit shall obtain and include proof of such insurance with the work permit application. The permit shall expire by operation of law if the insurance upon which the permit was conditioned lapses, expires or is cancelled, unless the permit holder files proof of alternate insurance before such event.



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NYC Administrative Code § 28-105.12.7.1

§ 28-105.12.7.1 Insurance coverage for adjacent properties.

A person who obtains a permit for construction or demolition operations shall, at such person's own expense, procure and maintain for the duration of the operations, insurance of a kind and in an amount specified by rule of the department, to insure any and all adjacent property owners and their lawful occupants fully for all risks of loss, damage to property or injury to or death of persons, arising out of or in connection with the performance of the proposed work. Such person shall submit proof of insurance to the department when applying for a permit for construction or demolition work.



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NYC Administrative Code § 28-105.12.8

§ 28-105.12.8 Site safety plan.

Where required by this code or by the department, applications shall include a site safety plan approved in accordance with the New York city building code. All work shall adhere to the site safety plan.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 11, eff. July 1, 2008.
28-105.12.7.1 added L.L. 8/2008 § 12, eff. July 1, 2008.



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ARTICLE 106: ASBESTOS INVESTIGATION

NYC Administrative Code § 28-106.1

§ 28-106.1 Asbestos investigation.

In addition to the requirements otherwise prescribed, all applications for construction document approval for work on buildings constructed on or before April 1, 1987 shall include asbestos certifications, reports or removal plans as may be required by this article.

Exception: Types of activities exempted pursuant to rules of the commissioner of environmental protection.



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NYC Administrative Code § 28-106.2

§ 28-106.2 Demolition and alteration of buildings constructed on or before April 1, 1987.

The commissioner shall not approve or accept an application for construction document approval for the demolition or alteration of a building constructed on or before April 1, 1987, unless the applicant submits (i) a certification from an asbestos investigator that the work to be performed will not constitute an asbestos project, (ii) an asbestos inspection report completed in accordance with the provisions of section 24-146.1 of the administrative code, or (iii) proof that an asbestos removal plan has been approved by the commissioner of the New York city department of environmental protection in accordance with section 24-146.1 of the administrative code.



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NYC Administrative Code § 28-106.3

§ 28-106.3 Asbestos project.

The commissioner shall not approve construction documents for work that constitutes an asbestos project and for which an asbestos inspection report is required unless the applicant at the time of application and prior to approval of the construction documents certifies on forms prescribed by the commissioner of environmental protection that the applicant is familiar with federal, state and local laws and regulations applicable to asbestos related work.



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NYC Administrative Code § 28-106.4

§ 28-106.4 Definitions.

For the purposes of this article, the terms "asbestos," "asbestos inspection report," "asbestos investigator," "asbestos project" and "asbestos removal plan" shall have the meanings as are ascribed in section 24-146.1 of the administrative code.



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ARTICLE 107: ALTERATION OR DEMOLITION OF SINGLE ROOM OCCUPANCY MULTIPLE DWELLINGS

NYC Administrative Code § 28-107.1

§ 28-107.1 General.

The commissioner shall not approve construction documents for the alteration or demolition of a single room occupancy multiple dwelling except as set forth in this article.



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NYC Administrative Code § 28-107.2

§ 28-107.2 Definitions.

The following words and terms shall, for the purposes of this article and elsewhere in the code, have the meanings shown herein.

CLASS A MULTIPLE DWELLING, CLASS B MULTIPLE DWELLING, FURNISHED ROOM HOUSE, ROOMING UNIT AND SINGLE ROOM OCCUPANCY. Shall have the meanings set forth in section 27-2004 of the New York city housing maintenance code.

SINGLE ROOM OCCUPANCY MULTIPLE DWELLING. A single room occupancy multiple dwelling means:

1. A "class A multiple dwelling" used in whole or part as a "rooming house" or "furnished room house," or for "single room occupancy" pursuant to section 248 of the New York state multiple dwelling law;

2. A "class A multiple dwelling" containing "rooming units"; or

3. A "class B multiple dwelling."

Exception: The term single room occupancy multiple dwelling shall not include:

1. College or school dormitories;

2. Clubhouses;

3. Luxury hotels, as such term is defined by the commissioner of housing preservation and development; or

4. Residences whose occupancy is restricted to an institutional use such as housing intended for use by the employees of a single company or institution;

5. City-owned multiple dwellings; or

6. Any multiple dwelling containing fewer than nine "class B" dwelling units; used for single room occupancy unless the total number of such units is more than fifty percent of the total number of dwelling units in such multiple dwelling; or

7. Any multiple dwelling that:

7.1. Is the subject of a program approved by the commissioner of housing preservation and development and related to the rehabilitation of a single room occupancy multiple dwelling or the provision of housing for persons of low or moderate income, other than a program consisting solely of real property tax abatement or tax exemption; and

7.2. Has been exempted from the provisions of this article by the commissioner of housing preservation and development.



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NYC Administrative Code § 28-107.3

§ 28-107.3 Covered categories of work.

Applications for the approval of construction documents for the following categories of work are covered by this article:

1. Demolition of a single room occupancy multiple dwelling;
2. Alteration of a single room occupancy multiple dwelling to a class A multiple dwelling to be used in whole or in part for other than single room occupancy purposes;
3. Alteration of a single room occupancy multiple dwelling resulting in the removal or addition of kitchen or bathroom facilities; and
4. Such other types of alteration work to a single room occupancy multiple dwelling as shall be prescribed by rule of the commissioner of housing preservation and development, in consultation with the commissioner.

Exceptions:

1. Work solely for the purpose of either (i) making the public areas of a multiple dwelling accessible to persons with disabilities without altering the configuration of any dwelling unit or rooming unit or (ii) making a dwelling unit or a rooming unit accessible to persons with disabilities shall not be covered by this article.
2. Repairs, demolition or any other work performed by a city agency or by a contractor pursuant to a contract with a city agency shall not be covered by this article.



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NYC Administrative Code § 28-107.4

§ 28-107.4 Required submittal documents.

The commissioner shall not approve any construction documents for a single room occupancy multiple dwelling for the covered categories of work unless the applicant provides:

1. A sworn affidavit by or on behalf of all the owners, as such term is defined in section 27-2004 of the New York city housing maintenance code, of such multiple dwelling that there will be no harassment of the lawful occupants of such multiple dwelling by or on behalf of such owners during the construction period;

2. A tenant protection plan as provided for in this code; and

3. One of the following documents from the commissioner of housing preservation and development:

3.1. A certification that there has been no harassment of the lawful occupants of such multiple dwelling within the 36 month period prior to submission of an application for such certification to the department of housing preservation and development, provided, however, that such certification shall except any portion of such 36 month period during which title was vested in the city; or

3.2. A waiver of such certification.



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NYC Administrative Code § 28-107.5

§ 28-107.5 Filing process.

After submitting an application for construction document approval to the commissioner and obtaining the identifying job number for the same, the applicant shall forward a copy of such application to the commissioner of housing preservation and development, together with an application for a certification of no harassment pursuant to section 27-2093 of the housing maintenance code.



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NYC Administrative Code § 28-107.6

§ 28-107.6 Time period for acceptance or rejection.

The time period in which the commissioner is required to approve or reject an application for construction document approval or resubmission thereof pursuant to this code shall commence from the date that the commissioner receives either the certification or waiver pursuant to this article.



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NYC Administrative Code § 28-107.7

§ 28-107.7 Denial of certification.

Where the commissioner of housing preservation and development denies the certification required by this article, the commissioner shall reject the application for construction document approval.



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NYC Administrative Code § 28-107.8

§ 28-107.8 Request for stop-work or rescission.

The commissioner shall be empowered to issue a stop-work notice or order with respect to an alteration or demolition permit and/or to rescind approval of construction documents at the request of the commissioner of housing preservation and development pursuant to section 27-2093 of the New York city housing maintenance code.



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NYC Administrative Code § 28-107.9

§ 28-107.9 Effect of denial or rescission.

Where the commissioner rejects or rescinds the approval of construction documents pursuant to this article, no further application for the covered categories of work shall be considered by the commissioner for a period of 36 months following the date of the denial of the certification of no harassment by the commissioner of housing preservation and development or the date of the rescission of such certification of no harassment by such commissioner.



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ARTICLE 108: PAVEMENT PLAN

NYC Administrative Code § 28-108.1

§ 28-108.1 General.

The commissioner shall not issue a permit for the erection of a new building or for alterations that will require the issuance of a new or amended certificate of occupancy without a statement that no certificate of occupancy shall be issued unless the sidewalk in front of or abutting such building, including but not limited to the intersection quadrants for corner properties, shall have been paved or repaired by the owner, at his or her own cost, in the manner, of the materials, and in accordance with the standard specifications prescribed by the New York city department of transportation pursuant to sections 19-113 and 19-115 of the administrative code.

Exceptions:

1. Application for the erection of an accessory building appurtenant to an existing one- or two-family dwelling.
2. Where the commissioner determines that a sidewalk is not required, provided that such determination shall not affect the obligations of the owner under subdivision a of section 19-152 of the administrative code, nor relieve the owner of any such obligations, nor impair or diminish the rights of the city or its agencies to enforce such obligations.
3. Where the extent of the change in use or occupancy or the cost of the alteration does not exceed a threshold established pursuant to rule of the commissioner.



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NYC Administrative Code § 28-108.2

§ 28-108.2 Pavement plan required.

Construction documents shall include a pavement plan processed and approved under guidelines established by the department. The pavement plan shall include documentation sufficient to show compliance with the standards and specifications of the New York city department of transportation pursuant to sections 19-113 and 19-115 of the administrative code.

Exception: No pavement plan shall be required with respect to an alteration application for a building where the applicant certifies that there is a sidewalk in existence in front of or abutting such building, including but not limited to the intersection quadrants for corner properties, complying with the specifications of the New York city department of transportation, and that the nature of such alteration work will neither remove such existing sidewalk nor cause damage to such existing sidewalk such that the damage could not be corrected as minor repairs prior to issuance of the certificate of occupancy.



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NYC Administrative Code § 28-108.3

§ 28-108.3 Improvement of streets.

The commissioner shall insure that streets are suitably improved in accordance with the standards and specifications of the department of transportation as required by subdivision two of section thirty-six of the general city law and shall otherwise carry out the provisions of such subdivision.



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NYC Administrative Code § 28-109.1

§ 28-109.1 Fire protection plan required for covered buildings.

New building and alteration applications for covered buildings as set forth in section 28-109.2 shall include a fire protection plan prepared by or under the supervision of a registered design professional who shall professionally certify such plan. Such plan shall be approved by the department and the fire department prior to issuance of a certificate of occupancy, a temporary certificate of occupancy or a letter of completion, as applicable.

Exception: No fire protection plan shall be required for an alteration that meets all three of the following requirements:

1. The alteration does not involve a change of use or occupancy;
2. The alteration does not exceed one million dollars; and
3. The alteration does not create an inconsistency with a previously approved fire protection plan.



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NYC Administrative Code § 28-109.2

§ 28-109.2 Covered buildings.

Covered buildings include:

1. High-rise buildings as described in section 403 of the New York city building code.
2. Occupancy groups B, E, F, H, M, or S occupying two or more stories with over 20,000 gross square feet (1858 m²) of floor area per floor, or occupying two or more stories in a building with a total floor area exceeding 50,000 gross square feet (4645 m²).
3. Any building containing an assembly occupancy having an occupant load of 300 or more persons.
4. Occupancy group I or R-1 occupying two or more stories and containing sleeping accommodations for 30 or more persons.
5. Occupancy group R-2 occupancies containing 30 or more dwelling units in a building where over 10,000 gross square feet (929 m²) of floor area is occupied by occupancy group A, E, M, or I.



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NYC Administrative Code § 28-109.3

§ 28-109.3 Scope.

The plan shall include the following information, where applicable:

1. A description of the building including: address; block and lot numbers; number of stories; height in feet; occupancy group; construction classification; occupancy load and department of buildings job number;
2. All floors, exits, doors, corridors, and partitions serving as fire barriers, fire partitions, fire walls; locations and ratings of required enclosures and fire areas; stairs with pressurization; roof access; exit discharges; and locations of any required frontage space; and
3. In narrative form, a description of safety systems and features, including:
 - 3.1. Communications systems.
 - 3.2. Alarm systems.
 - 3.3. Smoke and carbon monoxide detection equipment.
 - 3.4. Location of fire command station.
 - 3.5. Elevator recall.
 - 3.6. Emergency lighting and power.
 - 3.7. Standpipes.
 - 3.8. Sprinklers.
 - 3.9. Emergency power systems.

- 3.10. Mechanical ventilation and air conditioning.
- 3.11. Smoke control systems and equipment.
- 3.12. Furnishings types and materials.
- 3.13. Places of assembly.
- 3.14. Fire department access.
- 3.15. Photoluminescent pathway markings.
- 3.16. Other safety related systems, required and voluntary, to be installed.



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NYC Administrative Code § 28-110.1

§ 28-110.1 Site safety plan.

Where a site safety plan is required by chapter 33 of the New York city building code, such plan shall include the following:

1. Location of all construction fences around work site;
2. Location of all gates in construction fences;
3. Location of standard guardrails around excavations, when required;
4. Horizontal and vertical netting program, including details of the initial installation, schedule of horizontal jumps and vertical installations, and designated crane and derrick lifting areas where horizontal netting is omitted. The program shall include as an attachment any department approval obtained regarding required safety netting during construction or demolition operations; the revised site safety plan shall be approved;
5. Location of all sidewalk sheds, including appropriate department application numbers and department of transportation permit numbers and expiration dates;
6. Location of all temporary walkways, including appropriate department application numbers and department of transportation permit numbers and expiration dates;
7. Location of foot bridges and motor vehicle ramps, including appropriate department application numbers and department of transportation permit numbers and expiration dates;
8. Protection of side of excavation, when required, including appropriate department application numbers and department of transportation permit numbers and expiration dates;
9. Location of all street and sidewalk closing(s), including appropriate department application numbers and

department of transportation permit numbers and expiration dates;

10. Approximate location of material and personnel hoist(s) and loading areas, including appropriate department application numbers and department of transportation permit numbers and expiration dates;

11. Approximate location of all crane and derrick loading areas;

12. Location of all surrounding buildings, indicating occupancy, height and type of any required roof protection;

13. Location of all standpipe system and siamese hose connections;

14. Location of all temporary elevators for fire department use when building is above 75 feet (22 860 mm) in height;

15. Location of all exterior contractors' sheds;

16. All required safety netting and scaffolding;

17. Widths of all sidewalks and roadways; all traffic information; all exits from job site;

18. A copy of the proposed site safety manager or site safety coordinator certificate, as applicable, including the certificate for any alternate site safety manager or site safety coordinator;

19. Such features requiring special sequencing in order to maintain safe conditions with a written description of those sequences;

20. The site safety plan shall include a statement that prior to performing any work on the project all workers shall have successfully completed, within the previous five calendar years, a ten hour course approved by the United States Department of Labor Occupational Safety and Health Administration in construction industry safety and health, or by the commissioner covering substantially the same material. Successful completion of such training course shall be evidenced by (a) presentation of a bona fide course completion card, (b) copy of such card, (c) a training roster, attendance record or other documentation from the certified trainer pending the issuance of such card or (d) other valid proof which may be approved by the commissioner. Such evidence shall be readily available to the commissioner upon request; and

21. A statement that all workers employed on the site will receive a site-specific safety orientation program. This program shall include a review of any hazardous activities of the job that are relevant to the tasks and activities to be performed. All workers must attend such a program no later than seven days after commencing their employment.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 11, eff. July 1, 2008.

Items 18, 19 amended L.L. 41/2008 § 1, eff. Dec. 2, 2008. [See Note 1]

Items 20, 21 added L.L. 41/2008 § 1, eff. Dec. 2, 2008. [See Note 1]

NOTES:

1. L.L. 41/2008:

§ 2. This local law shall take effect ninety days from enactment, except that the commissioner of buildings shall promulgate rules and take such other actions necessary for its implementation prior to such effective date.



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§ 28-110.2 Phased site safety plans.

Multiple layouts of the site safety features enumerated in section 28-110.1 may be submitted at any time during construction operations to show phased site safety designs consistent with the phase of anticipated work.



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ARTICLE 111: TEMPORARY STRUCTURES AND USES

NYC Administrative Code § 28-111.1

§ 28-111.1 General.

The commissioner is authorized to issue a permit for temporary structures and temporary uses. Such permits shall be limited as to time of service or use, but shall not be permitted for more than 30 days. The commissioner may grant extensions for demonstrated cause.

Exception: No permit shall be required for:

1. The erection and use of temporary tents of less than 400 gross square feet (37 m²) for not more than 30 days.
2. The erection and use of temporary platforms, reviewing stands, outdoor bandstands and similar miscellaneous structures that cover an area less than 120 square feet (11.16 m²), including connecting areas or spaces with a common means of egress or entrance, for not more than 30 days.



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NYC Administrative Code § 28-111.2

§ 28-111.2 Conformance.

Temporary structures and uses shall conform to the structural strength, fire safety, means of egress, accessibility, light, ventilation and sanitary requirements of this code as necessary to ensure the public health, safety and general welfare.



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NYC Administrative Code § 28-111.3

§ 28-111.3 Termination of approval.

The commissioner is authorized to terminate such permit for a temporary structure or use and to order the temporary structure or use to be discontinued.



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§ 28-111.4 Application processing.

Application for such structures and uses shall be submitted to the department no later than 15 business days prior to the construction of the temporary structure or the commencement of the temporary use.



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NYC Administrative Code § 28-111.5

§ 28-111.5 Fees.

Applications for such permits shall be accompanied by the applicable fees in accordance with article 112. Fees for subsequent requests for renewals shall be paid upon approval of such requests.



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NYC Administrative Code § 28-112.1

§ 28-112.1 Payment of fees.

A permit, inspection, or other service or privilege as regulated in this code shall not be valid until the fees prescribed herein or in rules have been paid, nor shall a renewal of a permit or other service or privilege or an amendment to a permit be released until the fee has been paid. In addition, an approval required to be reissued due to a change in product name, company name and/or address, contact information or principals, shall not be reissued until a reissuance fee, if any, has been paid. The department shall adopt such rules and shall prescribe such forms as may be necessary to carry out the provisions of this article.

Exceptions:

1. A permit, inspection or other service or privilege as regulated in this code shall not be subject to this provision if the owner of the building or property affected is a corporation or association organized and operated exclusively for religious, charitable or educational purposes, or for one or more such purposes, no part of the earnings of which inures to the benefit of any private shareholder or individual, and provided that the property affected is to be used exclusively by such corporation or association for one or more of such purposes.

2. A permit, inspection or other service or privilege as regulated in this code shall not be subject to this provision if the work proposed is emergency work performed by a city agency or by a contractor pursuant to a contract with a city agency.



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NYC Administrative Code § 28-112.2

§ 28-112.2 Schedule of permit fees.

Permits for new buildings, structures, mechanical, and plumbing systems or alterations requiring a permit shall be accompanied by a fee for each permit in accordance with the fee schedule of Table 28-112.2. Fifty percent of the total fee for the work permit, but not less than one hundred dollars, or the total fee for the work permit where such fee is less than one hundred dollars, shall be paid and shall accompany the first application for the approval of construction documents; and the whole or remainder of the total fee shall be paid before the work permit may be issued. The commissioner may require reasonable substantiation of any statement or other form that may be required by the department.

Table 28-112.2 3]	Permit Type	Initial Fee	Renewal Fee	Comments
1]	Permit Type	Initial Fee	Renewal Fee	Comments
2]	New Buildings	New building work permit: One-, two- or three-family dwelling	\$0.12 for each square foot, or fraction thereof, of the total floor area of the new building, but not less than \$100 for each structure	\$100.;tb Subsequent applications related to initial new building work permit application, including but not limited to elevators, filed prior to the first temporary certificate of occupancy (TCO), or the final certificate of occupancy if no TCO is issued
		\$100. Each	\$100. Each	tb New building work permit: Garage for not more than three cars when accessory to and filed with plans for one-, two- or three-family dwelling to which it is accessory on the same lot
		\$100. \$100.	New building work permit: All other new buildings	\$0.26 for each square foot, or fraction thereof, of the total floor area of the new building, but not less than \$100 for each structure annually. \$100 annually.;tb Subsequent applications related to initial new building work permit application, including but not limited to elevators, filed prior to the first temporary certificate of occupancy (TCO), or the final certificate of occupancy if no TCO is issued
		\$100 annually.	Alterations	Alteration work permit;;tb One-, two- or three-family dwelling;;tb Permit to install and/or alter plumbing, plumbing system and/or fire suppression piping system in existing building: One-, two- or three-family dwelling. \$100 for the first five thousand dollars, or fraction thereof, of the cost of alteration, excluding the cost for the installation or alteration of any plumbing or plumbing system or fire suppression piping system; not less than \$100 annually for subsequent years; plus \$5.15 for each one thousand dollars, or fraction thereof, of cost of alterations in excess of five thousand dollars. \$100 annually.
		Alteration work permit;;tb Alterations in all other buildings and structures, including but not limited to aerial towers and masts, tank structures, fire escapes, etc., which are unoccupied and not easily valued by area;;tb Applications related to new building work permit application, filed after		

the first temporary certificate of occupancy (TCO), or the final certificate of occupancy if no TCO is issued.;tb
 Installation or alteration of elevators, escalators, amusement devices and other devices regulated under this code, except those filed under a new building application.;tb Permit to install and/or alter plumbing, plumbing system and/or fire suppression piping system in existing building: All buildings other than one-, two- or three-family dwelling.\$100 for the first three thousand dollars, or fraction thereof, of the cost of alteration not including the cost of the installation or alteration of any plumbing or plumbing system or fire suppression piping system; not less than \$100 annually for subsequent years; plus \$20 for each one thousand dollars, or fraction thereof, of the next two thousand dollars of such cost; plus \$10.30 for each one thousand dollars, or fraction thereof, of the alteration cost in excess of five thousand dollars.\$100 annually.Permit to install or alter service equipment except plumbing and fire suppression piping service equipment.Fee calculated as for respective building alteration.\$100.Permit to install, alter or re-place oil-burning equipment.;tb Where the storage tank exceeds two hundred seventy-five gallon capacity; or where the storage tank is less than two hundred seventy-five gallons and is to be buried, or is to be installed in a multiple dwelling or a place of assembly or in a building along the line of a subway, or is to deliver fuel oil to a burner installed above the lowest floor of a building with a primary Business Group B occupancy.\$100.\$100.;tb In all other conditions.\$50.\$100.OtherPermit for foundation, earthwork or open space without roof, whether enclosed or unenclosed, on sites such as parking lots, gasoline or oil-selling stations, storage yards, sales or exhibition or show spaces used for generally similar purposes.\$10 for each two thousand square feet of area or fraction thereof, but not less than \$100.\$100.Permit for golf driving range.\$7.50 for each twenty thousand square feet of area or fraction thereof, but not less than \$100.\$100.Accessory building to golf driving range, not to exceed one hundred forty-four square feet.\$100.\$100.Permit for demolition and removal.Multiply street frontage in feet or fraction thereof x number of stories of the building x \$2.60, but not less than \$260. For corner lot, use the longer street frontage.\$100.Asbestos permits.;tb Permit for the performance of an asbestos project for which the filing with the department of an asbestos inspection report, or proof of approval by the commissioner of environmental protection of an asbestos removal plan is required.;tb Application for plan approval or permit for work for which an asbestos investigator is required to submit an asbestos inspection report certifying that the work to be performed will not constitute an asbestos project.Specific fee to be established by the commissioner of environmental protection.Terms "asbestos project," "asbestos inspection report" and "asbestos removal plan" shall have the meanings ascribed in Section 24-146.1 of the administrative code.Filing of post-approval amendments to existing applicationsThe greater of \$100 or the fees for the additional scope or cost of work as calculated pursuant to this Table 28-112.2.Scaffold filing fee\$100.Scaffold permit\$30.SignsPermit to erect, install or alter sign: Ground sign.Basic fee calculated as for building alteration; plus \$5 for each one hundred square feet of surface area, or fraction thereof; but not less than \$35.\$100.Each face of any sign, when fronting on different streets, shall be treated as a separate sign.Permit to erect, install or alter sign: Roof sign having a tight, closed or solid surface.Basic fee calculated as for building alteration; plus\$15 for each one hundred square feet of surface area, or fraction thereof; but not less than \$70.\$100.Each face of any sign, when fronting on different streets, shall be treated as a separate sign.Permit to erect, install or alter sign: Roof sign without a tight, closed or solid surface, extending to a height of not more than thirty-one feet above roof level.Basic fee calculated as for building alteration; plus \$15 for each one hundred square feet of surface area, or fraction thereof, but not less than \$100.\$100.Each face of any sign, when fronting on different streets, shall be treated as a separate sign.Permit to erect, install or alter sign: Roof sign without a tight, closed or solid surface, extending to a height over thirty-one feet above roof level.Basic fee calculated as for building alteration; plus \$25 for each one hundred square feet of area, or fraction thereof, but not less than \$135.\$100.Each face of any sign, when fronting on different streets, shall be treated as a separate sign.Permit to erect, install or alter sign: Illuminated sign projecting beyond street line having thirty square feet or less on one side.Basic fee calculated as for building alteration.\$100.Illuminated sign is subject to annual use fee: \$45.Permit to erect, install or alter sign: Illuminated sign projecting beyond street line having more than thirty square feet but no more than fifty square feet on one side.Basic fee calculated as for building alteration.\$100.Illuminated sign is subject to annual use fee: \$70.Permit to erect, install or alter sign: Illuminated sign projecting beyond street line and having more than fifty square feet on one side.Basic fee calculated as for building alteration.\$100.Illuminated sign is subject to annual use fee: \$0.75 for each square foot or part thereof annually, but not less than \$100.Maintenance permit for outdoor signs.As provided by rule.Temporary StructuresPermit for temporary shed, fence, railing, footbridge, catch platform, building sidewalk shanty, over-the-sidewalk chute.\$130 for each permit.\$100.Sidewalk shed.\$130 for the first twenty-five feet or fraction thereof in the length of the shed; plus \$10 for

NYC Administrative Code § 28-112.2

each additional twenty-five feet or fraction thereof.\$100.Permit for temporary structure other than those listed above, including but not limited to tents, grandstands, stages.\$100 for the first one thousand square feet or fraction thereof; plus\$0.10 for each square foot or fraction thereof in excess of one thousand square feet.\$100.Reinstatement of Applications/PermitsApplication/permit reinstatement fees;;tb Prior to first permit.Full fee at the rate in effect on the date of reinstatement.;tb Following first permit issuance but prior to commencing work.Full fee at the rate in effect on the date of reinstatement.;tb Following first permit, with work partially complete.Based upon the full fee at the rate in effect on the date of reinstatement, the percentage of the fee equal to the percentage of work remaining as determined by the department inspector, plus the renewal fee.4]

HISTORICAL NOTES:

Section added L.L. 33/2007 § 11, eff. July 1, 2008.

Table 28-112.2 amended L.L. 8/2008 § 13, eff. July 1, 2008.



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NYC Administrative Code § 28-112.3

§ 28-112.3 Building permit valuations.

Where applicable, the applicant for a permit shall provide an estimated job construction cost at time of application. Cost estimates shall include total value of work, including materials and labor, for which the permit is being issued, such as installation or alteration of building, gas, mechanical, plumbing equipment and permanent systems. If, in the opinion of the department, the valuation is underestimated on the application, the permit shall be denied, unless the applicant can show detailed estimates to meet the approval of the department. Final building permit valuation shall be set by the department.



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NYC Administrative Code § 28-112.4

§ 28-112.4 Work commencing before permit issuance.

Any person who commences any work before obtaining the necessary permits shall be subject to a penalty as specified in this code that shall be in addition to the required permit fees.



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NYC Administrative Code § 28-112.5

§ 28-112.5 Related fees.

The payment of the fee for the construction, alteration, removal or demolition for work done in connection or concurrently with the work authorized by a building permit shall not relieve the applicant or holder of the permit from the payment of other fees that are prescribed by law.



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NYC Administrative Code § 28-112.6

§ 28-112.6 Refunds and rebates.

Upon application to the comptroller of the city of New York, and upon verification of claim by the commissioner, refunds or rebates of partial or full fees shall be provided as set forth in sections 28-112.6.1 through 28-112.6.3.



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NYC Administrative Code § 28-112.6.1

§ 28-112.6.1 Withdrawal of work permit applications.

In the event that an owner withdraws an application, the owner may obtain a refund of all or a portion of the fee paid as follows:

1. If an application for construction document approval is withdrawn prior to the commencement of examination of the application all but forty dollars of the deposit fee paid shall be refunded.
2. If an application for construction document approval is withdrawn during the progress of examination of the application, the comptroller shall retain a percentage of the deposit fee paid, which the department shall certify is the equivalent percentage of the examination completed, but not less than one hundred dollars. The remainder of the deposit fee shall be refunded to the owner.
3. If an application for construction document approval is withdrawn after examination of construction documents and/or construction document approval and before issuance of permit, there shall be refunded by the comptroller 50 percent of the total computed fee for the permit, except that not less than one hundred dollars shall be retained by the comptroller.



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NYC Administrative Code § 28-112.6.2

§ 28-112.6.2 Withdrawal of cranes and derricks applications.

If the applicant withdraws his or her application for a certificate of approval for a power-operated crane, derrick or cableway, such applicant may obtain a refund of a portion of the fees as follows:

1. If the application is withdrawn prior to the commencement of examination by the department, the entire fee shall be refunded except one hundred dollars.
2. If the application is withdrawn after the examination has commenced, the comptroller shall retain a percentage of the fee paid, which the department shall certify is the equivalent percentage of the examination performed, but not less than one hundred dollars. The remainder of the fee shall be refunded to the applicant.
3. If the application is withdrawn after the department has performed its examination, whether or not the application has been approved no part of the fee shall be returned to the applicant.



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NYC Administrative Code § 28-112.6.3

§ 28-112.6.3 Incentive rebates.

With respect to the rebates under this section 28-112.6, the commissioner may, at his or her discretion, issue a rebate of application fees as follows and as established by rule.



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NYC Administrative Code § 28-112.6.3.1

§ 28-112.6.3.1 Renewable energy rebates.

Owners who demonstrate the production on a zoning lot of five percent or more of the annual energy consumption on the zoning lot through renewable energy sources may receive a fee rebate as established by rule.



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NYC Administrative Code § 28-112.6.3.2

§ 28-112.6.3.2 Rebate for energy use reduction.

Owners who demonstrate a reduction in energy use from that allowed at the time of permit by the New York state energy conservation construction code as a result of the permitted work may receive a fee rebate as established by rule.



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NYC Administrative Code § 28-112.6.3.3

§ 28-112.6.3.3 Rebate for water conservation systems.

Owners who demonstrate conservation of water taken from the city supply by providing evidence of achieving the water-recycling discount authorized by the New York city water board may receive a fee rebate as established by rule.



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NYC Administrative Code § 28-112.6.3.4

§ 28-112.6.3.4 Rebate for redevelopment, remediation and reuse of contaminated properties known as brownfields.

Owners who demonstrate that their site was contaminated and has been certified as remediated by the United States environmental protection agency or the New York state department of environmental conservation, or has received a notice of satisfaction from the New York city department of environmental protection, may receive a fee rebate as established by rule.



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NYC Administrative Code § 28-112.6.3.5

§ 28-112.6.3.5 Rebate for recycling construction and demolition waste.

Owners who demonstrate the recycling of construction and demolition waste may receive a fee rebate as established by rule.



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NYC Administrative Code § 28-112.6.3.6

§ 28-112.6.3.6 Rebate for bicycle storage facilities.

Except for R-3 occupancy, owners who demonstrate that they have provided secured indoor bicycling facilities accessible to all building occupants may be rebated their fees as set out in rule. Such facilities shall be identified on approved plans and shall be noted on the certificate of occupancy with a statement that the bicycling accommodations dedicated to such facilities were provided in accordance with this section.



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NYC Administrative Code § 28-112.6.3.7

§ 28-112.6.3.7 Rebate for LEED or other environmental design certification.

Owners who demonstrate certification of their project, which was signed off following the effective date of this code, by the United States Green Building Council based upon the Council's Leadership in Energy and Environmental Design (LEED) rating system or as otherwise provided by rule, may be rebated their fees as set out in rule.



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NYC Administrative Code § 28-112.6.3.8

§ 28-112.6.3.8 Other rebates.

The commissioner is authorized to promulgate rules to rebate fees following sign-off based upon the installation of energy-conserving systems.



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NYC Administrative Code § 28-112.7

§ 28-112.7 Inspection fees.

Aside from the inspection fees covered under permit fees above, the following inspection fees shall be paid according to requirements of this code and as promulgated in rules.



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NYC Administrative Code § 28-112.7.1

§ 28-112.7.1 Fees for the testing, approval, inspection and use of power-operated cranes, derricks and cableways.

The owner of any crane or derrick shall renew the certificate of operation each year. Table 28-112.7.1 3]Equipment TypeInitial FeeRenewalFee forCertificateof OperationComments1]Equipment TypeInitial FeeRenewalFee forCertificateof OperationComments2]Prototype approval of one configuration of a mobile crane. One configuration shall be comprised of the crane with a main boom, one fixed jib and one set of counterweights.\$2500 when testing has been monitored and certified by a competent individual or group, other than the manufacturer, acceptable to the commissioner;\$4000 when, in lieu of monitoring and certification of tests, the commissioner shall require design calculations for such items as the commissioner deems necessary to supplement the tests.Additional configurations shall be subject to the same fees as the original configuration.Amendment to a configuration.One-half the original configuration fee.Prototype approval of a mobile crane with a hydraulic boom.\$4000.Certificate of approval for mobile crane with a boom less than two hundred feet in length; fee also includes initial certificate of operation.\$500.\$250annually.The boom length as herein specified shall include the jibs and any other extensions to the boom.Certificate of approval for mobile crane with a boom two hundred feet or more in length, but less than three hundred feet in length; fee also includes initial certificate of operation.\$1000.\$250annually.The boom length as herein specified shall include the jibs and any other extensions to the boom.Certificate of approval for mobile crane with a boom three hundred feet or more in length but less than four hundred feet in length; fee also includes initial certificate of operation.\$2000.\$400annually.The boom length as herein specified shall include the jibs and any other extensions to the boom.Certificate of approval for mobile crane with a boom four hundred feet or more in length; fee also includes initial certificate of operation.\$3000.\$400annually.The boom length as herein specified shall include the jibs and any other extensions to the boom.Certificate of approval for climber and tower cranes and derricks, regardless of length; fee also includes initial certificate of operation.\$3000.\$400annually.Certificate of approval for all other cranes; fee also includes initial certificate of operation.\$1000.\$250annually.Certificate of approval required for a mobile crane with a boom not exceeding fifty feet in length with a maximum rated capacity not exceeding three tons; fee also includes initial certificate of operation.\$300.\$200annually.The boom length as herein specified shall include the jibs and any other extensions to the boom.New certificate of approval, when the boom or extension thereof is replaced or altered.The fee shall be the full fee required for testing a new crane or derrick. with a boom or extension of the same size and design

as the replacement boom or extension thereof. Review only of engineering calculations for mobile crane with a boom exceeding 250 feet to be erected by a licensed master or special rigger, for which a certificate of on-site inspection is not required under this code or rules of the department. \$100. On-site inspection of up to three models of mobile cranes with boom, including jibs and other extensions to the boom two hundred fifty feet or more in length, or derrick. \$250 on normal working days; \$750 on other than normal working days, upon written request of the applicant. All other on-site inspections of cranes. \$150. Amendment to an application for certificate of on-site inspection. \$100. Application for waiver of on-site inspection of mobile crane or derrick. \$100.4]



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NYC Administrative Code § 28-112.7.2

§ 28-112.7.2 Periodic inspection fees.

Table 28-112.7.2 Inspection Type Initial Fee Renewal Fee Comments Filing fee for report of critical examination of exterior walls and appurtenances thereof. As provided by rule. Filing fee for inspection of potentially compromised buildings or structures. As provided by rule. Filing fee for report of condition assessment of retaining walls. As provided by rule.;tb Filing fee for periodic boiler inspection report. \$30 for each boiler. Equipment inspection fee: \$65 for each inspection, for each boiler.;tb High-pressure boiler periodically inspected as provided by section 28-303.10 As provided by rule.;tb Reinspection fee following a violation.;tb Filing fee for report of periodic inspection of elevator and other devices. \$30 for each device.;tb Equipment inspection fee: Each elevator or other device regulated by this code. \$65 for each inspection, for each device.



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NYC Administrative Code § 28-112.7.3

§ 28-112.7.3 Other inspection fees.

Table 28-112.7.3 Inspection Type Initial Fee Renewal Fee Comments
Curb cut, private dwelling, \$3 for each linear foot including splay.
Curb cut, other, \$6 for each linear foot including splay.
Marquee inspection, \$15 annually for each one hundred square feet or fraction thereof.
Place of assembly inspection, including following a violation, \$100 each inspection, each place of assembly.
Search inspection of a building with a frontage of twenty-five feet or less and a depth of one hundred feet or less, \$20 for each floor for the first three floors; \$10 for each additional floor; \$100 minimum total. A basement or a cellar shall count as a floor.;tb
Additional fee for building with frontage exceeding twenty-five feet.

;tb Additional fee for building with depth exceeding one hundred feet. Increase above fee by 40% for each floor for each additional twenty-five feet or fraction thereof. Increase above fee by 25% for each floor for each additional twenty-five feet or fraction thereof. Where both a basement and a cellar exist, the cellar shall not count as a floor in computing fee.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 11, eff. July 1, 2008.
Table 28-112.7.2 amended L.L. 37/2008 § 1, eff. Feb. 8, 2009.
Table 28-112.7.2 amended L.L. 33/2008 § 1, eff. Feb. 8, 2009.
Table 28-112.7.2 amended L.L. 8/2008 § 14, eff. July 1, 2008.



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NYC Administrative Code § 28-112.8

§ 28-112.8 Special fees.

The department shall be entitled to charge the following special fees:Table 28-112.8 3]Item DescriptionFeeComments1]Item DescriptionFeeComments2]Acknowledgement.As provided by rule.Accelerated plan review.In accordance with rules promulgated by the commissioner.Accelerated inspection.As provided by rule.Certificate of occupancy.As provided by rule.Accelerated certificate of occupancy request.As provided by rule.Application for temporary certificate of occupancy.\$100.\$100 renewal.Place of assembly certificate of operation.\$200.\$100 renewal.Reinspection made necessary by a failure to correct a condition or respond to a request to correct that results in issuance of a violation or other orderAs provided by ruleTemporary place of assembly certificate of operation.\$100.\$100 renewal.Temporary use letter for temporary structure.\$100.Temporary use letter for place of assembly.\$250.Application shall be submitted at least ten work days prior to the event; late fees shall be imposed at \$100 for each day following required submission date that the application is received by the department.Ordinary plumbing work.\$100 for each report.Limited plumbing alteration.Same as for alteration.Limited sprinkler and/or standpipe alteration.Same as for alteration.Approval or acceptance of materials, assemblies and equipmentApplication for approval of materials.\$600.Application for amendment of prior approval of materials.\$500.Application for change of identification (change of ownership, corporate name or name of product) of prior approval.\$350.Application for approval of materials evaluated by an approved testing agency.\$200.Other feesCertificate of pending violation: Multiple and private dwellings.As provided by rule.Certificate of pending violation: All other buildings.As provided by rule.Certified copy of license.As provided by rule.Microfilming of applications for new buildings and alterations and associated documentation for certificates of occupancy, temporary certificates of occupancy and/or letters of completion, as required by rule of the commissioner.As provided by rule.Preparing only or preparing and certifying a copy of a record or document filed in the department, other than a plan, certificate of occupancy or certificate of pending violation.As provided by rule.Half-size print from microfilm of a plan thirty-six by forty-eight inches or less.As provided by rule.Half-size print from microfilm of a plan exceeding thirty-six by forty-eight inches.As provided by rule.Notification of use or installation of a suspended scaffold hung from a c-hook or outrigger beams\$35.Issuance of a core certificate of completion, which indicates completion of the building structure, the elevator systems, stairs, and all fire safety systems\$100.Each inspection of a temporary amusement device\$100.Issuance of letter of no objection to or

NYC Administrative Code § 28-112.8

classification of a specified occupancy of a premises, as follows:;tb 1, 2, or 3 family homes\$25.;tb All other premises\$100.Fees for after-hours work variances.;tb The initial application fee for an after-hours variance\$100.;tb The renewal application fee for an after-hours variance\$100.;tb For each day for which such variance is granted or renewed\$80.Application for approved agency approvalAs provided by rule.Application for special inspector authorizationAs provided by rule.4]

HISTORICAL NOTES:

Section added L.L. 33/2007 § 11, eff. July 1, 2008.

Table 28-112.8 amended L.L. 8/2008 § 15, eff. July 1, 2008.



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NYC Administrative Code § 28-112.9

§ 28-112.9 Lien on premises for unpaid fee or other charge.

Any unpaid fee or charge for an inspection, reinspection, examination or service performed by the department or other unpaid amount owed to the department, and all permits issued by the department, pursuant to law shall constitute a lien upon the land and buildings upon or in respect to which such inspection, reinspection, examination or service was performed or permit issued, as hereinafter provided.



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NYC Administrative Code § 28-112.9.1

§ 28-112.9.1 Filing of fees.

The department shall maintain a record of all unpaid fees and other charges. Such records shall be kept on a building by building basis and shall be accessible to the public during business hours. An entry of an unpaid amount on the records of the department shall constitute notice to all parties.



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NYC Administrative Code § 28-112.9.2

§ 28-112.9.2 Lien.

All such unpaid amounts shall constitute a lien upon the land and building upon, or in respect to which, such inspection, reinspection, examination or service was performed or permit issued when the amount thereof shall have been definitely computed as a statement of account by the department and the department shall file such statement with the department of finance for entry in the records of such department against the premises. Such lien shall have a priority over all other liens and encumbrances except for the lien of taxes and assessments. However, no lien created pursuant to this section 28-112.9 shall be enforced against a subsequent purchaser in good faith or mortgagee in good faith unless the requirements of section 28-112.9.1 are satisfied.



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NYC Administrative Code § 28-112.9.3

§ 28-112.9.3 Notice.

A notice, stating the amount due and the nature of the charge, shall be mailed by the department of finance, to the last known address of the person whose name appears on the records in the office of the department of finance as being the owner or agent or as the person designated by the owner to receive tax bills or, where no name appears, to the premises, addressed to either the owner or the agent.



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NYC Administrative Code § 28-112.9.4

§ 28-112.9.4 Interest.

If such charge is not paid within 30 days from the date of entry, it shall be the duty of the department of finance to receive interest thereon at the rate of 15 percent per annum, to be calculated to the date of payment from the date of entry.



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NYC Administrative Code § 28-112.9.5

§ 28-112.9.5 Tax lien.

Such charge and the interest thereon shall continue to be, until paid, a lien on the premises. Such lien shall be deemed a tax lien within the meaning of sections 11-319 and 11-401 of the administrative code and may be sold, enforced or foreclosed in the manner provided in chapter three or four of title eleven of such code or may be satisfied in accordance with the provisions of section thirteen hundred fifty-four of the real property actions and proceedings law.



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NYC Administrative Code § 28-112.9.6

§ 28-112.9.6 Reference.

The notice mailed by the department of finance pursuant to this section 28-112.9 shall have stamped or printed thereon a reference to this section 28-112.9.



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NYC Administrative Code § 28-112.9.7

§ 28-112.9.7 Validity not subject to challenge in enforcement proceeding.

In any proceedings to enforce or discharge a lien created pursuant to this section 28-112.9 the validity of the lien shall not be subject to challenge based on:

1. The lawfulness of the inspection, reinspection, examination, service or permit; or
2. The propriety and accuracy of the fee for which a lien is claimed, except as provided in this section 28-112.9.



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NYC Administrative Code § 28-112.9.8

§ 28-112.9.8 Standing to challenge.

No such challenge may be made except by (i) the owner of the property, or (ii) a mortgagee or lienor whose mortgage or lien would, but for the provisions of this section 28-112.9, have priority over the department's lien.



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NYC Administrative Code § 28-113.1

§ 28-113.1 General.

Materials shall be used, tested and approved for use in accordance with the specific provisions of this code and department rules, except that the commissioner shall have the power to limit or prohibit the use of any material to protect public safety. Materials shall be identified or described on construction documents and other submittal documents.



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NYC Administrative Code § 28-113.2

§ 28-113.2 Use of materials.

Except as set forth in sections 28-113.2.1 through 113.2.6 materials specifically prescribed by this code or department rules may be used as prescribed without the prior approval of the commissioner.



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NYC Administrative Code § 28-113.2.1

§ 28-113.2.1 Approved material.

Whenever this code or the rules of the department requires the use of an approved material, such material shall not be used without the prior approval of the commissioner for such use and may be used only to the extent set forth in such approval.



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NYC Administrative Code § 28-113.2.2

§ 28-113.2.2 Alternative materials.

Except as otherwise specifically limited by this code, the provisions of this code are not intended to prevent the installation of any material or to prohibit any alternative engineered design or method of construction not specifically prescribed by this code, provided that the use of such alternative material has been previously approved by the commissioner and may be used only to the extent set forth in such approval. The use of an alternative material, design, method of construction or equipment shall be approved where the commissioner finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.



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NYC Administrative Code § 28-113.2.3

§ 28-113.2.3 Listed or labeled.

Whenever this code or the rules of the department requires that material used be listed or labeled to a standard, material that is so listed or labeled may be used in accordance with such list or label without the prior approval of the commissioner. However, the commissioner reserves the right to require that information be submitted with regard to the testing and evaluation of any material so listed or labeled including but not limited to inspection certificates, test or evaluation reports, analysis, computations or other information used to determine that the material so listed or labeled complies with the applicable standard.



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NYC Administrative Code § 28-113.2.4

§ 28-113.2.4 Material not listed or labeled.

Whenever this code or the rules of the department requires that material be listed or labeled to a standard and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the commissioner and such material shall be used only to the extent set forth in such approval.



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NYC Administrative Code § 28-113.2.5

§ 28-113.2.5 Reuse.

The use of used material that meets the requirements of this code for new material is permitted unless otherwise provided in this code. Used equipment and devices shall not be reused without the prior approval of the commissioner and may be used only to the extent set forth in such approval.



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NYC Administrative Code § 28-113.2.6

§ 28-113.2.6 Previously issued approvals.

Materials that were previously approved by the board of standards and appeals or by the department before the effective date of this code may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the commissioner.



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ARTICLE 113: MATERIALS

NYC Administrative Code § 28-113.3

§ 28-113.3 Approval procedure.

Approval of materials shall be in accordance with the rules of the department. The cost offsets, reports and investigations required under these provisions shall be paid by the applicant.



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NYC Administrative Code § 28-113.3.1

§ 28-113.3.1 Performance.

Specific information consisting of test reports conducted by an approved testing agency in accordance with standards referenced in the construction codes or other such information as necessary, shall be provided for the commissioner to determine whether the material will perform for the use intended.



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NYC Administrative Code § 28-113.3.2

§ 28-113.3.2 Research and investigation.

Sufficient technical data shall be submitted to the commissioner to substantiate the proposed use of any material. If it is determined that the evidence submitted is satisfactory proof of performance for the use intended, the commissioner shall approve the use of the material subject to the requirements of this code.



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NYC Administrative Code § 28-113.3.3

§ 28-113.3.3 Retesting of materials.

All materials tested and accepted for use shall be subject to periodic retesting as determined by the commissioner; and any material that upon retesting is found not to comply with the code requirements or the requirements set forth in the approval of such material shall cease to be acceptable for the use intended. During the period for such retesting, the commissioner may require the use of such material to be restricted or discontinued if necessary to secure safety.



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NYC Administrative Code § 28-113.3.4

§ 28-113.3.4 New materials.

New materials not provided for in this code, and any material of questioned suitability proposed for use in the construction of a building or structure, shall be subjected to the tests prescribed in this code or in the rules of the department to determine character, quality and limitations of use.



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NYC Administrative Code § 28-113.3.5

§ 28-113.3.5 Research reports.

Supporting data, where necessary to assist in the approval of materials not specifically provided for in this code, shall consist of valid research reports from approved sources.



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NYC Administrative Code § 28-113.3.6

§ 28-113.3.6 Conflicting test results.

Whenever there is evidence of conflicting results in the test of any material, the commissioner shall determine the acceptability of the material and/or the acceptable rating for such material.



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NYC Administrative Code § 28-113.3.7

§ 28-113.3.7 Amendment and repeal.

The commissioner shall have the power to amend or repeal the approval of any material, including materials previously approved by the board of standards and appeals.



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NYC Administrative Code § 28-113.3.8

§ 28-113.3.8 Maintenance of records of approved material.

For any material that has been approved, a record of such approval, including the conditions and limitations of the approval, shall be kept on file in the department and shall be open to public inspection at appropriate times.



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NYC Administrative Code § 28-113.3.9

§ 28-113.3.9 List of approved testing agencies and approved materials.

A current list of all approved testing agencies and a current list of all materials specifically approved by the commissioner or previously approved by the board of standards and appeals shall be maintained by the department and published in written form.



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NYC Administrative Code § 28-113.4

§ 28-113.4 Labeling.

Materials required to be labeled shall be labeled in accordance with the procedures set forth in this code or the recognized referenced standards.



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ARTICLE 113: MATERIALS

NYC Administrative Code § 28-113.4.1

§ 28-113.4.1 Testing.

An approved agency shall test a representative sample of the material being labeled to the relevant standard or standards. The approved agency shall maintain a record of the tests performed. The record shall provide sufficient detail to verify compliance with the test standard.



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NYC Administrative Code § 28-113.4.2

§ 28-113.4.2 Inspection and identification.

The approved agency shall at regular intervals perform an inspection, which shall be in-plant if necessary, of the material that is to be labeled. The inspection shall verify that the labeled material is representative of the material tested.



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NYC Administrative Code § 28-113.4.3

§ 28-113.4.3 Label information.

The label shall contain the manufacturer's or distributor's identification, model number, serial number or definitive information describing the material's performance characteristics and the approved agency's identification.



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NYC Administrative Code § 28-113.4.4

§28-113.4.4 Shipment and delivery certification of materials listed, labeled or approved.

In the case of the shipment or delivery of material listed or labeled to a standard, such material shall be appropriately labeled or accompanied by the inspection certificate of an approved agency that the material is the same as that which was tested and evaluated by such agency. In the case of the shipment or delivery of material previously approved by the commissioner, the material shall be identified by a tag or certificate indicating that the material is the same that was approved for its intended use by the commissioner or, if applicable, previously approved by the board of standards and appeals, and containing the applicable approval number or calendar number under which the material received such approval.



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ARTICLE 114: APPROVED AGENCIES

NYC Administrative Code § 28-114.1

§ 28-114.1 General.

Approved agencies shall satisfy the provisions of this article and the rules of the department as to qualifications and operations. The commissioner may revoke or suspend the commissioner's approval of or otherwise sanction an approved agency for cause.



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ARTICLE 114: APPROVED AGENCIES

NYC Administrative Code § 28-114.1.1

§ 28-114.1.1 Independent.

An approved agency shall perform its authorized duties objectively and competently. The agency shall disclose possible conflicts of interest so that objectivity can be confirmed.



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NYC Administrative Code § 28-114.1.2

§ 28-114.1.2 Testing equipment.

An approved agency shall have adequate testing equipment to perform required tests. The equipment shall be periodically calibrated.



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NYC Administrative Code § 28-114.1.3

§ 28-114.1.3 Personnel.

An approved agency shall employ experienced personnel qualified to conduct, supervise and evaluate the tests or inspections that it undertakes. Special inspections may be performed only by employees of such agency who are special inspectors qualified pursuant to department rules to perform or witness the particular test or inspection. The commissioner may require proof of the qualifications of employees.



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NYC Administrative Code § 28-114.1.4

§ 28-114.1.4 Background.

The commissioner may require an approved agency to submit to an investigation of its background and of the background of its principals as a condition of approval.



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NYC Administrative Code § 28-114.1.5

§ 28-114.1.5 Insurance.

An approved agency shall maintain liability insurance as required by department rules.



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ARTICLE 114: APPROVED AGENCIES

NYC Administrative Code § 28-114.2

§ 28-114.2 Written evaluation by approved agency.

An agency's evaluation of material or report of an inspection shall be in writing after satisfactory completion of the required inspection or test.



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ARTICLE 114: APPROVED AGENCIES

NYC Administrative Code § 28-114.3

§ 28-114.3 Records.

The approved agency shall maintain records of inspection and test reports for at least six years or for such period as the commissioner shall determine and shall make such records available to the department upon request.



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NYC Administrative Code § 28-114.4

§ 28-114.4 Re-authorization of approved agencies.

An approved agency shall have its approval re-authorized in accordance with rules of the department.



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ARTICLE 115: SPECIAL INSPECTORS

NYC Administrative Code § 28-115.1

§ 28-115.1 General.

Special inspectors shall satisfy the provisions of this article and the rules of the department as to qualifications in order to perform special inspections required by chapter 17 of the New York city building code or elsewhere in this code.



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ARTICLE 115: SPECIAL INSPECTORS

NYC Administrative Code § 28-115.2

§ 28-115.2 Disqualification.

The commissioner may disqualify a special inspector from performing special inspections pursuant to this code for cause. The special inspector shall be given prior notice of the proposed disqualification and the opportunity to contest such action. A list of special inspectors who have been disqualified from performing special inspection shall be maintained and made available to the public upon request.



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ARTICLE 115: SPECIAL INSPECTORS

NYC Administrative Code § 28-115.3

§ 28-115.3 Records.

A special inspector shall maintain records of special inspections on a building by building basis for at least 6 years or for such period as the commissioner shall determine and shall make such records available to the department upon request.



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ARTICLE 116: INSPECTIONS AND SIGN-OFF OF COMPLETED WORK

NYC Administrative Code § 28-116.1

§ 28-116.1 General.

Construction or work for which a permit is required shall be subject to inspection in accordance with this code and such construction or work shall remain accessible and exposed for inspection purposes until the required inspection is completed. A satisfactory inspection by the department or the acceptance by the department of a satisfactory report of an inspection by an approved agency or special inspector shall not be construed to be an approval by the department of a violation of the provisions of this code or of any other provision of law. It shall be the duty of the permit holder to cause the work to remain accessible and exposed for inspection purposes. The permit holder shall be liable for any expense entailed in the removal or replacement of any material required to allow inspection. The inspector shall supply a report of the results of each inspection.



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NYC Administrative Code § 28-116.2

§ 28-116.2 Types of inspections.

The inspections set forth in sections 28-116.2.1 through 28-116.2.4 are required or authorized by this code.



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NYC Administrative Code § 28-116.2.1

§ 28-116.2.1 Preliminary inspection.

Before approving construction documents, the commissioner is authorized to examine or cause to be examined structures or premises for which an application has been filed.



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NYC Administrative Code § 28-116.2.2

§ 28-116.2.2 Compliance inspections.

In addition to the inspections specified in this code, the commissioner is authorized to make or require other inspections of any construction work to ascertain compliance with the provisions of this code and other laws that are enforced by the department.



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NYC Administrative Code § 28-116.2.3

§ 28-116.2.3 Special inspections and other inspections required during the progress of work.

After the issuance of a work permit, special inspections and other inspections required by this code to be made during the progress of the work shall be made at such times or at such stages of the work and in such manner as shall be provided by this code or as otherwise required by the commissioner. The permit application shall set forth an inspection program for the job. Such inspections may be made by approved agencies or by the department as provided in this code or in the rules of the department. Special inspections shall be performed only by individuals who are special inspectors. The permit holder shall notify the relevant special inspectors in writing at least 72 hours prior to the commencement of any work requiring special inspection. The commissioner may accept inspection and test reports from approved agencies and special inspectors and the work may, unless otherwise specifically provided by code provisions or directed by the commissioner, proceed without any verifying inspection or test by the department. The names and business addresses of special inspectors and approved agencies shall be set forth in the work permit application. All inspection reports shall be in writing and signed by the person or entity performing the inspection. A record of all inspections shall be kept by the person performing the inspection. The commissioner may require inspection reports to be filed with the department. Records of inspections made by approved agencies and special inspectors shall be maintained by such persons for a period of six years after sign-off of the job or for such other period of time as the commissioner may require and shall be made available to the department upon request.



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NYC Administrative Code § 28-116.2.3.1

§ 28-116.2.3.1 Special inspection of fabricated items.

Where fabrication of regulated products is performed on the premises of a fabricator's shop, special inspection of the fabricated items is required. The special inspector shall verify that the fabricator maintains detailed fabrication and quality control procedures that provide a basis for inspection control of the workmanship and the fabricator's ability to conform to approved construction documents and referenced standards. The special inspector shall review the procedures for completeness and adequacy relative to the code requirements for the fabricator's scope of work.

Exception: Special inspections shall not be required where the fabricator is approved by the commissioner in accordance with section 28-116.7.



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NYC Administrative Code § 28-116.2.4

§ 28-116.2.4 Final inspection.

There shall be a final inspection of all permitted work. Final inspections shall comply with sections 28-116.2.4.1 through 28-116.2.4.2.



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NYC Administrative Code § 28-116.2.4.1

§ 28-116.2.4.1 Final inspection prior to certificate of occupancy.

In all cases where the permitted work requires the issuance of a new or amended certificate of occupancy, the final inspection shall be performed by the department in the presence of the, permit holder, the registered design professional of record or the superintendent of construction. Such inspection shall be performed after all work authorized by the building permit is completed and before the issuance of the certificate of occupancy. All failures to comply with the provisions of this code or approved construction documents shall be noted and the owner promptly notified thereof in writing. All defects noted in such inspection shall be corrected. Reports of such final inspections shall be maintained by the department. The final inspection report shall confirm that defects noted have been corrected, that the work is in substantial compliance with the approved construction documents and with this code and with other applicable laws and rules and that all required inspections were performed.



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NYC Administrative Code § 28-116.2.4.2

§ 28-116.2.4.2 Final inspection prior to letter of completion.

In all cases where the permitted work does not require the issuance of a certificate of occupancy, the final inspection shall be performed by the department or at the option of the owner by an approved agency. Whenever the department performs a final inspection, the department shall charge a fee for such inspection. The applicant shall take all reasonable and necessary steps to insure that the final inspection is performed within one year after the expiration of the last permit. The inspection shall be performed after all work authorized by the building permit is completed. The person performing the inspection shall note all failures to comply with the provisions of this code or approved construction documents and shall promptly notify the owner in writing. All defects noted in such inspection shall be corrected. The final inspection report shall confirm that defects noted have been corrected, that the work is in substantial compliance with the approved construction documents and with this code and other applicable laws and rules and that all required inspections were performed. Final inspection reports shall be filed with and maintained by the department. Records of final inspections made by approved agencies shall be maintained by such persons for a period of six years after sign-off or for such other period as the commissioner shall require and shall be made available to the department upon request.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 11, eff. July 1, 2008.
28-116.2.3 amended L.L. 8/2008 § 16, eff. July 1, 2008.



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NYC Administrative Code § 28-116.3

§ 28-116.3 Inspection requests.

It shall be the duty of the permit holder to notify the department or the person designated to perform the inspection when work requiring inspection is ready to be inspected. It shall be the duty of the permit holder to provide access to and means for inspection of such work for any inspections that are required by this code.



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NYC Administrative Code § 28-116.4

§ 28-116.4 Sign-off of completed work.

Upon submission of a satisfactory report of final inspection and all required submittal documents, the department shall document the sign-off of the project and issue a letter of completion, or, if applicable, a certificate of occupancy for the work. The owner shall take all reasonable and necessary steps for the issuance by the department of a letter of completion or certificate of occupancy within 1 year following the expiration of the last permit.



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NYC Administrative Code § 28-116.4.1

§ 28-116.4.1 Issuance of certificate of compliance.

The following types of service equipment shall not be operated until the department issues a certificate of compliance after submission of a satisfactory report of inspection and testing of such equipment in accordance with this code and all required submittal documents:

1. Air-conditioning and ventilation systems
2. Elevators, escalators, moving walkways and dumbwaiters
3. Fuel burning and fuel-oil storage equipment
4. Refrigeration systems
5. Heating systems
6. Boilers.

Exception: A certificate of compliance shall not be required in connection with work specifically exempted from permit requirements in accordance with this code or department rules.



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NYC Administrative Code § 28-116.5

§ 28-116.5 Payment of outstanding penalties.

The department may refuse to issue a letter of completion or certificate of occupancy pending payment of all outstanding fines or civil penalties imposed for violations of this code, the 1968 building code or other laws enforced by the department at the same building.



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NYC Administrative Code § 28-116.6

§ 28-116.6 List of approved inspection agencies.

A current list of all approved inspection agencies shall be maintained by the department and published in written form.



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NYC Administrative Code § 28-116.7

§ 28-116.7 Fabricator approval.

Approval of fabricators by the department shall be based upon review of the fabricator's written procedural and quality control manuals and periodic auditing of fabrication practices by an approved agency.



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NYC Administrative Code § 28-116.7.1

§ 28-116.7.1 Fabricator's certificate of compliance.

For all fabricated items, the approved fabricator shall submit a certificate of compliance to the department stating that the work was performed in accordance with the approved construction documents, referenced standards and applicable provisions of law.



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NYC Administrative Code § 28-117.1

§ 28-117.1 Place of assembly certificate of operation.

It shall be unlawful to use or occupy any building or space as a place of assembly without a certificate of operation issued by the commissioner. An application for a certificate of operation shall be made to the department in such form and containing such information as the commissioner shall provide. The department shall inspect every place of assembly space prior to the issuance of a certificate of operation. The commissioner shall not issue a certificate of operation unless the department determines that the space conforms substantially to the approved construction documents and to the provisions of this code and that the certificate of occupancy authorizes such use. A certificate of operation shall not be issued to a place of assembly providing seating or other moveable furnishings unless the commissioner approves a plan conforming to this code and the rules of the department. Seating and other moveable furnishings shall be maintained at all times during occupancy in accordance with the approved plan. Any amendment of such plan shall be subject to the prior approval of the commissioner.



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NYC Administrative Code § 28-117.1.1

§ 28-117.1.1 Contents of certificate of operation.

The certificate of operation shall contain the place of assembly certificate number, the number of persons who may legally occupy the space and any other information that the commissioner may determine. Such certificate of operation shall be framed and mounted in a location that is conspicuously visible to a person entering the space. For the purposes of this article a place of assembly permit issued prior to the effective date of this code shall be valid until its expiration. Prior to the expiration of the term of such place of assembly permit, the party responsible for renewal shall apply to the department for a certificate of operation in accordance with this article, except that the issuance of such certificate shall be subject to the same inspection requirement as a renewal of a certificate of operation pursuant to this code.



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NYC Administrative Code § 28-117.2

§ 28-117.2 Temporary place of assembly certificate of operation.

At the commissioner's discretion, a temporary certificate of operation may be issued for a place of assembly space upon request by the applicant in accordance with this code provided that public safety is not jeopardized thereby. The applicant shall notify the fire department when a temporary place of assembly certificate of operation is issued.



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NYC Administrative Code § 28-117.3

§ 28-117.3 Duration and renewal of certificate.

A place of assembly certificate of operation shall be issued for a term of 1 year and may be renewed annually upon payment of proper fees and proof of satisfactory inspection by the fire department.



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NYC Administrative Code § 28-117.4

§ 28-117.4 Security guards.

In the case of a certificate holder that offers for sale food and/or beverages for on-premises consumption, but not including establishments operated by a not-for-profit corporation, and employs or uses the services of a security guard, as that term is defined in subdivision six of section eighty-nine of the general business law, such certificate holder shall comply with the provisions of article 7-A of the general business law, shall obtain proof that such security guard is registered pursuant to article 7-A of the general business law, shall maintain such proof in a readily available location, in accordance with rules promulgated by the commissioner during all hours in which such place of assembly is open to the public, shall maintain a roster of all security guards working at any given time when such place of assembly is open to the public, and shall require each security guard to maintain on his or her person proof of registration at all times when on the premises.



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NYC Administrative Code § 28-117.4.1

§ 28-117.4.1 Presumption.

For purposes of this section, there shall be a rebuttable presumption that a person employed or whose services are retained at a place of assembly is a security guard if his or her job functions include:

1. The monitoring or guarding of the entrance or exit of such place of assembly to manage ingress and egress to such place of assembly for security purposes during the hours of operation of such establishment; and/or
2. Protection of such place of assembly from disorderly or other unlawful conduct by patrons of such place of assembly.



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NYC Administrative Code § 28-117.4.1.1

§ 28-117.4.1.1 Presumption not applicable to owner.

The rebuttable presumption in section 28-117.4.1 shall not apply to an individual who is an owner of the establishment as described in section 28-117.4 that has received a place of assembly certificate of operation.



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NYC Administrative Code § 28-117.4.2

§ 28-117.4.2 Responsibility for violations.

Notwithstanding any provision of this section, only the holder of a certificate of operation shall be liable for violations of this article that relate to such holder's obligations regarding security guards.



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NYC Administrative Code § 28-117.4.3

§ 28-117.4.3 Enforcement.

In addition to employees of the department, employees of the police department and the department of consumer affairs shall have the authority to enforce the provisions of this article regarding security guards.



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NYC Administrative Code § 28-117.4.4

§ 28-117.4.4 State liquor authority reporting.

The enforcement agency shall report any violation of the provisions of this section relating to security guards to the state liquor authority if the holder of the certificate of operation holds a license pursuant to the alcoholic beverage control law.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 17, eff. July 1, 2008.



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NYC Administrative Code § 28-118.1

§ 28-118.1 General provisions.

No building or open lot shall be used or occupied without a certificate of occupancy issued by the commissioner.
Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code
or of other applicable laws and rules.



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NYC Administrative Code § 28-118.2

§ 28-118.2 New buildings or open lots.

No building hereafter constructed or open lot shall be occupied or used, in whole or in part, unless and until a certificate of occupancy shall have been issued certifying that such building or open lot conforms substantially to the approved construction documents and the provisions of this code and other applicable laws and rules.



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NYC Administrative Code § 28-118.3

§ 28-118.3 Completed buildings or open lots.

The provisions of sections 28-118.3.1 through 28-118.3.4 shall apply to completed buildings or open lots.



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NYC Administrative Code § 28-118.3.1

§ 28-118.3.1 Change of occupancy or use.

No building, open lot or portion thereof hereafter altered so as to change from one occupancy group to another, or from one zoning use group to another, either in whole or in part, shall be occupied or used unless and until the commissioner has issued a certificate of occupancy certifying that the alteration work for which the permit was issued has been completed substantially in accordance with the approved construction documents and the provisions of this code and other applicable laws and rules for the new occupancy or use.



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NYC Administrative Code § 28-118.3.2

§ 28-118.3.2 Changes inconsistent with existing certificate of occupancy.

No change shall be made to a building or open lot or portion thereof inconsistent with the last issued certificate of occupancy or, where applicable, inconsistent with the last issued certificate of completion for such building or open lot or which would bring it under some special provision of this code or other applicable laws or rules, unless and until the commissioner has issued a new certificate of occupancy.



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NYC Administrative Code § 28-118.3.3

§ 28-118.3.3 Changes to exits.

No building hereafter altered so as to cause a major alteration to existing exits shall be occupied or used unless and until the commissioner has issued a certificate of occupancy certifying that the alteration work for which the permit was issued has been completed substantially in accordance with the approved construction documents and the provisions of this code and other applicable laws and rules.



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NYC Administrative Code § 28-118.3.4

§ 28-118.3.4 Existing buildings or open lots without certificates of occupancy.

A building or open lot in existence prior to January 1, 1938 and heretofore legally used or occupied without a certificate of occupancy or, if applicable, a certificate of completion, and subject to the provisions of section 28-102.4 (continuation of lawful existing use), may continue to be used or occupied without a certificate of occupancy or, if applicable, a certificate of completion, pursuant to the requirements of section six hundred forty five of the New York city charter, this code and other applicable laws and rules provided there is no change in the existing use or occupancy classification of the building, open lot or portion thereof.



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NYC Administrative Code § 28-118.3.4.1

§ 28-118.3.4.1 Application for certificate of occupancy.

Upon application by the owner of such a building or open lot in existence prior to January 1, 1938, the commissioner shall issue a certificate of occupancy for such building, provided that at the time of issuing such certificate, such existing building is in compliance with all retroactive requirements of the 1968 building code applicable to such building and no notices of violation or other notices or orders affecting the building as they relate to the provisions of this code or the 1968 building code are pending before the department, and provided further that it is established to the satisfaction of the commissioner, after inspection and investigation, that the alleged use of the building has heretofore legally existed.



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NYC Administrative Code § 28-118.3.4.2

§ 28-118.3.4.2 Partial certificates of occupancy.

Partial certificates of occupancy may be issued pursuant to section 28-118.16 .



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NYC Administrative Code § 28-118.4

§ 28-118.4 Applications for certificates of occupancy.

All applications for certificates of occupancy shall be submitted on forms furnished by the department. Applications for new buildings or additions to buildings shall be accompanied by an accurate and complete final lot survey made by a land surveyor showing such information as prescribed by the commissioner. The commissioner may waive the requirement of such survey in the case of small sheds, stands, temporary structures, signs, and similar small structures.



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NYC Administrative Code § 28-118.4.1

§ 28-118.4.1 Applicant.

The application for a certificate of occupancy shall be made by or on behalf of the owner of the building or open lot; and if made by a person other than the owner, the application shall be accompanied by a signed statement of the applicant stating that the applicant is authorized by the owner to make the application. The full names and addresses of the owner, and applicant, and of the principal officers thereof, if a corporation, shall be stated in the application.



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NYC Administrative Code § 28-118.4.2

§ 28-118.4.2 Statement of compliance.

When a certificate of occupancy for a new or altered building is applied for, the application shall be accompanied by a signed statement of the registered design professional of record or the superintendent of construction, as applicable, stating that such person has examined the approved construction documents and specifications of the building for which the certificate of occupancy is sought, and that, to the best of his or her knowledge and belief, the building has been erected or altered in accordance with the approved construction documents and specifications and, as erected or altered, complies with the provisions of this code and all other applicable laws and rules, except insofar as variations or variances therefrom have been legally permitted or authorized, specifying such variations or variances in such required statement.



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NYC Administrative Code § 28-118.5

§ 28-118.5 Review of applications for certificates of occupancy.

All applications for certificates of occupancy and accompanying submittal documents shall be examined promptly after their submission. If the building is entitled to the certificate of occupancy applied for, the application shall be approved and the certificate of occupancy issued by the commissioner within 10 calendar days after submission of a complete application. Otherwise, the application shall be rejected and written notice of rejection, stating the grounds of rejection, shall be given to the applicant within 10 calendar days of the submission of the application. Wherever an application has been rejected and proof is thereafter submitted establishing that the grounds of rejection have been met and that the building is entitled to the certificate of occupancy applied for, the application shall be approved and the certificate of occupancy issued within 10 calendar days after submission of such proof.



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NYC Administrative Code § 28-118.6

§ 28-118.6 Issuance of certificate of occupancy.

After the commissioner inspects the building or open lot and determines that the building or open lot conforms substantially to the approved construction documents and to the provisions of this code and other applicable laws and rules, the commissioner shall issue a certificate of occupancy that shall contain information including, but not limited to:

1. The building permit number.
2. The address of the structure.
3. Block and lot numbers pertaining to the zoning lot as of the date of issuance, as defined in section 12-10 of the New York city zoning resolution.
4. The description of the structure for which the certificate is issued.
5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code.
6. The name and signature of the commissioner.
7. The code under which the permit was issued.
8. The use and occupancy, in accordance with this code and the zoning resolution.
9. The type of construction as defined in this code.
10. The design occupant load of floors and spaces.

11. Types of major fire suppression or alarm systems.
12. Any special stipulations and conditions of the building permit.
13. The maximum permissible live loads on the several floors of the building.
14. The number of parking spaces.



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NYC Administrative Code § 28-118.7

§ 28-118.7 Pavement plan.

No certificate of occupancy shall be issued for any building or open lot requiring a pavement plan pursuant to article 108 unless and until an inspection has been made to show that all work necessary for compliance with the pavement plan has been completed.



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NYC Administrative Code § 28-118.7.1

§ 28-118.7.1 Certification.

No certificate of occupancy shall be issued for any building or open lot requiring a certification pursuant to article 108 unless and until the applicant, after completion of construction work, inspects the sidewalk and certifies that the sidewalk is free from defects.

Exception: The commissioner may issue a certificate of occupancy if in lieu of such certification the owner furnishes to the department prior to the issuance of the certificate of occupancy security satisfactory to the department that the sidewalk will be installed and paved or repaired within the time specified by the department.



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NYC Administrative Code § 28-118.8

§ 28-118.8 Sanitary/storm water drainage.

No certificate of occupancy shall be issued until the department confirms by inspection that all work relating to the installation of the part of the sanitary/storm water drainage system which lies outside of such property, if and as required by section 24-526 of the administrative code, has been satisfactorily completed.



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NYC Administrative Code § 28-118.9

§ 28-118.9 Fire protection plan.

No certificate of occupancy shall be issued until a fire protection plan, if required pursuant to article 109, has been filed and accepted.



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NYC Administrative Code § 28-118.10

§ 28-118.10 Electrical work.

No certificate of occupancy shall be issued unless compliance with the New York city electrical code is certified by the commissioner.



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NYC Administrative Code § 28-118.11

§ 28-118.11 Certificates of compliance.

No certificate of occupancy shall be issued until certificates of compliance are issued for the following types of service equipment:

1. Air conditioning and ventilation systems.
2. Elevators, escalators, moving walkways and dumbwaiters.
3. Fuel burning and fuel oil storage equipment.
4. Refrigeration systems.
5. Heating systems.
6. Boilers.



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NYC Administrative Code § 28-118.12

§ 28-118.12 Place of assembly certificate of operation.

The issuance of a certificate of occupancy shall not authorize the use of any space as a place of assembly unless and until the commissioner thereafter issues a place of assembly certificate of operation.



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NYC Administrative Code § 28-118.13

§ 28-118.13 Certificates of occupancy for air-inflated structures, air-supported structures, and tents.

Certificates of occupancy for air-inflated structures, air-supported structures, and tents shall be issued for a period not exceeding one year. Such certificates may be renewed for one-year periods upon demonstration that the structure complies with all laws and rules in effect at the time of the request for renewal.



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NYC Administrative Code § 28-118.14

§ 28-118.14 Payment of outstanding penalties.

The department may refuse to issue a certificate of occupancy for a building pending payment of all outstanding fines or civil penalties imposed for violations of this code, the 1968 building code or other laws enforced by the department at the same building.



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NYC Administrative Code § 28-118.15

§ 28-118.15 Temporary certificates of occupancy.

Upon application, the commissioner is authorized to issue a temporary certificate of occupancy before the completion of the entire work covered by the permit, provided that the subject portion or portions of the building may be occupied and maintained in a manner that will not endanger public safety, health, or welfare. The commissioner shall set a time period during which the temporary certificate of occupancy is valid.



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NYC Administrative Code § 28-118.16

§ 28-118.16 Amended certificate of occupancy.

Where a building exceeds three stories in height and the change does not exceed 20 percent of the total floor area, an amendment to the existing certificate of occupancy for such new use shall be issued by the commissioner certifying that the proposed new occupancy and use conforms to the provisions of the laws governing building construction and that the proposed use will not be in conflict with any provisions of the labor law, multiple dwelling law or the zoning resolution.



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NYC Administrative Code § 28-118.16.1

§ 28-118.16.1 Partial certificate of occupancy.

A partial certificate of occupancy may be issued to a specific floor or floors of an existing building erected prior to January 1, 1938 subject to the following conditions:

1. The building does not have and is not otherwise required to have a certificate of occupancy or certificate of completion, if applicable.
2. The floor or floors for which a certificate of occupancy is issued shall not constitute more than 50 percent of the gross floor area of the building.
3. The building is of noncombustible construction and protected with an automatic sprinkler system.
4. Adequate means of egress are provided from all floors.
5. Upon inspection, the building is deemed safe for occupancy.



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NYC Administrative Code § 28-118.17

§ 28-118.17 Revocation of certificates of occupancy.

The commissioner is authorized to request, in writing, pursuant to section six hundred forty five of the New York city charter that the board of standards and appeals or a court of competent jurisdiction revoke, vacate, or modify a certificate of occupancy issued under the provisions of this code whenever the certificate is issued in error, or on the basis of incorrect information provided to the department.



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NYC Administrative Code § 28-118.18

§ 28-118.18 Record of certificates.

A record of all certificates of occupancy shall be kept by the department; and copies thereof shall be furnished by the department upon request, and on the payment of the fee prescribed in article 112 of this chapter. The certificate of occupancy or a copy thereof shall be available for inspection at the building at all reasonable times.



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ARTICLE 118: CERTIFICATES OF OCCUPANCY

NYC Administrative Code § 28-118.19

§ 28-118.19 Posting of certificates of occupancy.

The owner shall post a copy of the building's certificate of occupancy in accordance with this section 28-118.19, except buildings occupied entirely by group R3. Buildings that are not required to have a certificate of occupancy shall be posted by the owner with a sign or placard in a form prescribed by the commissioner. The certificate of occupancy or sign, as applicable, shall be permanently affixed to the structure in a conspicuous location in a public hall, corridor, management office of the building or as otherwise prescribed by the commissioner.



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NYC Administrative Code § 28-118.19.1

§ 28-118.19.1 Replacement of posted certificates of occupancy and signs.

All posted certificates of occupancy or signs, as applicable, shall not be removed or defaced and, if lost, removed or defaced, shall be immediately replaced. The commissioner may inspect or cause to be inspected periodically all buildings for compliance with the provisions of this code in regard to posting; and the inspection reports shall specify any violation thereof.



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ARTICLE 119: SERVICE UTILITIES

NYC Administrative Code § 28-119.1

§ 28-119.1 Connection of service utilities.

It shall be unlawful for any utility company or utility corporation to supply gas to a building, place or premises in which new meters other than replacement are required until a certificate of approval of gas installation from the department is filed with such utility company or utility corporation. When new gas service piping has been installed it shall be locked-off by the utility company or utility corporation either by locking the gas service line valve or by installing a locking device on the outside gas service line valve. The lock shall not be removed until the gas meter piping (other than utility owned) and gas distribution piping have been inspected and certified as required by the department of buildings as being ready for service.



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ARTICLE 119: SERVICE UTILITIES

NYC Administrative Code § 28-119.1.1

§ 28-119.1.1 Gas shut-off for alterations to gas piping systems.

When alterations, extensions or repairs to existing gas meter piping or gas distribution piping require the shut-off of gas flow to a building, the utility company shall be notified by the owner or his or her authorized representative.



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ARTICLE 119: SERVICE UTILITIES

NYC Administrative Code § 28-119.2

§ 28-119.2 Temporary connection.

The commissioner shall have the authority to authorize the temporary connection of the building or system to the gas service utility.



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ARTICLE 119: SERVICE UTILITIES

NYC Administrative Code § 28-119.3

§ 28-119.3 Authority to disconnect utility service.

The commissioner may authorize disconnection of gas service to the building, structure or system regulated by this code and the codes referenced in case of emergency where necessary to eliminate an immediate hazard to life or property. The department shall notify the local gas utility company, and wherever possible the owner and occupant of the building, structure or service system of the decision to disconnect prior to taking such action.



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ARTICLE 201: GENERAL

NYC Administrative Code § 28-201.1

§ 28-201.1 Unlawful acts.

It shall be unlawful to erect, construct, alter, extend, repair, fail to maintain, move, remove, demolish, occupy, use or operate any building, structure, premises, or equipment, or to conduct any subject matter regulated by this code or by the zoning resolution, or to cause same to be done, in conflict with or in violation of any of the provisions of this code, the zoning resolution, or the rules of the department or, with regard to existing buildings, any applicable provision of the 1968 building code or any other law or rule enforced by the department. It shall be unlawful to fail to comply with an order of the commissioner or to violate any order of the commissioner issued pursuant to this code, the 1968 building code, the zoning resolution or any law or rule enforced by the department.



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NYC Administrative Code § 28-201.2

§ 28-201.2 Classification of violations.

The commissioner shall promulgate rules classifying all violations of this code, the zoning resolution or, with regard to existing buildings, the 1968 building code or other laws or rules enforced by the department as immediately hazardous violations, major violations or lesser violations unless the classification of such violations is specifically directed by this code. Such classification shall be based on the effect of the violation on life, health, safety or the public interest or the necessity for economic dis-incentive.



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NYC Administrative Code § 28-201.2.1

§ 28-201.2.1 Specified immediately hazardous violations.

The commissioner shall classify the following violations as immediately hazardous:

1. A violation of section 28-210.1 in which a building legally approved for occupancy as a one-family or two-family dwelling (as set forth in the certificate of occupancy or if no certificate of occupancy is required, as evidenced by official records) is illegally converted to or maintained as a dwelling for occupancy by four or more families;

2. Any violation of section 28-211.1 false statement;

3. Any violation of a stop work order or of a cease use order;

4. Any violation of a vacate order or order to seal, secure and close, or closure order;

5. Unlawful demolition;

6. Falsely impersonating an employee or authorized representative of the department;

7. Occupancy without a required certificate of occupancy;

8. Intentional disobedience or violation of any provision of a closure order;

9. Submittal of a materially false or misleading professional certification.

10. A violation of section 28-212.11.

11. A violation of section 28-307.1.

12. A violation by a licensed rigger or person performing the functions and duties of a licensed rigger of the

provisions of sections 28-404.1 or 28-401.9 of this code or such person's failure to ensure that workers have certificates of fitness required pursuant to this code or applicable rule or any person's violation of the provisions of section 3314.4.3.1 of the New York city building code.

13. A violation of any provision of chapter 4 of this title for engaging in any business or occupation without a required license or other authorization.

14. Any person who knowingly permits or causes a violation of paragraph 3314.4.5 or paragraph 3314.4.6 of subdivision 3314.4 of section BC 3314 of the building code.

15. A violation of sections 3303.4.5 and 3303.4.6 of the building code.



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NYC Administrative Code § 28-201.2.2

§ 28-201.2.2 Specified major violations.

The commissioner shall classify the following violations as major violations:

1. A violation of section 28-210.1 or 28-210.2 other than a violation that is directed to be classified as immediately hazardous.
2. Failure to perform required facade, retaining wall, elevator and boiler inspections, structural inspections of buildings and structures that are potentially compromised as defined in section 28-216.12, and to file required reports within the applicable time period.
3. Failure to provide the notice required by section 24-234.1.1. of the New York city building code.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 11, eff. July 1, 2008.
28-201.2.1 item 12 amended L.L. 46/2008 § 3, eff. Dec. 21, 2008.
28-201.2.1 items 12, 13 added L.L. 8/2008 § 18, eff. July 1, 2008.
28-201.2.1 item 14 added L.L. 24/2008 § 6, eff. July 1, 2008.
28-201.2.1 item 15 added L.L. 34/2008 § 1, eff. Aug. 12, 2008.
28-201.2.2 item 1 amended L.L. 37/2007 § 5, eff. July 1, 2008.
28-201.2.2 item 2 amended L.L. 37/2008 § 2, eff. Feb. 8, 2009.
28-201.2.2 item 2 amended L.L. 33/2008 § 2, eff. Feb. 8, 2009.
28-201.2.2 item 3 added L.L. 8/2008 § 19, eff. July 1, 2008.



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NYC Administrative Code § 28-201.3

§ 28-201.3 Methods of enforcement.

The commissioner may use any of the methods set forth in this code to enforce compliance with this code, the 1968 building code, the zoning resolution, other laws or rules enforced by the department and orders of the commissioner issued pursuant thereto including but not limited to:

1. Proceedings for the recovery of civil penalties for immediately hazardous, major and lesser violations before the environmental control board or other administrative tribunal.
2. Civil judicial proceedings for the recovery of civil penalties or injunctive relief or both for immediately hazardous, major and lesser violations.
3. Criminal judicial proceedings for the imposition of criminal fines or imprisonment or both for immediately hazardous, major and lesser violations.
4. The issuance and enforcement of peremptory orders for immediately hazardous, major and lesser violations.
5. The issuance of a commissioner's request for correction of an unlawful use or condition or order to correct an unlawful use or condition.
6. Other special remedies as set forth in this code, the zoning resolution or other law or rule.



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NYC Administrative Code § 28-201.3.1

§ 28-201.3.1 Issuance.

Officers and employees of the department and of other city agencies designated by the commissioner shall have the power to issue summonses, appearance tickets and notices of violation for violations of this code, the 1968 building code, the zoning resolution or other laws or rules enforced by the department, orders, and requests for corrective action.



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ARTICLE 201: GENERAL

NYC Administrative Code § 28-201.4

§ 28-201.4 Aggravating and mitigating factors.

Civil penalties and criminal fines and imprisonment shall be imposed within the ranges set forth in this code or as otherwise specified in this code or other law, with due regard for mitigating and aggravating factors.



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ARTICLE 202: CIVIL PENALTIES

NYC Administrative Code § 28-202.1

§ 28-202.1 Civil penalties.

Except as otherwise specified in this code or other law, violations of this code, the 1968 building code, the zoning resolution or other laws or rules enforced by the department shall be punishable by civil penalties within the ranges set forth below:

1. For immediately hazardous violations, a civil penalty of not less than one thousand dollars nor more than twenty-five thousand dollars may be imposed for each violation. In addition to such civil penalty, a separate additional penalty may be imposed of not more than one thousand dollars for each day that the violation is not corrected. The commissioner may by rule establish specified daily penalties within the limit set forth above for particular immediately hazardous violations.
2. For major violations, a civil penalty of not more than ten thousand dollars may be imposed for each violation. In addition to such civil penalty, a separate additional penalty may be imposed of not more than two hundred fifty dollars for each month that the violation is not corrected. The commissioner may by rule establish specified monthly penalties within the limit set forth above for particular major violations.
3. For lesser violations, a civil penalty of not more than five hundred dollars may be imposed for each violation.



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ARTICLE 202: CIVIL PENALTIES

NYC Administrative Code § 28-202.2

§ 28-202.2 Continuing violations.

Notwithstanding the assessment of daily penalties, each day that a violation continues shall be a separate and distinct offense.



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ARTICLE 203: CRIMINAL PENALTIES

NYC Administrative Code § 28-203.1

§ 28-203.1 Criminal fines and imprisonment.

Except as otherwise specified in this code or other law, violations of this code, the 1968 building code, the zoning resolution or other laws or rules enforced by the department shall be punishable by criminal fines and imprisonment within the ranges set forth below:

1. Every person convicted of violating a provision of this code, the 1968 building code, the zoning resolution or other law or rule enforced by the department or an order of the commissioner issued pursuant thereto that is classified by the commissioner or the code as an immediately hazardous violation shall be guilty of a misdemeanor punishable by a fine of not more than twenty-five thousand dollars or by imprisonment of not more than one year or by both such fine and imprisonment.
2. Every person convicted of violating a provision of this code, the 1968 building code, the zoning resolution or other law or rule enforced by the department or an order of the commissioner issued pursuant thereto that is classified by the commissioner or the code as a major violation shall be guilty of a violation punishable by a fine of not more than ten thousand dollars or imprisonment for not more than 15 days or both such fine and imprisonment.
3. Every person convicted of violating a provision of this code, the zoning resolution or other law or rule enforced by the department or an order of the commissioner issued pursuant thereto that is classified by the commissioner or the code as a lesser violation shall be guilty of a violation punishable by a fine of not more than five hundred dollars.



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ARTICLE 203: CRIMINAL PENALTIES

NYC Administrative Code § 28-203.2

§ 28-203.2 Continuing violations.

In the case of continuing violations each day's continuance shall be a separate and distinct offense.



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NYC Administrative Code § 28-204.1

§ 28-204.1 General.

Any person who shall violate or fail to comply with any of the provisions of this code, the 1968 building code, the zoning resolution or other laws or rules enforced by the department or with any order issued pursuant thereto shall be liable for a civil penalty that may be recovered in a proceeding before the environmental control board. Such proceeding shall be commenced by the service of a notice of violation returnable before the board. Such notice of violation may be issued by employees of the department or of other city agencies designated by the commissioner and may be served by such employees or by a licensed process server.



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NYC Administrative Code § 28-204.2

§ 28-204.2 Order to certify correction.

Each such notice of violation shall contain an order of the commissioner directing the respondent to correct the condition constituting the violation and to file with the department electronically or in such other manner as the department may authorize by rule a certification that the condition has been corrected. Unless otherwise provided by rule, such order shall require that violations classified as major or lesser be corrected within 30 days from the date of the order, that violations classified as immediately hazardous be corrected forthwith. Such order shall also require that certification of the correction of the violation shall be filed with the department in a manner and form and within such period of time as shall be established by the department. In any proceeding before the environmental control board, no civil penalty shall be imposed for a lesser violation if the respondent complies with the commissioner's order to correct and to certify correction of the violation within the applicable time period. However, such violation may serve as a predicate for purposes of assessing aggravating factors attributable to multiple offenses.

HISTORICAL NOTES:

Section amended L.L. 34/2008 § 2, eff. Aug. 12, 2008.

Section added L.L. 33/2007 § 11, eff. July 1, 2008.



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NYC Administrative Code § 28-204.3

§ 28-204.3 Failure of proof.

In any proceeding before the environmental control board, if the board finds that the commissioner has failed to prove the violation charged, the order requiring the respondent to correct the condition constituting the violation shall be deemed dismissed.



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NYC Administrative Code § 28-204.4

§ 28-204.4 Failure to certify the correction of a violation.

Failure to comply with an order of the commissioner issued pursuant to section 28-204.2 to correct and to certify correction of a violation within the applicable time period shall be a violation of this code for which penalties may be imposed in addition to the penalties that may be or have been imposed for the violation referred to in such order. Upon application, for good cause, the commissioner may extend the time for filing the certification of correction of a violation, but not for more than 30 days for each extension.



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NYC Administrative Code § 28-204.5

§ 28-204.5 False statements in certification of correction.

For the purposes of this section 28-204.5, if the environmental control board finds that a certification of correction filed pursuant to section 28-204.2 contained material false statements relating to the correction of a violation, such certification of correction shall be null and void and the penalties set forth in this code for the violation may be imposed as if such false certification had not been filed with and accepted by the department. It shall be an affirmative defense that the respondent neither knew nor should have known that such statements were false.



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NYC Administrative Code § 28-204.6

§ 28-204.6 Tax lien.

Enforcement of environmental control board judgments against owners for certain building code violations.

Notwithstanding any provision of law to the contrary, an environmental control board judgment against an owner for a building code violation with respect to a private dwelling, a wooden-framed single room occupancy multiple dwelling, or a dwelling with a legal occupancy of three or fewer dwelling units shall constitute a tax lien on the property named in the violation with respect to which such judgment was rendered, as hereinafter provided. Such liens shall be entered and enforced as provided in this section 28-204.6.



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NYC Administrative Code § 28-204.6.1

§ 28-204.6.1 Record of unpaid judgments.

There shall be filed in the office of the department a record of all such unpaid judgments. Such records shall be kept by tax lot and block number and shall be accessible to the public during business hours. An entry of a judgment on the records of the department shall constitute notice to all parties.



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NYC Administrative Code § 28-204.6.2

§ 28-204.6.2 Lien.

All such unpaid judgments shall constitute a lien upon the property named in the violation with respect to which such judgment was rendered when the amount shall have been definitely computed as a statement of account by the department, and the department shall file such statement with the department of finance for entry against the property. Such lien shall have a priority over all other liens and encumbrances except for the lien of taxes and assessments. However, no lien created pursuant to this section 28-204.6 shall be enforced against a subsequent purchaser in good faith or mortgagee in good faith unless the requirements of section 28-204.6.1 are satisfied.



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NYC Administrative Code § 28-204.6.3

§ 28-204.6.3 Notice.

A notice, stating the amount due and the nature of the charge, shall be mailed by the department of finance to the last known address of the person whose name appears on the records of the department as being the owner or agent of the property or as the person designated by the owner to receive tax bills or, where no name appears, to the property, addressed to either the "owner" or the "agent."



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NYC Administrative Code § 28-204.6.4

§ 28-204.6.4 Mailing.

Such notice mailed by the department of finance pursuant to this section 28-204.6.4 shall have stamped or printed thereon a reference to section 204.6.



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NYC Administrative Code § 28-204.6.5

§ 28-204.6.5 Failure to pay charge.

If such charge is not paid within 30 days from the date of entry, it shall be the duty of the department of finance to receive interest thereon at the same rate as unpaid real property taxes, to be calculated to the date of payment from the date of entry.



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NYC Administrative Code § 28-204.6.6

§ 28-204.6.6 Enforcement of lien.

Such charge and the interest thereon shall continue to be, until paid, a lien on the property. Any remedy or procedure available for the enforcement of tax liens against such property, including, but not limited to, any sale of a tax lien or any foreclosure of a tax lien, shall be available with respect to such tax lien. In addition, such tax lien may be satisfied in accordance with the provisions of section 1354 of the real property actions and proceedings law.



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NYC Administrative Code § 28-204.6.7

§ 28-204.6.7 Validity of lien.

In any proceeding to enforce or discharge a lien created pursuant to this section 28-204.6, the validity of the lien shall not be subject to challenge based on the lawfulness of the judgment, except as provided in this section 28-204.6.



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NYC Administrative Code § 28-204.6.8

§ 28-204.6.8 Challenge.

No such challenge may be made except by the owner of the property or a mortgagee or lienor whose mortgage or lien would, but for the provisions of this section 28-204.6, have priority over the department's lien.



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NYC Administrative Code § 28-204.6.9

§ 28-204.6.9 Notice to mortgagees and lienors.

Notwithstanding the foregoing provisions, no such judgment shall be entered and enforced as a tax lien against any property unless at the time of the issuance of the notice of violation a copy of such notice was also served on all mortgagees and lienors of record of such property by mail addressed to the recorded addresses of such mortgagees and lienors.



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NYC Administrative Code § 28-204.6.10

§ 28-204.6.10 Non-exclusive remedy.

The procedures provided in this section 28-204.6 for the enforcement of environmental control board judgments against owners shall be in addition to any other methods provided under any other provision of law for the enforcement of such judgments.



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ARTICLE 205: CIVIL JUDICIAL PROCEEDINGS

NYC Administrative Code § 28-205.1

§ 28-205.1 Civil judicial enforcement.

The owner, lessee, person in charge, or occupant of any building, structure, premises, equipment or part thereof, where a violation of this code, the 1968 building code, the zoning resolution or of other laws or rules enforced by the department or any order issued by the commissioner shall exist or the agent, architect, builder, contractor, engineer, or any other person who commits or assists in any such violation or who maintains any building, structure, premises, equipment or part thereof where any such violation shall exist shall be subject to an action or proceeding to restrain, correct or abate such violation, or to compel compliance with such order. Upon request of the commissioner, the corporation counsel may institute judicial actions or proceedings seeking such relief. In addition to any other remedies, in any such action or proceeding the defendant or respondent shall be subject to the payment of civil penalties as provided in this code.



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ARTICLE 205: CIVIL JUDICIAL PROCEEDINGS

NYC Administrative Code § 28-205.1.1

§ 28-205.1.1 Corporation counsel.

Such actions and proceedings may be instituted by the corporation counsel in the name of the city in any court of competent jurisdiction in the city and shall be given preference over pending causes therein. In such actions or proceedings, the city may apply for restraining orders, preliminary injunctions or other provisional remedies, with or without notice; and no undertakings shall be required as a condition to the granting or issuing of any such order, injunction or remedy, or by reason thereof. No court shall lose jurisdiction of any action or proceeding hereunder by reason of a plea that the title to real estate is involved if the object of the action is to recover a penalty for the violation of any of the provisions of this code.



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ARTICLE 205: CIVIL JUDICIAL PROCEEDINGS

NYC Administrative Code § 28-205.1.1.1

§ 28-205.1.1.1 Naming the building as a defendant.

The corporation counsel shall name as defendants the building, structure, or premises where the violation shall exist by describing it by block, lot number, and street address and at least one of the owners of some part of or interest in the building, structure, or premises.



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NYC Administrative Code § 28-205.1.1.2

§ 28-205.1.1.2 In rem jurisdiction over the building.

In rem jurisdiction over the building, structure, or premises where the violation shall exist shall be complete by affixing the summons to the door of the building, structure, or premises and by mailing the summons by certified or registered mail, return receipt requested, to one of the owners of some part of or interest in the building, structure, or premises. Proof of service shall be filed within two days thereafter with the clerk of the court designated in the summons. Service shall be complete upon such filing.



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NYC Administrative Code § 28-205.1.1.3

§ 28-205.1.1.3 Service on other defendants.

Defendants, other than the building, structure, or premises where the violation shall exist, shall be served with the summons as provided in the civil practice law and rules.



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NYC Administrative Code § 28-205.1.2

§ 28-205.1.2 Presumptive evidence.

In any action or proceeding founded upon a claim by the commissioner that any law or rule enforceable by the department has been violated, or that a lawful order issued by such commissioner has not been complied with, the following presumptions shall apply:



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NYC Administrative Code § 28-205.1.2.1

§ 28-205.1.2.1 Presumption of commissioner certificate.

A certificate in writing by the commissioner, or his or her authorized representative, shall be presumptive evidence of any matter stated therein.



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NYC Administrative Code § 28-205.1.2.2

§ 28-205.1.2.2 Presumption of ownership.

The person in whose name the real estate affected by the action is recorded in the office of the city register or the county clerk, as applicable, shall be presumed to be the owner thereof.



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NYC Administrative Code § 28-205.1.2.3

§ 28-205.1.2.3 Presumption of employment or agency.

Whenever there is evidence that a person was the manager, operator, or supervisor or, in any other way, in charge of the premises, at the time the violation occurred, such evidence shall be presumptive that he or she was an agent or employee of the owner or lessee of the building, structure, or premises.



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NYC Administrative Code § 28-205.1.3

§ 28-205.1.3 Costs.

In no case shall the department, or any officer or employee thereof, be liable for costs in any such action or proceeding; and officers and employees of the department, acting in good faith and without malice, shall be free from liability for acts done in any such action or proceeding.



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NYC Administrative Code § 28-205.1.4

§ 28-205.1.4 Lien.

Any judgment rendered in any such action or proceeding shall be and become a lien upon the premises named in the complaint in such action or proceeding, if any, the lien to date from the time of filing a notice of pendency in the office of the clerk of the county in which the premises is located, and to have priority before any mortgage or other lien existing prior to such filing, except tax and assessment liens.



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NYC Administrative Code § 28-205.1.5

§ 28-205.1.5 Notice of pendency.

The notice of pendency referred to in this section 28-205.1.5 may be filed at the commencement of judicial proceedings; provided the commissioner may deem such action to be necessary. Any notice of pendency filed pursuant to the provisions of this code may be vacated and cancelled of record upon an order of a justice of the court in which such action or proceeding was instituted or is pending, or upon the consent in writing of the corporation counsel. The clerk of the county where the notice is filed is hereby directed and required to mark any such notice of pendency, and any record or docket thereof, as vacated and cancelled of record upon the presentation and filing of a certified copy of such order or consent.



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ARTICLE 206: CRIMINAL JUDICIAL PROCEEDINGS

NYC Administrative Code § 28-206.1

§ 28-206.1 Criminal judicial enforcement.

The owner, lessee, person in charge, or occupant of any building, structure, premises, equipment or part thereof, where a violation of this code, the 1968 building code, the zoning resolution or of other laws or rules enforced by the department or any order issued by the commissioner shall exist or the agent, architect, builder, contractor, engineer, or any other person who commits or knowingly assists in any such violation or who maintains any building, structure, premises, equipment or part thereof where any such violation shall exist shall be guilty of a criminal offense punishable by a fine or imprisonment or both a fine and imprisonment in accordance with this code.



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ARTICLE 206: CRIMINAL JUDICIAL PROCEEDINGS

NYC Administrative Code § 28-206.1.1

§ 28-206.1.1 Other penalties.

The criminal penalties provided by this code shall be in addition to or alternative to any civil sanctions authorized to be imposed for an unlawful use or condition cited in this code.



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ARTICLE 207: PEREMPTORY ORDERS

NYC Administrative Code § 28-207.1

§ 28-207.1 Contents and service.

Peremptory orders issued by the commissioner shall contain a description of the building, structure, premises, equipment or subject matter affected, and shall be designated by address where applicable. Such orders may be served personally or by posting at the premises followed by regular mail, by any officer or employee of the department, or by any person authorized by the commissioner.



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NYC Administrative Code § 28-207.2

§ 28-207.2 Stop work orders.

Whenever the commissioner finds that any building work is being executed in violation of the provisions of this code, the 1968 building code, the zoning resolution or of any laws or rules enforced by the department, or in a dangerous or unsafe manner, the commissioner or his or her authorized representative may issue a stop work order.



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NYC Administrative Code § 28-207.2.1

§ 28-207.2.1 Issuance.

Upon issuance of a stop work order by the commissioner, all work shall immediately stop unless otherwise specified. Such order may require all persons to forthwith vacate the premises pursuant to the provisions of section 28-207.4 and may also require such work to be done as, in the opinion of the commissioner, may be necessary to remove any danger therefrom. The police department or other law enforcement agency or officer shall, upon the request of the commissioner, assist the department in the enforcement of this section 28-207.2. The stop work order may be given verbally or in writing to the owner, lessee or occupant of the property involved, or to the agent of any of them, or to the person or persons executing the work. A verbal order shall be followed promptly by a written order and shall include the reason for the issuance of the stop work order.



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NYC Administrative Code § 28-207.2.2

§ 28-207.2.2 Unlawful continuance.

No person shall with knowledge or notice of a stop work order allow, authorize, promote, continue or cause to be continued any work covered by the stop work order, except such work that may be required by order of the commissioner.



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NYC Administrative Code § 28-207.2.3

§ 28-207.2.3 Rescission.

Upon application, the commissioner shall rescind the stop work order when the condition that gave rise to its issuance has been corrected and either all civil penalties or criminal fines assessed for any violation of such order have been paid or, where a violation is pending, security for the payment of such penalties or fines has been posted in accordance with department rules, or where the stop work order was issued in error or conditions are such that it should not have been issued. The commissioner may by rule require the payment of a fee in the amount of the expense of additional inspection and administrative expense related to such stop work order.



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NYC Administrative Code § 28-207.2.4

§ 28-207.2.4 Mandatory stop work orders.

The commissioner shall issue stop work orders in the circumstances set forth below. Upon issuance of such stop work order, the work shall immediately stop and shall not resume until the stop work order is rescinded by the department. The stop work order shall not be rescinded less than two business days after the date of issuance of such order. Nothing in the following sections shall be construed to limit the commissioner's power to issue stop work orders in other circumstances.



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NYC Administrative Code § 28-207.2.4.1

§ 28-207.2.4.1 Scaffold safety.

A stop work order shall be issued if a permit holder or person directly in charge of any suspended scaffold supported by c-hooks or outrigger beams fails to notify the department prior to the installation or use of such equipment as required by section 3314.1.1 of the New York city Building code and either:

1. The rigger does not hold a license required by this code, or
2. The workers lack certificates of fitness as required by this code or applicable rule, or
3. The rigger failed to file with the department satisfactory evidence of insurance required by this code.



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NYC Administrative Code § 28-207.2.5

§ 28-207.2.5 Penalties.

In addition to the penalties provided for in this chapter, any person who fails to comply with a stop work order shall be liable for a civil penalty in the amount of five thousand dollars for the initial violation and ten thousand dollars for every subsequent violation, to be paid to the department prior to the rescission of the stop work order; provided, however, this shall not apply to any work performed to remedy an unsafe or hazardous condition as authorized by order of the commissioner.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 11, eff. July 1, 2008.
28-207.2.4 added L.L. 8/2008 § 20, eff. July 1, 2008.
28-207.2.5 added L.L. 34/2008 § 3, eff. Aug. 12, 2008.



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NYC Administrative Code § 28-207.3

§ 28-207.3 Public nuisance.

Whenever any building, structure, place or premises is or may be perilous to life or property by reason of the nature or condition of its contents, its use, the overcrowding of persons therein, defects in its construction, or deficiencies in fire alarm, fire extinguishing equipment or fire escape equipment, or by reason of any condition in violation of law or order of the commissioner, the commissioner may declare that the same, to the extent that the commissioner may specify, is a public nuisance and may order the same to be removed, sealed, abated, repaired, altered or otherwise improved.



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NYC Administrative Code § 28-207.3.1

§ 28-207.3.1 Rescission.

Upon application, the commissioner shall rescind such order when the condition that gave rise to its issuance has been corrected or where the declaration was issued in error or conditions are such that it should not have been issued. The commissioner may by rule require the payment of a fee in the amount of the expense of additional inspection and administrative expense related to such order.



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NYC Administrative Code § 28-207.4

§ 28-207.4 Vacate order.

In case any order to remedy a condition that is or may be imminently perilous, dangerous or detrimental to life, public safety or property, issued by the commissioner is not complied with, or the commissioner determines that an emergency exists requiring such action, the commissioner may order and immediately cause any building, structure, place or premises to be vacated. The vacate order may be given verbally or in writing to the owner, lessee or occupant of the property involved, or to the agent of any of them, or to the person or persons executing the work. A verbal order shall be followed promptly by a written order and shall include the reason for the issuance of the vacate order.



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NYC Administrative Code § 28-207.4.1

§ 28-207.4.1 Basis for vacate.

Conditions for which the commissioner may issue a vacate order shall include but shall not be limited to the following conditions that create a hazard to life, public safety, or property:

1. Danger of structural failure;
2. Danger of faade failure;
3. Inadequate fire protection, detection, or suppression;
4. Inadequate egress; or
5. Improper storage of hazardous materials, combustible or toxic.



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NYC Administrative Code § 28-207.4.2

§ 28-207.4.2 Enforcement of vacate order.

All orders issued pursuant to this section 28-207.4 shall be posted upon the premises and made available to the public. Immediately upon the posting of an order upon the premises, officers and employees of the police department, the department, and other authorized officers and employees of the city shall immediately act upon and enforce such order. The police department shall provide all reasonable assistance to the department and other authorized officers and employees necessary to carry out the provisions of this section 28-207.4. A copy of the vacate order shall be filed with the county clerk of the county in which the premises is located. Such filing shall be notice of the vacate order to any subsequent owner and such owner shall be subject to such order.



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NYC Administrative Code § 28-207.4.3

§ 28-207.4.3 Rescission.

Upon application, the commissioner shall rescind the vacate order when the condition that gave rise to its issuance has been corrected and either all civil penalties or criminal fines assessed for any violation of such order have been paid or, where a violation is pending, security for the payment of such penalties or fines has been posted in accordance with department rules, or where the vacate order was issued in error or conditions are such that it should not have been issued. The commissioner may by rule require the payment of a fee in the amount of the expense of additional inspection and administrative expense related to such vacate order.



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NYC Administrative Code § 28-207.5

§ 28-207.5 Cease use orders for service equipment.

Whenever the commissioner determines that the operation of any service equipment is or may be dangerous to life, health or safety, the commissioner may issue a cease use order requiring such equipment to be shut down or sealed or otherwise made inoperable. Upon the issuance of such order a tag or notice shall be affixed to the device warning that the equipment is unsafe for operation. It shall be unlawful to operate such equipment or to remove or deface such tag unless and until the cease use order is rescinded by the commissioner.



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ARTICLE 207: PEREMPTORY ORDERS

NYC Administrative Code § 28-207.5.1

§ 28-207.5.1 Rescission of cease use order.

Upon application, the commissioner shall rescind the cease use order when the condition that gave rise to its issuance has been corrected and either all civil penalties or criminal fines assessed for any violation of such order have been paid or, where a violation is pending, security for the payment of such penalties or fines has been posted in accordance with department rules or where the cease use order was issued in error or conditions are such that it should not have been issued.. The commissioner may by rule require the payment of a fee in the amount of the expense of additional inspection and administrative expense related to such cease use order.



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ARTICLE 208: COMMISSIONER'S REQUEST FOR CORRECTIVE ACTION

NYC Administrative Code § 28-208.1

§ 28-208.1 Commissioner's request for corrective action.

As an alternative to the issuance of an order or notice of violation, the commissioner may issue a request for corrective action to any person responsible for any claimed unlawful use or condition in any premises. Each request for corrective action shall have the commissioner's signature affixed thereto; but the commissioner may authorize any subordinate to affix such signature, including an electronic signature.



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ARTICLE 208: COMMISSIONER'S REQUEST FOR CORRECTIVE ACTION

NYC Administrative Code § 28-208.1.1

§ 28-208.1.1 Contents and delivery.

The request for corrective action shall contain a description of the building, structure, premises, equipment or subject matter affected, shall be designated by address, where applicable, shall be sent by regular mail or upon consent by electronic means to the owner, lessee, person in charge, or occupant of the building, structure, premises, equipment or to any person responsible for the unlawful use or condition at the last known address for such person. Requests for corrective action may be sent to a managing agent or other person specifically designated by the owner to attend to such requests on behalf of the owner. Each such request shall describe the unlawful use or condition, call upon the person addressed to correct it and to inform the department of the action taken. A time for correction or response shall be specified. A request for corrective action may be given orally, followed within a reasonable time by a writing as described in this section 28-208.1.1. A request for corrective action shall provide notice that failure to respond to such a request may result in the imposition of a fee for any subsequent inspection that results in the issuance of a notice of violation for the condition.



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NYC Administrative Code § 28-208.1.2

§ 28-208.1.2 Public record.

The department shall keep a record, available to the public, of requests for corrective action issued pursuant to this article. The record of a request for corrective action shall be reflected as withdrawn upon submission to the department of a statement in a form prescribed by rule indicating that the use or condition has been corrected or did not exist or following an inspection by the department that confirms correction. A request for corrective action may be issued in response to a complaint or inspection.



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NYC Administrative Code § 28-208.1.3

§ 28-208.1.3 Other remedies not precluded.

Nothing in this article shall be construed to limit the power of the commissioner to take any other action authorized by this code with respect to any unlawful use or condition including, but not limited to, the commencement of an action or proceeding in a court or before the environmental control board or other administrative tribunal or the issuance of a peremptory order or to require that the commissioner issue a request for corrective action as a prerequisite to any other enforcement action.



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ARTICLE 209: COMMISSIONER'S ORDER TO CORRECT UNLAWFUL USE OR CONDITION

NYC Administrative Code § 28-209.1

§ 28-209.1 General.

The commissioner may issue an order to the persons responsible for any unlawful use or condition in any premises directing such person to correct the unlawful use or condition. Each such order shall have the commissioner's signature affixed thereto; but the commissioner may authorize any subordinate to affix such signature, including an electronic signature.



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ARTICLE 209: COMMISSIONER'S ORDER TO CORRECT UNLAWFUL USE OR CONDITION

NYC Administrative Code § 28-209.2

§ 28-209.2 Contents and service of order.

All orders issued by the commissioner shall contain a description of the building, structure, premises, equipment or subject matter affected, and shall be designated by address where applicable. All such orders shall be served by regular mail or, upon consent, electronically. Such orders may be served by any officer or employee of the department, or by any person authorized by the commissioner. An order may be given orally, followed within a reasonable time by a written order as described in this section 28-209.2. Failure to comply with a commissioner's order within the stated time period shall be a violation of this code punishable by civil penalties or criminal fines and imprisonment as set forth in this code. Proof of compliance with a commissioner's order shall consist of certification as prescribed by the rules of the department.



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ARTICLE 210: ILLEGAL CONVERSIONS

NYC Administrative Code § 28-210.1

§ 28-210.1 Illegal residential conversions.

It shall be unlawful, except in accordance with all requirements of this code, to convert any dwelling for occupancy by more than the legally authorized number of families or to assist, take part in, maintain or permit the maintenance of such conversion. Upon the finding of such violation and the imposition of punishment for such violation as set forth in this code the department or if applicable the environmental control board shall forward to the internal revenue service, the New York state department of taxation and finance and the New York city department of finance the name and address of the respondent or defendant, the address of the building or structure with respect to which the violation occurred and the time period during which the violation was found to have existed.



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NYC Administrative Code § 28-210.2

§ 28-210.2 Illegal industrial or manufacturing conversions.

Except as otherwise provided by section 42-03 of the zoning resolution and the multiple dwelling law, it shall be unlawful, except in accordance with all requirements of this code, to convert to residential use any space legally authorized for occupancy for industrial or manufacturing use or to assist, take part in, maintain or permit the maintenance of such conversion. Upon the finding of such violation and the imposition of punishment for such violation as set forth in this code the department, or, if applicable, the environmental control board shall forward to the internal revenue service, the New York state department of taxation and finance and the New York city department of finance the name and address of the respondent or defendant, the address of the building or structure with respect to which the violation occurred and the time period during which the violation was found to have existed.

HISTORICAL NOTES:

Section added L.L. 37/2007 § 6, eff. July 1, 2008.



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ARTICLE 211: FALSE STATEMENTS

NYC Administrative Code § 28-211.1

§ 28-211.1 False statements in certificates, forms, written statements, applications, reports or certificates of correction.

It shall be unlawful for any person to make a material false statement in any certificate, professional certification, form, signed statement, application, report or certification of the correction of a violation required under the provisions of this code or any rule of any agency promulgated thereunder that such person knew or should have known to be false.



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NYC Administrative Code § 28-211.1.1

§ 28-211.1.1 Rebuttable presumption.

In any proceeding that relates to a false statement in a certification of correction of a violation filed in compliance with section 28-204.2 if an inspection made within six months after the filing of the certification finds a condition constituting a violation that is the same as the condition described in the notice of violation with respect to which such certification was filed, there shall be a rebuttable presumption that the condition described in such notice of violation continued and is the same condition found in the inspection.



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NYC Administrative Code § 28-211.1.2

§ 28-211.1.2 Additional penalty for false statements.

In addition to any other penalty provided by law, the commissioner may refuse to accept an application or other document submitted pursuant to or in satisfaction of a requirement of this code or of a rule of any agency promulgated thereunder that bears the signature of a person who has been found, after a hearing at the office of administrative trials and hearings pursuant to the department's rules, to have knowingly or negligently made a false statement or to have knowingly or negligently falsified or allowed to be falsified any certificate, form, signed statement, application, report or certification of the correction of a violation required under the provisions of this code or of a rule of any agency promulgated thereunder.

HISTORICAL NOTES:

Section added L.L. 33/2007 § 11, eff. July 1, 2008.
28-211.1.2 added L.L. 8/2008 § 21, eff. July 1, 2008.



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NYC Administrative Code § 28-211.2

§ 28-211.2 Falsely impersonating an officer.

It shall be unlawful for any person to falsely represent himself or herself as an officer, inspector or employee of the department, or as acting under the authority of the department, or without authority to use, wear or display a shield or other insignia or emblem such as is worn by such officer, inspector or employee.



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ARTICLE 212: ABATEMENT OF PUBLIC NUISANCE CAUSED BY CERTAIN ILLEGAL OCCUPANCIES

NYC Administrative Code § 28-212.1

§ 28-212.1 Abatement of public nuisances caused by illegal commercial or manufacturing occupancy in residence districts and certain other zoning districts.

Any building or part thereof or vacant land that is located in a residence zoning district and that is occupied for a use not permitted in such district in violation of the zoning resolution, without a certificate of occupancy authorizing such use, is hereby declared to be a public nuisance. Any building or part thereof or vacant land that is located in a C-1 or C-2 commercial zoning district and that is occupied for a commercial or manufacturing use indicated under use group 16, 17, or 18 as described in sections 32-25, 42-14, and 42-15 of the zoning resolution, in violation of the zoning resolution, without a certificate of occupancy authorizing such use is hereby declared to be a public nuisance.



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NYC Administrative Code § 28-212.2

§ 28-212.2 Order of closure.

If a building or part thereof or vacant land in which such a nuisance occurs is not occupied primarily as a residence, the commissioner may, in addition to or as an alternative to any other remedy under any other provision of law, after notice and the opportunity for a hearing in accordance with this article, order the closing of such building or part thereof or such vacant land to the extent necessary to abate the nuisance.



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NYC Administrative Code § 28-212.3

§ 28-212.3 Notice of hearing.

A notice of hearing with respect to an order of closure shall be served on the owner and mortgagee of record of such building or part thereof or such vacant land and on any person alleged to be occupying such building or part thereof or such vacant land at which the nuisance is located.



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NYC Administrative Code §28-212.4

§ 28-212.4 Service of notice of hearing.

Service may be made on the owner by delivering such notice to the owner or to an agent of the owner or to a person of suitable age and discretion at the residence or place of business of the owner or, if upon reasonable application such delivery cannot be completed, by affixing such notice in a conspicuous place at the owner's place of business or residence or by placing it under the entrance door at either of such locations or by delivering such notice to a person employed by the owner to work at or to manage or maintain the premises at which the nuisance is located and, in all instances except personal delivery upon such owner by mailing the notice of hearing as follows:



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NYC Administrative Code § 28-212.4.1

§ 28-212.4.1 Mailing to owner's registered address.

To the person registered with the department of housing preservation and development as the owner or agent of the premises, at the address filed with such department in compliance with article two of subchapter four of chapter two of title twenty-seven of the administrative code;



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NYC Administrative Code § 28-212.4.2

§ 28-212.4.2 Mailing to billing address.

To the person designated as owner of the building or designated to receive real property tax or water bills for the building at the address for such person contained in one of the files compiled by the department of finance for the purpose of the assessment or collection of real property taxes and water charges or in the file compiled by the department of finance from real property transfer forms filed with the city register upon the sale or transfer of real property; or



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NYC Administrative Code § 28-212.4.3

§ 28-212.4.3 Mailing to recorded address.

To the person in whose name the real estate affected by the order of the commissioner is recorded in the office of the city register or the county clerk as the case may be at the address set forth on the recorded instrument.



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NYC Administrative Code § 28-212.4.4

§ 28-212.4.4 Service on corporate owner.

Service may be made on an owner that is a corporation pursuant to section 306 of the business corporation law; however, service upon a corporation shall be deemed to have been completed 45 days following service upon the secretary of state.



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NYC Administrative Code § 28-212.4.5

§ 28-212.4.5 Service on mortgagees.

Service may be made upon mortgagees of record by mailing such notice to the mortgagees at the address set forth on the recorded instrument.



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NYC Administrative Code § 28-212.4.6

§ 28-212.4.6 Service on occupants.

Service may be made upon an occupant by delivering such notice to the occupant or to a person employed by the occupant to work at or to manage or maintain the premises at which the nuisance is located; or by affixing such notice to the premises at which the nuisance is located in a conspicuous place or by placing a copy under the entrance door of such premises and mailing a copy of such notice to the occupant at such premises; and in all instances except personal delivery upon such occupant, by mailing the notice of hearing to the occupant at the premises at which the nuisance is located.



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NYC Administrative Code § 28-212.4.7

§ 28-212.4.7 Proof of service.

Proof of service pursuant to section 28-212.4.1 through 28-212.4.6 shall be filed with the commissioner.



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NYC Administrative Code § 28-212.5

§ 28-212.5 Conduct of hearing by office of administrative trials and hearings.

The hearing shall be conducted by the office of administrative trials and hearings. The administrative law judge assigned to hear the matter shall submit his or her proposed findings of fact and recommended decision to the commissioner. If based on such recommended decision, proposed findings of fact, and the record of the hearing the commissioner determines that the building or part thereof or vacant land is a public nuisance, pursuant to this article, the commissioner may issue an order of closure. Such order shall not bar legally required ingress or egress for residential occupancy of parts of the building that are not subject to the order of closure.



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NYC Administrative Code § 28-212.6

§ 28-212.6 Lack of knowledge not a defense.

At such hearing it shall not be a defense that the owner, occupant, lessor, lessee, mortgagee, or other person having an interest in the property lacked knowledge of or did not acquiesce or participate in the creation or continuation of the public nuisance.



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NYC Administrative Code § 28-212.7

§ 28-212.7 Closure not an act of possession.

A closure ordered by the commissioner pursuant to this article shall not constitute an act of possession, ownership, or control by the city over the closed premises.



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NYC Administrative Code § 28-212.8

§ 28-212.8 Posting of order of closure.

An order of closure shall be posted at the building or part thereof or vacant land that is the subject of such order, and shall be mailed to the record owner of such premises, and any record mortgagee at the address for such person set forth in the recorded instrument, and to the person designated as owner or agent of the building or designated to receive real property tax or water bills for the building at the address for such person contained in one of the files compiled by the department of finance for the purpose of the assessment or collection of real property taxes and water charges or in the file compiled by the department of finance from real property transfer forms filed with the city register upon the sale or transfer of real property. A copy shall also be filed with county clerk or register of the county in which such premises are located. Such filing shall be notice of the order to any subsequent owner and such owner shall be subject to such order.



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NYC Administrative Code § 28-212.9

§ 28-212.9 Enforcement of order of closure.

On the tenth business day after the posting of such order and upon the written directive of the commissioner, police officers and authorized employees of the department shall act upon and enforce such order by sealing, padlocking, or otherwise preventing access to the premises in a manner that will not bar legally required ingress or egress for residential occupancy of parts of the building that are not subject to the closure order.



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NYC Administrative Code § 28-212.10

§ 28-212.10 Rescission of order of closure.

If at any time after the issuance of such order, the owner, mortgagee, or other person having an interest in the property provides assurance, in a form satisfactory to the commissioner, that the illegal commercial or manufacturing use of the premises has been discontinued and will not reoccur, or such owner, mortgagee, or other person establishes that the premises may be lawfully occupied for such use, the commissioner shall rescind the closure order. If such order is rescinded, the commissioner shall, upon request of such owner, mortgagee, or other person, provide a copy of such rescission, which may be filed with the county clerk or register of the county in which such premises are located. No such re-occupancy shall be permitted without a certificate of occupancy authorizing such use.



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NYC Administrative Code § 28-212.11

§ 28-212.11 Violation of closure order.

It shall be unlawful for any person to use or occupy or to permit any other person to use or occupy any building or part thereof or vacant land that has been sealed, padlocked, or otherwise closed pursuant to an order of the commissioner. It shall be unlawful to mutilate or remove a posted order of the commissioner. Intentional disobedience or violation of any provision of a closure order shall be punishable as an immediately hazardous violation.



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ARTICLE 213: PENALTY FOR WORK WITHOUT A PERMIT

NYC Administrative Code § 28-213.1

§ 28-213.1 Department penalty for work without a permit.

In addition to any penalties otherwise authorized by law pursuant to article 202 and the rules of the department, whenever any work for which a permit is required pursuant to this code has been performed without a permit, a penalty shall be imposed by the department as provided in this article.



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NYC Administrative Code § 28-213.1.1

§ 28-213.1.1 Penalty for work without permit on one or two-family dwelling.

Where work has been performed without a permit on a one-family or two-family dwelling the penalty shall equal four times the amount of the fee payable for the permit. Where only part of the work has been performed without a permit, the penalty shall be reduced proportionately according to the amount of work still to be performed at the time a permit is issued. Notwithstanding the foregoing, no such penalty shall be less than five hundred dollars.



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NYC Administrative Code § 28-213.1.2

§ 28-213.1.2 Penalty for work without permit on other than one or two-family dwelling.

The penalty for work without a permit on buildings other than one or two-family dwellings shall be fourteen times the amount of the fee payable for such permit. Where only part of the work has been performed without a permit, the penalty shall be reduced proportionately according to the amount of work still to be performed at the time a permit is issued. Notwithstanding the foregoing, no such penalty shall be less than five thousand dollars.



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NYC Administrative Code § 28-213.2

§ 28-213.2 Waiver.

Such penalty and the permit fee shall be payable by the owner of the building on which the unpermitted work was performed. A waiver or reduction of such penalty shall be available to a subsequent bona fide purchaser of the premises pursuant to department rules.



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ARTICLE 213: PENALTY FOR WORK WITHOUT A PERMIT

NYC Administrative Code § 28-213.3

§ 28-213.3 Payment of penalty required before issuance of permit.

No permit shall be issued for work described in this article until the penalty assessed by the department pursuant to this article has been paid.



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NYC Administrative Code § 28-213.4

§ 28-213.4 Procedure.

The department shall adopt a rule setting forth a procedure for assessment of penalties pursuant to this article.



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ARTICLE 214: ORDER TO SEAL, SECURE AND CLOSE

NYC Administrative Code § 28-214.1

§ 28-214.1 Order to seal, secure and close.

If the commissioner determines such action is necessary to the preservation of life and safety the commissioner may order a building subject to a vacate order to be sealed, secured and closed, except that the commissioner shall not order sealed, secured and closed any dwelling unit or other space lawfully used for residential purposes unless such dwelling unit or other space is sealed pursuant to the provisions of article 216.



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NYC Administrative Code § 28-214.1.1

§ 28-214.1.1 Definition.

For the purpose of this article, "sealed" and "sealed, secured and closed" shall mean the use of any means available to render the building, structure or part thereof inaccessible, including but not limited to the use of a padlock or cinder blocks.



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NYC Administrative Code § 28-214.1.2

§ 28-214.1.2 Hearing.

Such order to seal, secure and close shall contain notice of the opportunity for a hearing with respect to such order to determine if the order was properly issued in accordance with the provisions of this article. Such hearing shall be conducted by the commissioner, or in the commissioner's discretion, by the office of administrative trials and hearings or the environmental control board. If the matter is referred to such office or board, the hearing officer shall submit his or her findings of fact and a recommended decision to the commissioner. The hearing shall be held within three business days after the receipt of the written request of an owner, lessor, lessee, or mortgagee for such hearing. The commissioner shall render a decision within three business days after such hearing is concluded or findings of fact and a recommendation are submitted.



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NYC Administrative Code § 28-214.1.3

§ 28-214.1.3 Service of seal, secure and close order.

Such order issued pursuant to this article shall be served as follows: It shall be mailed to the record owner of such premises; any record mortgagee of such premises at the address for such person as set forth in the recorded instrument; and if reasonably ascertainable, the person designated as owner's agent of the building or designated to receive real property tax or water bills for the building at the address for such person contained in one of the files compiled by the department of finance for the purpose of the assessment or collection of real property taxes and water charges or in the file compiled by the department of finance from real property transfer forms filed with the city register upon the sale or transfer of real property. A copy shall also be filed with the county clerk of the county in which such premises is located. Such filing shall be notice of the order to any subsequent owner and such owner shall be subject to such order.



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NYC Administrative Code § 28-214.1.4

§ 28-214.1.4 Rescission of seal, secure and close order.

An order issued pursuant to this article shall not be rescinded unless the owner, lessor, lessee or mortgagee seeking such rescission provides assurance, in a form satisfactory to the commissioner, that the conditions that caused the issuance of such order have been corrected and will not reoccur. If such order is rescinded, upon the request of the owner, lessor, lessee or mortgagee, the commissioner shall provide a certified copy of such rescission, which may be filed with the county clerk of the county in which such premises is located.



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NYC Administrative Code § 28-214.1.5

§ 28-214.1.5 Expenses of enforcing seal, secure and close orders.

The expenses attending the execution of any and all orders duly made by the department shall respectively be a several and joint personal charge against each of the owners or part owners, and each of the lessees and occupants of the building, structure, enclosure, place or premises to which such order relates, and in respect to which such expenses were incurred; and also against every person or body who was by law or contract bound to do that in regard to such building, structure, enclosure, place or premises which such order requires. Such expenses shall also be a lien on all rent and compensation due, or to become due, for the use of any building, structure, place or premises, or any part thereof, to which such order relates, and in respect to which such expenses were incurred.



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NYC Administrative Code § 28-214.1.6

§ 28-214.1.6 Notice of seal, secure and close order to community.

The commissioner shall give written notice of the closing of any building, structure, enclosure, place or premises pursuant to this article, and any subsequent actions taken with respect thereto, as soon as practicable, to the borough president of the borough within which the closing has occurred; the council member representing the district within which the closing has occurred; and the local community board. On January first of each year, the commissioner shall submit a report to the council, setting forth the number of closings made in the previous year, the locations of such closings, and the nature and use of the premises closed. The commissioner shall, in addition, as soon as practicable after a building, structure, enclosure, place or premises has been closed, make and publish a report of said closing in a manner calculated to quickly notify the local community in which such closing occurred. The commissioner shall also make and publish a report of any premises reopened pursuant to his or her permission under this article. Failure to comply with this section 28-214.1.6 shall not invalidate any action taken by the commissioner pursuant to this article.



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NYC Administrative Code § 28-214.2

§ 28-214.2 Access to sealed premises.

The commissioner shall allow access to the premises sealed, secured and closed pursuant to this article to an owner, or a lessor, lessee or mortgagee upon the following conditions:

1. The submission of a written affirmation, satisfactory to the commissioner, that such person or persons will commence or cause to be commenced without delay all work necessary to correct the conditions stated in the vacate order or otherwise to make the premises meet all applicable laws and rules and will complete such work within a period of time and in a manner to be approved by the commissioner;
2. The submission of a written affirmation or other proof satisfactory to the commissioner describing the steps that have been taken and will be taken in the future to ensure that the premises will be used or operated in a lawful manner and specifying such lawful use;
3. If a license, permit, certificate of operation or certificate of occupancy is necessary for such lawful use, the submission of a written affirmation or other proof, satisfactory to the commissioner, describing the steps that have been taken and will be taken in the future to ensure that such premises will be used or operated in compliance with any law requiring such license, permit, certificate of operation or certificate of occupancy; and
4. If the premises are leased and the person making the affirmations described above in items 1, 2 and 3 is not such lessee, the commissioner may also require any authorized person seeking access to submit a written affirmation or other proof that proceedings to enable such person to take actions necessary to ensure compliance with the affirmations submitted by such authorized person pursuant to items 1, 2 and 3 have been commenced.



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NYC Administrative Code § 28-214.3

§ 28-214.3 Additional penalties for harm or injury from violation of order to seal, secure and close.

Notwithstanding any other law, rule, or regulation, any person, corporation, partnership, association or any other legal entity who permits a building, structure, enclosure, place or premises, or any part thereof, to be unlawfully occupied or used in contravention of an order of the commissioner pursuant to this article, or who negligently fails to prevent or prohibit such unlawful occupancy or use, shall be liable for a civil penalty of not more than one million dollars, if any other person suffers serious physical injury, as defined in section ten of the penal law, or death in the building, structure, place or premises or any part thereof subject to such order as a result of such unlawful occupancy or use. If more than one person suffers serious physical injury or death, such penalty shall be recoverable for each person suffering serious physical injury or death. Such penalty shall be recovered in a civil action brought by the corporation counsel in the name of the city in any court of competent jurisdiction. In determining the amount of the civil penalty to be imposed the court shall consider:

1. The extent and severity of injury to persons and property caused by the violation;
2. The history of violations by the defendant at such premises, or any other premises, of laws or rules enforced by the department;
3. The degree of willfulness, recklessness, or negligence displayed by the defendant in committing the subject violation;
4. The defendant's financial resources; and
5. The defendant's good faith efforts to cure the subject violation, including efforts to obtain entry to or possession of the premises in order to do so.



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NYC Administrative Code § 28-214.3.1

§ 28-214.3.1 Payment by city.

In the event that the family of any person seriously injured or who has died as the result of any unlawful occupancy or use described in this section 28-214.3 is unable to collect a judgment recovered in a civil action for personal injury or wrongful death against a defendant who has violated this section 28-214.3 because of the insolvency of such defendant, the city may, in its discretion, pay to such injured person or the family of such deceased person an amount, as hereinafter provided, collected from such defendant in an action relating to the same injury or death commenced by the corporation counsel against such defendant pursuant to this section 28-214.3.1.



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NYC Administrative Code § 28-214.3.2

§ 28-214.3.2 Limitations.

Payments pursuant to section 28-214.3.1 shall be made as a matter of grace and shall be in such amounts and in accordance with such standards and procedures as shall be established by the mayor, provided, however, that any payment made pursuant to section 28-214.3.1 shall be in an amount not exceeding out-of-pocket expenses, including indebtedness reasonably incurred for medical or other services necessary as a result of the injury upon which such action is based; loss of earnings or support resulting from such injury; burial expenses not exceeding two thousand five hundred dollars of a person who died as a result of such unlawful occupancy or use described in this section 28-214.3; and the unreimbursed cost of repair or replacement of articles of essential personal property lost, damaged or destroyed as a direct result of such unlawful occupancy or use. In no event shall the payment made to any person exceed the amount of such person's uncollected judgment for personal injury or wrongful death and in no event shall the total amount paid to any number of persons with such uncollected judgments against a single defendant exceed the actual amount collected by the city from such defendant in an action under this subdivision.



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NYC Administrative Code § 28-215.1

§ 28-215.1 Emergency work.

Notwithstanding any other provisions of law, if the commissioner determines that a structure or any part thereof is in imminent danger of collapse and the exigency of the situation is such that any delay may cause further danger to the public safety, then the commissioner may direct the commissioner of housing preservation and development or the department of citywide administrative services, or other city agency to perform or arrange the performance of the emergency demolition of such structure or part thereof or such other work as deemed by the commissioner to make it safe.



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NYC Administrative Code § 28-215.1.1

§ 28-215.1.1 Lien for emergency work.

The expenses of the city in performing emergency work on any structure or part of such structure pursuant to this article shall constitute a debt recoverable from the owner and a lien upon the land and any part of such structure that was not demolished. Every such lien shall have priority over all other liens and encumbrances on the premises except for the lien of taxes and assessments. Except as otherwise provided by rule of the affected agency, the agency incurring such expense shall be governed by the procedures set forth in article eight of subchapter five of the housing maintenance code with respect to the enforcement of such debt and lien against all types of structures, including those authorized to be occupied or otherwise occupied for residential, commercial, and manufacturing purposes.



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NYC Administrative Code § 28-215.2

§ 28-215.2 Stopping work and securing structures.

See section 28-207.2.



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NYC Administrative Code § 28-215.3

§ 28-215.3 Vacating structures.

See section 28-207.4.



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NYC Administrative Code § 28-215.4

§ 28-215.4 Violations of protective measures during construction or demolition.

During the construction or demolition of a structure, the commissioner shall notify the owner of the structure affected of any failure to comply with any of the provisions of this code that concern the protection of the public and workers during construction or demolition. Unless the owner so notified proceeds immediately to comply with the orders of the commissioner, the commissioner shall have full power to correct the violation. All expenses incurred therefore shall become a lien on the property pursuant to section 28-112.9.



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NYC Administrative Code § 28-215.5

§ 28-215.5 Investigation of accidents or other emergency conditions.

When necessary to conduct an investigation of any occurrence affecting building or construction safety, the commissioner may seize or impound equipment, building material, and portions of the affected building or premises for examination and testing. The police department or other authorized law enforcement agency shall cooperate with the commissioner upon request and shall provide a suitable place for the deposit of such items.



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NYC Administrative Code § 28-215.6

§ 28-215.6 Closing streets temporarily.

The commissioner may, when necessary for the public safety, temporarily close the sidewalks, streets, structures or places adjacent to a structure or part thereof, and the police commissioner, or any of his or her subordinates shall enforce all orders or requirements made by the commissioner, when so requested by the commissioner.



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NYC Administrative Code § 28-215.7

§ 28-215.7 Recovery of bodies from wrecked structures.

Where any persons are known or believed to be buried under the ruins of any fallen structure or part thereof in the city, the commissioner shall cause an examination of the premises to be made for the recovery of the injured and bodies of the dead. Whenever, in making such examination, it shall be necessary to remove any debris from the premises, other city agencies shall cooperate with the commissioner in carrying out the purposes of this section 28-215.7, and shall provide suitable and convenient places for the deposit of such debris.



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NYC Administrative Code § 28-215.8

§ 28-215.8 Non-compliance with orders; execution of work by department.

Upon the failure to comply with any order of the commissioner within the time limited thereby, and subject to the provisions of article 216, any work required to be executed by such order may be executed by the commissioner through the officers, agents or contractors of the department; and the city shall be reimbursed promptly for all costs and expenses of such work. Such costs and expenses shall become a lien upon the premises involved and named in the commissioner's order, which may be enforced in accordance with the provisions of section 28-112.9 of this code.



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ARTICLE 216: UNSAFE BUILDINGS

NYC Administrative Code § 28-216.1

§ 28-216.1 Conditions constituting an unsafe building or structure.

Any building, structure or part thereof described in this article shall be deemed an unsafe building and shall be demolished or removed or made safe and secure as provided herein.



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NYC Administrative Code § 28-216.1.1

§ 28-216.1.1 Compromised structures.

Any structure or premises or part of a structure or premises that from any cause may at any time become dangerous or unsafe, structurally or as a fire hazard, or dangerous or detrimental to human life, health or safety, shall be demolished and removed or made safe and secure.



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NYC Administrative Code § 28-216.1.2

§ 28-216.1.2 Vacant buildings.

Any vacant building not continuously guarded or not sealed and kept secure against unauthorized entry shall have all openings sealed in a manner approved by the commissioner, and it shall be the duty of the owner thereof promptly to make any repairs that may be necessary for the purpose of keeping such building sealed and secure.



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NYC Administrative Code § 28-216.2

§ 28-216.2 Record and notice of unsafe building, structure or premises.

The department shall cause a report to be filed on an unsafe building, structure or premises. The report shall describe the nature of the occupancy of the structure and the nature of the unsafe condition and be made a record of the department.



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NYC Administrative Code § 28-216.3

§ 28-216.3 Notice and order.

The owner, executor, administrator, mortgagee, lessee or any other person who may have a recorded vested or recorded contingent interest in the unsafe building, structure or premises, shall be served with a notice containing a description of the unsafe building, structure or premises and an order requiring such building be vacated pursuant to 28-207.4, if necessary, and sealed, secured, repaired, shored, or demolished and removed as may be deemed necessary by the department.



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NYC Administrative Code § 28-216.3.1

§ 28-216.3.1 Content.

Such notice shall require the person thus served immediately to certify to the department his or her acceptance or rejection of the order. The notice shall further notify said person(s) that upon his or her refusal or neglect to comply with any of the requirements of this provision, a survey of the building or premises named in such notice will be made at a time and place therein named. The notice shall also state that if, pursuant to the survey, it is found that the building, structure, or premises referred to therein is unsafe or dangerous by the surveyors, their report of survey will be placed before the supreme court for trial at a time and place named in such notice.



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NYC Administrative Code § 28-216.4

§ 28-216.4 Method of service.

The notice and order shall be served in accordance with the civil practice law and rules of the state of New York.



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NYC Administrative Code § 28-216.5

§ 28-216.5 Owner abatement of unsafe or dangerous conditions.

If the person served with a notice and order pursuant to section 28-216.4 shall immediately certify his or her assent to the securing or removal of such unsafe building, structure or premises condition, such person shall be allowed a period of time as determined by the commissioner, or his or her designee, within which to commence and complete the abatement of the unsafe or dangerous condition. Such person shall employ sufficient labor and assistance to secure or remove such conditions as expeditiously as possible.



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NYC Administrative Code § 28-216.6

§ 28-216.6 Survey.

A survey of the building or premises shall be conducted as follows:



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NYC Administrative Code § 28-216.6.1

§ 28-216.6.1 Identity of surveyors.

The survey shall be made by three competent persons, of whom one shall be the commissioner or his or her designee; another shall be a registered design professional appointed by a recognized professional organization; and the third shall be a registered design professional appointed by the person served with a notice pursuant to section 28-216.4. If the person served with such notice shall neglect or refuse to appoint such surveyor, the other two surveyors shall make the survey. In case they disagree, they shall appoint a third person to take part in such survey, who shall be a registered design professional of at least 10 years' practice, whose decision shall be final.



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NYC Administrative Code § 28-216.6.2

§ 28-216.6.2 Posting report of survey.

A copy of the report of the survey shall be posted on the structure that is the subject thereof by the persons holding the survey, immediately on their issuing such report.



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NYC Administrative Code § 28-216.6.3

§ 28-216.6.3 Compensation of surveyors.

The registered design professional appointed by the respective professional organization, as hereinbefore provided, who may act on any survey called in accordance with the provisions of this section 28-216.6, and the third surveyor who may have been called in the case of disagreement provided for in this section 28-216.6, shall each be paid a sum to be determined by rule to be promulgated by the department.



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NYC Administrative Code § 28-216.6.4

§ 28-216.6.4 Cost of survey.

Any costs incurred by the city in connection with the survey shall become money due and owing to the city as part of the return of precept and judgment provided for in section 28-216.9 and 28-216.10 of this code or pursuant to lien provided for in section 28-112.9 of this code.



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NYC Administrative Code § 28-216.7

§ 28-216.7 Court proceeding.

Whenever the report of survey shall recite that the building, structure or premises surveyed is unsafe or dangerous, the corporation counsel or his or her designee shall, at the time specified in the notice, place such notice and report before a justice of the court named in the notice. The report of survey shall be in writing and constitute the issues to be placed before the court for trial. The purpose of the trial shall be to determine whether the unsafe building, structure, or premises shall be vacated and sealed, secured, shored, or demolished and removed.



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NYC Administrative Code § 28-216.7.1

§ 28-216.7.1 Precedence of proceeding.

The unsafe building proceeding shall have precedence over every other business of such supreme court. The trial on the issues in the unsafe building proceeding shall be held without delay, at the time specified in the notice, and shall be held by a justice of the court or by a referee, whose decision or report in the matter shall be final.



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NYC Administrative Code § 28-216.7.2

§ 28-216.7.2 Precept to abate.

If the justice or referee determines the building, structure or premises that is the subject of the report of survey is unsafe or dangerous, such justice or referee trying the case shall immediately issue a precept directed to the commissioner authorizing the commissioner forthwith to vacate pursuant to section 28-207.4, if necessary, and to seal, secure, shore, or demolish and remove the unsafe building, structure or premises named in such report. The precept shall be effective for a period of three years from the date of issuance.



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ARTICLE 415: SIGN HANGER LICENSE

NYC Administrative Code § 28-415.5.1

§ 28-415.5.1 Danger warning.

Every licensed sign hanger shall, while sign hanging operations are in progress at a job site, place conspicuously at such job site two plates or signs not less than 18 inches (457 mm) by 24 inches (610 mm) in size (i) displaying the word "danger" in letters not less than 6 inches (152 mm) high, and (ii) disclosing the sign hanger's name, business address, type of license and license number.



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ARTICLE 415: SIGN HANGER LICENSE

NYC Administrative Code § 28-415.5.2

§ 28-415.5.2 Sign hanger place of business.

Every licensed sign hanger shall have a place of business within the city and shall display prominently at such place of business a plate or sign marked with the words "sign hanger" and the license number immediately thereunder.



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ARTICLE 415: SIGN HANGER LICENSE

NYC Administrative Code § 28-415.6

§ 28-415.6 Fitness to perform work.

As a condition of license renewal, a licensed sign hanger shall provide evidence satisfactory to the department that such licensee is fit to perform the work.



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ARTICLE 416: FILING REPRESENTATIVE REGISTRATION

NYC Administrative Code § 28-416.1

§ 28-416.1 Filing representative registration required.

No person shall use the term "registered filing representative" or "filing representative" or any similar representation in such manner as to convey the impression that such person is a registered filing representative in accordance with the provisions of this article; nor shall any person present, submit, furnish or seek approval of applications or construction documents, or remove any documents from the possession of the department, without first having registered with the department such person's name, address and company affiliation on a form to be furnished by the department.



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NYC Administrative Code § 28-416.2

§ 28-416.2 Exemptions.

The following persons are exempt from the provisions of this article:

1. The owners of the premises for which the building applications are filed including, in the case of partnerships or corporations, the general partners or the principal officers of the corporation, where the principal officers of a corporation shall include the president, vice presidents, secretary and treasurer;
2. The lessees of such premises authorized by the owner to file building applications;
3. Condominium unit owners authorized by the condominium board of managers to file building applications;
4. Cooperative shareholders authorized by the cooperative board of directors to file building applications;
5. Architects;
6. Engineers;
7. Attorneys admitted to practice in New York state;
8. Master plumbers licensed pursuant to this chapter;
9. Master fire suppression piping contractors licensed pursuant to this chapter; and
10. Master electricians licensed pursuant to subchapter one of chapter 3 of title 27 of the administrative code.



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NYC Administrative Code § 28-416.3

§ 28-416.3 Rules.

The commissioner shall promulgate rules for the proper and efficient administration and enforcement of this article. Unless required by rule, a registered filing representative shall not be required to take an examination or to complete continuing education courses as a condition for renewal of the registration.



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ARTICLE 417: BOARDS

NYC Administrative Code § 28-417.1

§ 28-417.1 Plumbing and fire suppression piping contractor license board.

The commissioner shall appoint annually and may remove in his or her discretion each member of a plumbing and fire suppression piping contractor license board that shall have as its purpose the following:

1. To advise the commissioner regarding the character and fitness of applicants for certificates of competence and licenses who have passed the required examination.
2. To advise the commissioner regarding allegations of illegal practices on the part of licensed master plumbers, licensed master fire suppression piping contractors, master plumber businesses or master fire suppression piping businesses.
3. To advise the commissioner regarding plumbing and fire suppression piping practices, code applications, regulations and legislation.
4. To perform such other responsibilities as may be requested by the commissioner and as set forth in rules promulgated by the department.



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NYC Administrative Code § 28-417.1.1

§ 28-417.1.1 Removal.

The commissioner may remove any member of the license board and shall fill any vacancy therein.



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ARTICLE 417: BOARDS

NYC Administrative Code § 28-417.1.2

§ 28-417.1.2 Membership.

Membership of the board shall consist of:

1. Two officers or employees of the department;
2. Five licensed master plumbers, three of whom shall be selected from nominees of the New York city contracting plumbing association whose members perform the largest dollar value of work within the city and one of whom shall be the holder of a class A or class B master fire suppression piping contractor license. The two remaining licensed master plumber board member positions shall be from the next largest plumbing association in the city of New York.
3. Two licensed master fire suppression piping contractors, both of whom shall hold a class A license and shall be selected from nominees of the New York city sprinkler/fire suppression piping contractors association whose members perform the largest dollar value of work within the city;
4. A registered journeyman plumber from the organization representing the largest number of registered journeyman plumbers;
5. A registered journeyman fire suppression piping installer from the organization representing the largest number of registered journeyman fire suppression piping installers;
6. An engineer having at least five years experience in the design of plumbing systems;
7. An architect;
8. An engineer who is a full member of the society of fire protection engineers;
9. Two officers or employees of the fire department representing the fire commissioner; and

10. A real estate owner or manager or representative thereof.



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NYC Administrative Code § 28-417.1.3

§ 28-417.1.3 Organization of the board.

A member of the board who is an officer or employee of the department representing the commissioner shall serve as chairperson and all members shall serve without compensation. Nine members including the chairperson, who shall be entitled to vote, shall constitute a quorum of the board for the transaction of business. All actions shall be conducted by majority vote except as otherwise provided, and the board shall keep minutes of its proceedings and records of its investigations. The board shall meet at least once a month except during the months of July and August, and at such other times upon call of the chairperson.



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NYC Administrative Code § 28-417.1.4

§ 28-417.1.4 Advisory and support personnel.

The board may request the commissioner to appoint duly authorized representatives to conduct investigations and other activities incidental to the functions of the license board. Such appointees shall be non-voting members of the committee to which they are appointed, and may include personnel who are not department employees who shall serve without compensation. In addition the commissioner may designate such employees of the department as the commissioner deems necessary to the service and support of the license board.



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ARTICLE 418: GENERAL CONTRACTOR REGISTRATION*

NYC Administrative Code § 28-418.1

§ 28-418.1 Requirement of registration.

On and after November 1, 2008 it shall be unlawful for a person to conduct business as a general contractor unless such person holds a general contractor registration in accordance with the provisions of this article.



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ARTICLE 418: GENERAL CONTRACTOR REGISTRATION*

NYC Administrative Code § 28-418.1.1

§ 28-418.1.1 Expiration of registration.

A general contractor registration shall expire on the second anniversary of such registration or such other date as determined by the commissioner by rule so as to distribute the expiration dates of the registrations evenly over the course of a year.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 28, eff. July 1, 2008.



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NYC Administrative Code § 28-418.2

§ 28-418.2 Unlawful use of general contractor title.

On and after November 1, 2008 it shall be unlawful to use or cause to be used the title registered general contractor or any other title in a manner as to convey the impression that an individual, corporation, partnership or other business entity, or any person it employs, is a registered general contractor, unless such individual, corporation, partnership or other business entity is registered in accordance with the provisions of this article.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 28, eff. July 1, 2008.



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SUBCHAPTER 2: TECHNICAL STANDARDS
ARTICLE 418: GENERAL CONTRACTOR REGISTRATION*

NYC Administrative Code § 28-418.3

§ 28-418.3 Application requirements.

An application for a general contractor registration or renewal shall be made in writing to the commissioner on a form provided by the department and shall be accompanied by the following:

1. If the applicant is an individual: the applicant's full name, residence address, business address and business telephone number;
2. If the applicant is a corporation:
 - 2.1. The corporate name, address and telephone number of the applicant's principal office or place of business;
 - 2.2. The date and state of incorporation;
 - 2.3. The name, residence address and residence telephone number of all corporate officers and registered agents and any person owning an interest of ten percent or more in the corporation;
 - 2.4. Proof that the corporation is in good standing under the laws of the state of New York;
3. If the applicant is a partnership:
 - 3.1. The name, address and telephone number of the applicant's principal office or place of business;
 - 3.2. The name, residence address and residence telephone number of all partners;
4. The registration fee;

5. A verified statement that the applicant is financially solvent;
6. The name and address of the principal location from which the applicant has engaged in the business of general contracting at any time within the last five years;
7. If the applicant is not a sole proprietor, proof that the applicant is authorized to do business in the state of New York;
8. Proof of insurance as required by section 28-401.9;
9. The name and address of the officer, principal or director of the applicant who is primarily responsible for the registrant's compliance with the requirements of this code or any rule adopted thereunder;
10. Any other information that the commissioner may require.



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ARTICLE 418: GENERAL CONTRACTOR REGISTRATION*

NYC Administrative Code § 28-418.3.1

§ 28-418.3.1 Financial solvency.

For the purposes of this article, financial solvency shall mean that the applicant's operating capital shall exceed twenty-five thousand dollars.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 28, eff. July 1, 2008.



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NYC Administrative Code § 28-418.4

§ 28-418.4 Warranties.

A warranty shall be provided to the buyer of a new one-, two- or three-family structure that accords with the provisions of article thirty-six-B of the New York state general business law, including the following:

1. One year from and after the warranty date the home will be free from defects due to a failure to have been constructed in a skillful manner;
2. Two years from and after the warranty date the plumbing, electrical, heating, cooling and ventilation systems of the home will be free from defects due to a failure by the builder to have installed such systems in a skillful manner; and
3. Six years from and after the warranty date the home will be free from material defects, including, but not limited to, any construction that is not in compliance with the building code or the zoning resolution of the city of New York.



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NYC Administrative Code § 28-418.4.1

§ 28-418.4.1 Modification prohibited.

Except as otherwise provided in section seven hundred seventy-seven-b of such article thirty-six-B, no such warranty shall be modified or excluded in any way.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 28, eff. July 1, 2008.



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NYC Administrative Code § 28-418.5

§ 28-418.5 Duties and responsibilities.

The general contractor shall comply with sections 28-418.5.1 through 28-418.5.3.



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NYC Administrative Code § 28-418.5.1

§ 28-418.5.1 Subcontractor information.

The general contractor shall be responsible for providing information to the department about his or her subcontractors and the particular work they perform on jobs for which the department has issued permits to the general contractor. Such information shall be provided in a format and at the times specified in the rules of the department.



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ARTICLE 418: GENERAL CONTRACTOR REGISTRATION*

NYC Administrative Code § 28-418.5.2

§ 28-418.5.2 Technical reports.

The general contractor shall maintain at the work site such technical reports as specified in the rules of the department and shall make such reports available to department personnel on request.



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NYC Administrative Code § 28-418.5.3

§ 28-418.5.3 Notice of pending disciplinary actions.

The general contractor shall notify all of its suppliers of any pending suspension or revocation actions against such general contractor and shall provide an affidavit to the department stating that this notification has been made.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 28, eff. July 1, 2008.



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NYC Administrative Code § 28-418.6

§ 28-418.6 Posting of disciplinary actions.

The names of all general contractors whose registration was suspended or revoked after an OATH decision shall be posted on the department's website.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 28, eff. July 1, 2008.



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ARTICLE 419: SEIZURE AND FORFEITURE*

NYC Administrative Code § 28-419.1

§ 28-419.1 General.

On and after November 1, 2008 vehicles and tools used in connection with unlicensed or unregistered activity at the work site of a new residential structure containing no more than three dwelling units shall be subject to seizure and forfeiture.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 28, eff. July 1, 2008.



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NYC Administrative Code § 28-419.2

§ 28-419.2 Definitions.

For purposes of this article, the following terms shall have the following meanings.

1. The term "owner" as applied to vehicles shall mean an owner as defined in section one hundred twenty-eight and in subdivision three of section three hundred eighty-eight of the vehicle and traffic law.

2. The term "security interest" as applied to vehicles shall mean a security interest as defined in subdivision k of section two thousand one hundred one of the vehicle and traffic law.

3. The term "unlicensed activity" shall mean the conduct of any activity at a work site for the construction of a residential structure containing no more than three dwelling units without a license for which a license is required under any law, rule or regulation enforced by the commissioner of buildings, and the term "unregistered activity" shall mean the conduct of any activity at a work site for the construction of a residential structure containing no more than three dwelling units without a registration for which a registration is required under any law or regulation enforced by the commissioner of buildings.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 28, eff. July 1, 2008.



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ARTICLE 419: SEIZURE AND FORFEITURE*

NYC Administrative Code § 28-419.3

§ 28-419.3 Seizure procedure.

The following provisions shall govern seizure of vehicles and tools pursuant to this article.



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ARTICLE 419: SEIZURE AND FORFEITURE*

NYC Administrative Code § 28-419.3.1

§ 28-419.3.1 Seizure.

Any police officer or authorized officer or authorized employee of the department may seize any vehicle and any tools contained therein that such police officer or authorized officer or authorized employee has reasonable cause to believe is being used in connection with unlicensed or unregistered activity, upon service on the owner or operator of the vehicle of a notice of violation for engaging in such activity. Any vehicle and tools seized pursuant to this section shall be delivered into the custody of the department or other appropriate agency.



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NYC Administrative Code § 28-419.3.2

§ 28-419.3.2 Written demand.

The owner or operator of the vehicle and/or tools may make a written demand for a hearing for the return of the seized property. Notice of the right to a hearing shall be provided to the operator at the time of seizure of the vehicle and/or tools, and a copy of such notice shall be sent by mail to the registered and/or title owner of the vehicle, if other than the operator, and to the owner of the tools if other than the owner or operator of the vehicle and if reasonably ascertainable, within five business days of the seizure. The department shall schedule the hearing at the office of administrative trials and hearings (OATH) or its successor agency, as applicable, for a date within ten business days after receipt of the demand and shall notify the operator and the owner(s) of the opportunity to participate in the hearing and the date thereof.



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NYC Administrative Code § 28-419.3.3

§ 28-419.3.3 Claimant.

A claimant seeking release of the vehicle and tools at the hearing may be either the person from whom the vehicle and tools were seized, if that person was in lawful possession of the vehicle and tools, or the owner if different from such person.



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NYC Administrative Code § 28-419.3.4

§ 28-419.3.4 Determination.

The OATH judge shall issue a determination within five business days after the conclusion of the hearing.



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ARTICLE 419: SEIZURE AND FORFEITURE*

NYC Administrative Code § 28-419.3.5

§ 28-419.3.5 Return pending hearing.

The department shall establish a procedure whereby an owner or operator who wishes to have the vehicle and/or tools returned pending the hearing shall post a bond in an amount determined by the department, but in no event less than an amount sufficient to cover any applicable removal and storage fees as well as fines and penalties.



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NYC Administrative Code § 28-419.3.6

§ 28-419.3.6 Return without hearing.

The department shall establish a procedure whereby an owner or operator may request the return of the vehicle and/or tools without a hearing if such owner or operator:

1. Establishes that the vehicle and/or tools were seized in error, or
2. Immediately applies for licensure or registration pursuant to the applicable provisions of this code and pays an amount not to exceed removal and storage fees and any fines or penalties that could have been imposed under the provisions of this code.

Where the owner or operator establishes that the vehicle and/or tools were seized in error, the department shall expeditiously return such vehicle and/or tools.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 28, eff. July 1, 2008.



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NYC Administrative Code § 28-419.4

§ 28-419.4 Abandoned property.

Any vehicle and/or tools for which a written demand for return of the vehicle and/or tools or for a hearing pursuant to section 28-419.3.2 has not been made within thirty days of service of the notice of violation on the operator of the vehicle and/or tools or within thirty days of service of the notice of violation on the owner of the vehicle and/or tools if the owner is not the operator of the vehicle and/or tools shall be deemed abandoned and shall be disposed of by the department pursuant to applicable law.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 28, eff. July 1, 2008.



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NYC Administrative Code § 28-419.5

§ 28-419.5 Combined hearings.

The department may choose to have the underlying violation adjudicated before the office of administrative trials and hearings in accordance with sections 28-419.5.1 through 28-419.5.3.



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NYC Administrative Code § 28-419.5.1

§ 28-419.5.1 Combined hearing and determination.

Upon notice to the respondent, the department may choose to have the violation underlying the seizure returnable to and heard at OATH and may combine the hearing on the underlying violation with the hearing for the return of the seized property. At such combined hearing the OATH judge shall make a determination as to both and may impose any penalty that could be imposed in a proceeding before the environmental control board for the underlying violation. The OATH judge shall issue a determination within five business days after the conclusion of the hearing.



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NYC Administrative Code § 28-419.5.2

§ 28-419.5.2 Release following finding of no violation.

If the OATH judge finds that the vehicle and/or tools were not used in connection with unlicensed or unregistered activity, the department shall promptly release such vehicle and/or tools.



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NYC Administrative Code § 28-419.5.3

§ 28-419.5.3 Release following finding of violation.

If the OATH judge finds that the vehicle and/or tools were used in connection with unlicensed or unregistered activity, the department may release such vehicle and/or tools upon payment of all applicable fines and civil penalties and all reasonable costs of removal and storage, or may commence a forfeiture action within twenty business days after the date of the judge's determination.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 28, eff. July 1, 2008.



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NYC Administrative Code § 28-419.6

§ 28-419.6 Separate hearings.

In the event that the adjudication of the violation underlying the seizure is not held at OATH, and a determination is made that the vehicle and tools were not used in connection with unlicensed or unregistered activity, the department shall promptly release such vehicle and/or tools.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 28, eff. July 1, 2008.



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NYC Administrative Code § 28-419.7

§ 28-419.7 Forfeiture procedure.

The following provisions shall govern forfeiture of vehicles and tools pursuant to this article.



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NYC Administrative Code § 28-419.7.1

§ 28-419.7.1 Commencement of forfeiture.

A forfeiture action pursuant to this article shall be commenced by the filing of a summons with a notice or a summons and complaint in accordance with the civil practice law and rules. Such summons with notice or a summons and complaint shall be served in accordance with the civil practice law and rules on the vehicle operator, the owner of the tools, if different from the vehicle operator, and owner of the vehicle, and on all owners of the subject vehicle listed in the records maintained by the department of motor vehicles, or for vehicles not registered in the state of New York, in the records maintained by the state of registration. Except as otherwise provided in this article, a vehicle and/or tools that are the subject of such action shall remain in the custody of the department or other appropriate agency pending the final determination of the forfeiture action.



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NYC Administrative Code § 28-419.7.2

§ 28-419.7.2 Notice of forfeiture.

Notice of the institution of the forfeiture action shall be given by certified mail to all persons holding a security interest in such vehicle or tools, if known, if such security interest in the vehicle has been filed with the department of motor vehicles pursuant to the provisions of title ten of the vehicle and traffic law, at the address set forth in the records of such department, or, for vehicles not registered in the state of New York, all persons holding a security interest in such vehicle if such security interest has been filed with the state of registration and which persons are made known by such state to the department, at the address provided by such state of registration.



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NYC Administrative Code § 28-419.7.3

§ 28-419.7.3 Security interest.

Any person with a security interest in such vehicle or tools who receives notice of the institution of the forfeiture action who claims an interest in such vehicle or tools subject to forfeiture may assert a claim in such action for satisfaction of such person's security interest in such vehicle or tools.



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NYC Administrative Code § 28-419.7.4

§ 28-419.7.4 Forfeiture subject to security interest.

Forfeiture shall be made subject to the interest of a person who claims an interest in the vehicle or tools, where such person establishes that:

1. The use of the vehicle or tools for the conduct that was the basis for the seizure of the vehicle and tools occurred without the knowledge of such person, or if such person had knowledge of such use, that such person did not consent to such use by doing all that could reasonably have been done to prevent such use, and that such person did not knowingly obtain such interest in the vehicle or tools in order to avoid the forfeiture of such vehicle or tools, or
2. The conduct that was the basis for such seizure was committed by any person other than such person claiming an interest in the vehicle or tools, while such property was unlawfully in the possession of a person who acquired possession thereof in violation of the criminal laws of the United States or any state.



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NYC Administrative Code § 28-419.7.5

§ 28-419.7.5 Disposition.

The department or agency having custody of the vehicle and tools, after judicial determination of forfeiture, shall, at its discretion, either (i) retain such vehicle and tools for the official use of the city; or (ii) by public notice of at least five days, sell such forfeited vehicle and tools at public sale. The net proceeds of any such sale shall be paid into the general fund of the city.



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NYC Administrative Code § 28-419.7.6

§ 28-419.7.6 Amount of award.

In any forfeiture action commenced pursuant to this article, where the court awards a sum of money to one or more persons in satisfaction of such person's interest in the forfeited vehicle and tools, the total amount awarded to satisfy such interest or interests shall not exceed the amount of the net proceeds of the sale of the forfeited vehicle and tools after deduction of the lawful expenses incurred by the city, including reasonable costs of removal and storage of the vehicle and tools between the time of seizure and the date of sale.

HISTORICAL NOTES:

Section added L.L. 8/2008 § 28, eff. July 1, 2008.



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NYC Administrative Code § 28-501.1

§ 28-501.1 Permit required.

The commissioner may, in his or her discretion, when necessary in the public interest, establish a permit requirement for signs maintained in the areas described in this article in accordance with the provisions of this article and the rules of the department. On and after a date to be provided by the rules establishing such a permit requirement, and subject to the provisions of section 28-501.6 of this code, it shall be unlawful to place or maintain a sign, as defined in section 12-10 of the zoning resolution, on any building or premises unless a permit for the maintenance of such sign has been issued by the department pursuant to this article if such sign is within a distance of nine hundred linear feet from and within view of an arterial highway or within a distance of 200 linear feet (60 960 mm) from and within view of a public park with an area of one half acre or more.



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NYC Administrative Code § 28-501.1.1

§ 28-501.1.1 Other permits notwithstanding.

Where a sign maintenance permit has been established by the commissioner pursuant to section 28-501.1 such permit shall be required for all signs maintained in the areas described in such section 28-501.1 and not otherwise excluded under section 28-501.6, whether or not a work permit is required and/or has been issued for the installation, alteration or erection of such sign pursuant to chapter 1 of this title.



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NYC Administrative Code § 28-501.1.2

§ 28-501.1.2 Arterial highway.

For the purposes of this article, the term arterial highway shall include all highways that are shown on the master plan of arterial highways and major streets as principal routes parkways or toll crossings and that have been designated by the city planning commission as arterial highways to which the provisions of sections 42-55 and 32-66 of the zoning resolution shall apply as shown in appendix C of the zoning resolution.



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NYC Administrative Code § 28-501.2

§ 28-501.2 Application.

Application for a permit or for the renewal of a permit shall be made on forms to be furnished by the department and shall contain such information as the department shall prescribe. Except as otherwise provided in section 28-501.3, a permit shall remain in effect for a period to be determined by rule and may be renewed. The fee for a permit or for its renewal shall be established by rule. The identification number of the permit shall be displayed on the sign or on the building or premises on which the sign is located or both, in a manner to be provided by rule.



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NYC Administrative Code § 28-501.3

§ 28-501.3 Permit expiration.

A permit issued pursuant to this article shall expire and be of no further force or effect where:

1. In the case of a sign which is accessory to a principal use within the meaning of section 12-10 of the zoning resolution, there has been a discontinuance of the operation of the principal use to which such sign is accessory, or in the event the sign is no longer in the same ownership as such principal use or is no longer operated and maintained substantially for the benefit or convenience of the owners, occupants, employees, customers or visitors of the principal use;

2. In the case of any sign for which a permit has been issued pursuant to this article, whether or not accessory to a principal use within the meaning of section 12-10 of the zoning resolution, there has been a change in copy which the commissioner has determined renders such sign no longer in compliance with the zoning resolution. The commissioner shall prescribe by rule procedures for the notification to the department concerning changes in copy which have been made on signs for which permits have been issued under this article. Nothing herein shall be construed as limiting the ability of any person to apply for a new permit pursuant to this article.



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NYC Administrative Code § 28-501.4

§ 28-501.4 Civil penalties.

Any person who places or maintains a sign on a building or premises without an appropriate permit in violation of this article shall be liable for a civil penalty of, for a first violation, not more than fifteen thousand dollars and, for a second or subsequent violation, not more than twenty-five thousand dollars. Each day's continuance shall be a separate and distinct violation. Such civil penalties may be recovered in an action in any court of appropriate jurisdiction or in a proceeding before the environmental control board. Such board shall have the power to impose the civil penalties provided for in this article. Notwithstanding the provisions of section six hundred sixty-six of the charter, a notice of violation issued by the department pursuant to this section 28-501.4 shall not be subject to review by the board of standards and appeals.



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NYC Administrative Code § 28-501.5

§ 28-501.5 Construction.

This chapter shall not be construed to grant the right to place or maintain a sign on any building or premises where the placement or maintenance of such sign would otherwise be prohibited pursuant to the zoning resolution, the administrative code or any other provision of law. No permit for a sign issued hereunder shall be deemed to constitute permission or authorization to maintain a sign which is unlawful pursuant to any other provisions of law nor shall any permit issued hereunder constitute a defense in an action or proceeding with respect to such an unlawful sign.



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NYC Administrative Code § 28-501.6

§ 28-501.6 Exemption.

The provisions of this article shall not apply to:

1. Signs with a surface area of 200 square feet (19 m²) or less that are located no higher than 3 feet (914 mm) above the floor of the second story of the building on which the sign is located; and
2. Signs under the control of an outdoor advertising company and included on a certified list of signs, sign structures, and sign locations under the control of such company required to be filed with the department pursuant to this chapter.



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ARTICLE 502: OUTDOOR ADVERTISING COMPANIES

NYC Administrative Code § 28-502.1

§ 28-502.1 Definitions.

As used in this chapter, the following terms shall have the following meanings:

AFFILIATE. An outdoor advertising company having a controlling interest in another outdoor advertising company or in which such other outdoor advertising company has a controlling interest. In addition, where a person or entity has controlling interests in two or more outdoor advertising companies, such outdoor advertising companies shall be considered affiliates of each other. A "controlling interest" means actual working control, in whatever manner exercised, including without limitation, control through ownership, management, debt instruments or negative control, as the case may be, as defined in rules of the department.

OUTDOOR ADVERTISING COMPANY. A person, corporation, partnership or other business entity that as a part of the regular conduct of its business engages in or, by way of advertising, promotions or other methods, holds itself out as engaging in the outdoor advertising business.

OUTDOOR ADVERTISING BUSINESS. The business of selling, leasing, marketing, managing, or otherwise either directly or indirectly making space on signs situated on buildings and premises within the city of New York available to others for advertising purposes, whether such advertising directs attention to a business, profession, commodity, service or entertainment conducted, sold, or offered on the same or a different zoning lot and whether such sign is classified as an advertising sign pursuant to section 12-10 of the zoning resolution.

SIGN. A sign as defined in section 12-10 of the zoning resolution except that such term shall not include any sign subject to regulation by the department of transportation.

SIGN LOCATION. A building or premises on which an outdoor advertising company is entitled to sell, lease, market, manage or otherwise either directly or indirectly make space on signs available to customers, irrespective of whether a sign exists on such building or premises.

UNDER THE CONTROL OF AN OUTDOOR ADVERTISING COMPANY in reference to a sign, sign structure, or sign location. That space on such sign, sign structure, or at such sign location that is sold, leased, marketed, managed or otherwise either directly or indirectly made available to others for any purposes by such outdoor advertising company.



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NYC Administrative Code § 28-502.2

§ 28-502.2 Registration of outdoor advertising companies.

On and after a date to be provided by rule, it shall be unlawful for an outdoor advertising company to engage in the outdoor advertising business or, by way of advertising, promotions or other methods, hold itself out as engaging in the outdoor advertising business unless such company is registered in accordance with this code and the rules of the department. Such rules shall establish a procedure pursuant to which the department may require the single registration of an outdoor advertising company and its affiliates. An outdoor advertising company and its affiliates made subject to single registration shall be considered a single outdoor advertising company for purposes of this code.



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NYC Administrative Code § 28-502.2.1

§ 28-502.2.1 Application.

Application for registration or the renewal of registration shall be made on forms to be furnished by the department, may be made through electronic means, and shall contain such information as the department shall prescribe. Registration shall remain in force for two years and may be renewed. The fee for such registration and for the renewal of such registration shall be established by rule and may be based on the number of signs in the registered inventory.



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NYC Administrative Code § 28-502.2.2

§ 28-502.2.2 Security.

Each outdoor advertising company shall post a bond or provide another form of security to the city in an amount to be determined by the department by rule to cover:

1. All costs incurred by the city pursuant to this code for painting over, covering, rendering ineffective or for the removal and storage of an illegal sign or sign structure under the control of such outdoor advertising company; and
2. All fines or civil penalties imposed against such company pursuant to this chapter.



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NYC Administrative Code § 28-502.3

§ 28-502.3 Revocation or suspension or registration.

The department may revoke, suspend or refuse to renew the registration of an outdoor advertising company or impose fines or other penalties where it is determined by the commissioner, after notice and the opportunity to be heard, that (i) such company has made statements that it knew or should have known are false in any application or certification filed with the department, (ii) such company has failed to comply with section 28-502.3 of this code or the rules adopted pursuant to its provisions by failing to file a listing of signs, sign structures and sign locations under its control as specified in such section within the time and in the manner required by department rules or by filing an incomplete listing of signs, sign structures and sign locations under its control as specified in such section, (iii) such company has been found liable for or has admitted to violations of the zoning resolution under section 28-502.5 of this code committed on three or more occasions within a 36 month period, where such violations relate to the erection, maintenance, attachment, affixing, painting or representation in any other manner on a building or premises of advertising signs, as defined in section 12-10 of the zoning resolution, at locations where the display of such advertising signs is not permitted under the zoning resolution or at locations where the display of such advertising signs violates the size, height, or illumination provisions of the zoning resolution, and such signs are located within a distance of nine hundred linear feet from and within view of an arterial highway or within 200 linear feet (60 960 mm) from and within view of a public park with an area of one half acre or more, (iv) such company has failed to pay any civil penalties imposed or amounts owed to the city pursuant to section 28-502.5 of this code or, (v) such company has violated the department's rules pertaining to outdoor advertising companies. No application for registration by an outdoor advertising company or any affiliate thereof shall be accepted for filing by the department for a period of five years after revocation of or the refusal to renew the registration of such outdoor advertising company pursuant to this code. The department shall not accept or process any applications for permits to install, erect or alter signs pursuant to this code or for the maintenance of signs pursuant to section 28-501.1 of this code where such applications are filed by or where such signs are under the control of an outdoor advertising company or any affiliate thereof after the registration of such outdoor advertising company has been revoked or not renewed or during the term of any period of suspension of such registration. The commissioner may settle any proceeding in which the revocation, suspension or renewal of an outdoor advertising company's registration is at issue upon such terms and conditions as he or she may deem appropriate

including but not limited to the agreement of an outdoor advertising company to remove signs along with supporting sign structures as a condition for the dismissal of such proceeding.



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NYC Administrative Code § 28-502.4

§ 28-502.4 Reporting requirement.

An outdoor advertising company shall provide the department with a list with the location of signs, sign structures and sign locations under the control of such outdoor advertising company in accordance with the following provisions:

1. The list shall include all signs, sign structures and sign locations located (i) within a distance of 900 linear feet (274 m) from and within view of an arterial highway; or (ii) within a distance of 200 linear feet (60 960 mm) from and within view of a public park with an area of 1/2 acre (5000 m) or more.
2. The commissioner may, by rule, expand the scope of such list to include the reporting of other signs, sign structures and sign locations, as specified in such rule.



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NYC Administrative Code § 28-502.4.1

§ 28-502.4.1 Form of list.

The list shall be in such form, containing such information and filed at such periodic intervals or upon such other conditions, as the department shall prescribe by rule.



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NYC Administrative Code § 28-502.4.2

§ 28-502.4.2 Other required information.

Such list shall also indicate the work permit identification numbers for the erection, alteration or installation of such signs pursuant to chapter 1 of this title and for the maintenance of such signs pursuant to article 501, unless a permit is not required pursuant to such provisions, as well as the name and license number of the master or special sign hanger who hung or erected each such sign.



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NYC Administrative Code § 28-502.4.3

§ 28-502.4.3 Certification of list.

Such list shall be accompanied by (i) a certification by an architect or engineer, co-signed by a responsible officer of the outdoor advertising company, that all signs reported on such list are in compliance with the zoning resolution; (ii) copies of proof that the sign complies with the zoning resolution and a certification by the sign's owner that to the best of the certifier's knowledge and belief the information provided is accurate, or (iii) a written opinion by the department, stating that the sign to which the opinion refers complies with the zoning resolution. Notwithstanding any inconsistent provision of this code, where, in accordance with the department's rules, the department renders an opinion, determination or decision relating to whether a sign is non-conforming or whether it is located in proximity to an arterial highway as defined by the zoning resolution, such decision, determination or opinion will be appealable to the board of standards and appeals in accordance with applicable law. If a timely appeal to such board is taken, the department shall not issue a notice of violation with respect to such sign pending a determination of such appeal by such board.



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NYC Administrative Code § 28-502.4.4

§ 28-502.4.4 Public access to list.

The commissioner shall make all listings filed pursuant to this article accessible to the public.



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NYC Administrative Code § 28-502.5

§ 28-502.5 Display of name and registration number of outdoor advertising company.

On and after a date to be prescribed by rule, the commissioner shall require that each outdoor advertising company display, in a manner to be provided by rule, on each sign under its control or on the building or premises where each sign under its control is located or both, (i) the name and registration number of such company and, (ii) unless a permit is not required, the work permit identification number for the installation, alteration or erection of the sign pursuant to chapter 1 of this code and, if applicable, for the maintenance of the sign pursuant to article 501.



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NYC Administrative Code § 28-502.6

§ 28-502.6 Criminal and civil penalties.

Outdoor advertising companies that violate the zoning resolution, this code, the 1968 building code or rules of the department shall be subject to criminal and civil penalties in accordance with this article.



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NYC Administrative Code § 28-502.6.1

§ 28-502.6.1 General.

Notwithstanding any other provision of law, an outdoor advertising company shall be liable for a civil penalty in accordance with this article if a sign under its control has been erected, maintained, attached, affixed, painted on, or in any other manner represented on a building or premises in violation of any provision of the zoning resolution, this code, the 1968 building code or rules adopted pursuant thereto relating to signs.



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NYC Administrative Code § 28-502.6.2

§ 28-502.6.2 Unlawful for outdoor advertising company to sell space on illegal sign.

It shall be unlawful for an outdoor advertising company to sell, lease, market, manage or otherwise make available to others for advertising purposes space on a sign that has been erected, maintained, attached, affixed, painted on or in any other manner represented on a building or premises in violation of any provision of the zoning resolution, this code, the 1968 building code or rules adopted pursuant thereto or to enter into any agreement for such purpose.



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NYC Administrative Code § 28-502.6.3

§ 28-502.6.3 Unlawful to transfer sign to unregistered outdoor advertising company.

On and after a date to be provided by rule, it shall be unlawful for an outdoor advertising company to sell or otherwise transfer control of a sign or sign location or of any right of such company to sell, lease, market, manage or otherwise make space on a sign or at a sign location available to others for advertising purposes to an outdoor advertising company that is not registered in accordance with this article and the rules of the department.



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NYC Administrative Code § 28-502.6.4

§ 28-502.6.4 Civil penalty.

An outdoor advertising company that violates any of the provisions of this article shall be subject to a civil penalty of, for a first violation, not more than fifteen thousand dollars and, for a second or subsequent violation, not more than twenty-five thousand dollars. Each day's continuance shall be a separate and distinct violation.



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NYC Administrative Code § 28-502.6.5

§ 28-502.6.5 Criminal penalty.

Notwithstanding any inconsistent provision of law, an outdoor advertising company shall, upon being found guilty, be subject to fines or imprisonment or both pursuant to this code if a sign under its control has been erected, maintained, attached, affixed, painted on, or in any other manner represented on a building or premises in violation of any provision of the zoning resolution, this code, the 1968 building code or rules adopted pursuant thereto relating to signs.



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NYC Administrative Code § 28-502.6.6

§ 28-502.6.6 Activity by unregistered company.

On and after a date to be provided by rule, an outdoor advertising company that engages in the outdoor advertising business or, by way of advertisement, promotion or other methods holds itself out as engaging in the outdoor advertising business without registering with the department pursuant to this chapter, or, after such registration has been revoked or not renewed pursuant to this code continues to engage in such business beyond a date specified by the commissioner in his or her determination to revoke or not renew, shall be guilty of a misdemeanor subject to a fine not to exceed five thousand dollars or a sentence of imprisonment of not more than one year or both such fine and imprisonment for each offense. In the case of a continuing violation each day's continuance shall be a separate and distinct violation. Such company shall also be liable for a civil penalty of, for a first violation, not more than fifteen thousand dollars and, for a second or subsequent violation, not more than twenty-five thousand dollars. Each day's continuance shall be a separate and distinct violation.



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NYC Administrative Code § 28-502.6.7

§ 28-502.6.7 Venue.

Civil penalties may be recovered in an action in any court of appropriate jurisdiction or in a proceeding before the environmental control board. Such board shall have the power to impose the civil penalties provided for in this article. Notwithstanding the provisions of section six hundred sixty-six of the charter, a notice of violation issued by the department pursuant to this article shall not be subject to review by the board of standards and appeals.



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NYC Administrative Code § 28-502.7

§ 28-502.7 Signs under control of unregistered outdoor advertising company are public nuisance.

On and after a date to be provided by rule, it shall be unlawful to erect, maintain, attach, affix, paint on, or in any other manner represent on a building or premises any sign that is under the control of an unregistered outdoor advertising company. In addition to or as an alternative to any other remedies or penalties provided under any other provision of law, the commissioner may commence a proceeding for the removal of such sign or its sign structure or both in accordance with the procedures set forth in this code for the abatement of a nuisance and any such sign and its sign structure is hereby declared to be a public nuisance pursuant thereto. All of the provisions of article 503 of this chapter shall apply to the removal of a sign pursuant to this article except that a sign under the control of an unregistered outdoor advertising company may be removed whether or not it is in compliance with the zoning resolution, this code, the 1968 building code or rules adopted pursuant thereto, and irrespective of whether it has a surface area greater than 200 square feet (19 m2).



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NYC Administrative Code § 28-502.8

§ 28-502.8 Franchise or concession disqualification.

Notwithstanding any other provision of law to the contrary, an outdoor advertising company, or any affiliate thereof, that has been found guilty of a misdemeanor or liable for a civil penalty pursuant to this article or whose registration has been revoked shall be considered ineligible for the award of any city franchise or concession, and shall be prohibited from administering any advertising program on behalf of a city franchisee or concessionaire, for a period of five years following judgment or decision.



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NYC Administrative Code § 28-502.9

§ 28-502.9 Investigations.

The department may investigate any matter within the jurisdiction conferred by this chapter and shall have full power to compel the attendance, examine and take testimony under oath of such persons as it may deem necessary in relation to such investigation, and to require the production of books, accounts, papers and other evidence relevant to such investigation. The department of investigation may, at the request of the commissioner, assist the department in any investigation conducted pursuant to this article.



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NYC Administrative Code § 28-503.1

§ 28-503.1 General.

A sign with a surface area greater than 200 square feet (19 m²) that is erected, maintained, attached, affixed, painted on, or in any other manner represented on a building or premises in violation of the zoning resolution, this code, the 1968 building code or rules adopted pursuant thereto is hereby declared to be a public nuisance. The commissioner may, after notice and hearing, order the removal of such illegal sign or its sign structure or both, as hereinafter provided.



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NYC Administrative Code § 28-503.2

§ 28-503.2 Notice.

The commissioner shall serve a notice of hearing with regard to the proposed nuisance abatement on the owner and mortgagee of record of the building or premises and other persons having a recorded interest in the property in the manner provided in article 212 of chapter 2 of this title for the service of an order of closure. If the sign is under the control of an outdoor advertising company and an address for such company is reasonably ascertainable, the notice shall also be served on such outdoor advertising company by mail to the last known address for such company or, if such company is registered in accordance with section 28-502.2, at the address provided to the department by the registrant.



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NYC Administrative Code § 28-503.3

§ 28-503.3 Hearing.

The office of administrative trials and hearings shall conduct the hearing. The administrative law judge assigned to hear the matter shall submit his or her proposed findings of fact and recommended disposition to the commissioner. If based on such recommended disposition, proposed findings of fact and the record of the hearing the commissioner determines (i) that the sign has a surface area greater than 200 square feet (19 m²) and, (ii) that the sign has been erected, maintained, attached, affixed, painted on, or in any other manner represented on the building or premises in violation of the zoning resolution, this code, the 1968 building code or rules adopted pursuant thereto, he or she may order the removal of the illegal sign or its sign structure or both.



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NYC Administrative Code § 28-503.3.1

§ 28-503.3.1 Lack of knowledge no defense.

At such hearing it shall not be a defense that an owner or other person having an interest in the property lacked knowledge of or did not participate in the erection or maintenance of the illegal sign.



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NYC Administrative Code § 28-503.4

§ 28-503.4 Posting of order.

The commissioner's order of removal shall be posted, mailed and filed in the manner provided in this code for an order of closure.



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NYC Administrative Code § 28-503.5

§ 28-503.5 Enforcement of order.

On or after the tenth business day after the posting of such order and upon the written directive of the commissioner, police officers and authorized representatives of the department shall act upon and enforce such order by removing, covering, painting over or otherwise rendering ineffective the illegal sign or its sign structure or both. Such work shall at all times be performed by a licensed sign hanger where required by law. Nothing in this article shall be construed to prohibit an owner or other person having an interest in the property from removing or causing the removal of an illegal sign or its sign structure prior to the arrival of such enforcement officers. On and after the posting of such removal order, no further permits for signs shall be issued for such building or premises pursuant to this code and, if the sign structure is not removed, no further display shall be exhibited on such sign structure unless and until the commissioner rescinds such order.



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NYC Administrative Code § 28-503.6

§ 28-503.6 Rescission of order.

The commissioner may rescind the order if the owner or other person having an interest in the building or premises provides assurance in a form satisfactory to the commissioner that all signs erected or maintained at such building or premises will be in compliance with the zoning resolution, this code, the 1968 building code or rules adopted pursuant to such provisions. If such order is rescinded, the commissioner shall, upon request of such owner, mortgagee or other person, provide a certified copy of such rescission which may be filed with the county clerk or register of the county in which such building or premises is located.



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NYC Administrative Code § 28-503.7

§ 28-503.7 Costs.

The costs and expenses for painting over, covering, rendering ineffective or for the removal and storage of such sign and its sign structure may be recovered from the owner of the premises or, if the illegal sign is under the control of an outdoor advertising company and notice was served on such company in accordance with this article, from such outdoor advertising company. Such amounts may be recovered by the city in an action or proceeding in any court of appropriate jurisdiction and, with respect to amounts owed by an outdoor advertising company, by drawing upon any bond posted or other security provided by such company pursuant to section 28-502.2. Nothing in this article shall be construed to limit the ability of an owner to seek recovery of such costs and expenses from any other party.



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NYC Administrative Code § 28-503.8

§ 28-503.8 Lien.

In addition, such costs and expenses shall constitute a lien on the land and building on which the sign was located which may be entered and enforced pursuant to the provisions of this code in the same manner as an unpaid fee.



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NYC Administrative Code § 28-503.9

§ 28-503.9 Storage and disposal.

The commissioner shall adopt rules to provide for the storage and disposal of any sign or sign structure removed pursuant to this article. If the identity and address of the owner of such property is reasonably ascertainable, notice of the removal shall be sent to the owner within a reasonable period of time after the removal. If such property is not claimed within thirty days after its removal, it shall be deemed to be abandoned and may be sold at a public auction after having been advertised in the City Record and the proceeds paid into the general fund or if the commissioner determines that the property is not saleable, he or she may turn over such property to the department of sanitation for disposal. Property removed pursuant to this article shall be released to the owner or other person lawfully entitled to possession upon payment of the costs of removal and storage as set forth in the rules of the department and any fines or civil penalties imposed for the violation or, if an action or proceeding for the violation is pending in court or before the environmental control board, upon the posting of a bond or other form of security acceptable to the department in an amount which will secure the payment of such costs and any fines or civil penalties which may be imposed for the violation.



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NYC Administrative Code § 28-503.10

§ 28-503.10 Definitions.

For the purposes of this article the terms "sign" and "surface area," in reference to a sign, shall be as defined under section 12-10 of the zoning resolution.



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NYC Administrative Code § 28-503.11

§ 28-503.11 Review of order.

An order of the commissioner issued pursuant to this article shall be a final determination of the commissioner for purposes of review pursuant to article seventy-eight of the civil practice law and rules. Notwithstanding any inconsistent provision of paragraph (a) of subdivision six of section six hundred sixty-six of the New York city charter, such order shall not be subject to review by the board of standards and appeals.



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Title 28: NEW YORK CITY CONSTRUCTION CODES**
Chapter 6: THE NEW YORK CITY PLUMBING CODE*
ARTICLE 601: ENACTMENT AND UPDATE OF THE NEW YORK CITY PLUMBING CODE

NYC Administrative Code § 28-601.1

§ 28-601.1 Update.

No later than the third year after the effective date of this section and every third year thereafter, the commissioner shall submit to the city council proposed amendments that he or she determines should be made to this code to bring it up to date with the latest edition of the International Plumbing Code or otherwise modify the provisions thereof. In addition, prior to the submission of such proposal to the city council, such proposal shall be submitted to an advisory committee established by the commissioner pursuant to this title for review and comment.

HISTORICAL NOTES:

Section renumbered (former § 28-401.1) L.L. 33/2007 § 14, eff. July

1, 2008.

Section added L.L. 99/2005 § 1, eff. July 1, 2008 per L.L. 33/2007 § 10.

[See Table 28 footnote]



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Title 28: NEW YORK CITY CONSTRUCTION CODES**

Chapter 6: THE NEW YORK CITY PLUMBING CODE*

ARTICLE 601: ENACTMENT AND UPDATE OF THE NEW YORK CITY PLUMBING CODE

NYC Administrative Code § 28-601.2

§ 28-601.2 Enactment of the New York city plumbing code.

The New York city plumbing code based on the 2003 edition of the International Plumbing Code published by the International Plumbing Code published by the International Code Council, with changes that reflect the unique character of the city, is hereby adopted to read as follows:



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Chapter 1: ADMINISTRATION*
ARTICLE 104: CONSTRUCTION DOCUMENTS

NYC Administrative Code § 28-104.2.1.3.2.1

§ 28-104.2.1.3.2.1 Reinstatement.

A registered design professional who is excluded from the program in accordance with section 28-104.2.1.3 may apply for reinstatement one year or more after such exclusion. An applicant who the commissioner finds is qualified to resume participation in the program shall be on probation for a period of not less than 6 months after reinstatement and during that time shall as a condition of such reinstatement attend one or more training or continuing education courses, approved by the department, related to compliance with the building code and related laws and rules and the zoning resolution. The professional shall submit satisfactory proof of the successful completion of such training or continuing education courses to the department.



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Chapter 1: ADMINISTRATION*

ARTICLE 104: CONSTRUCTION DOCUMENTS

NYC Administrative Code § 28-104.2.1.3.2.2

§ 28-104.2.1.3.2.2 Mandatory permanent revocation.

The commissioner shall permanently revoke, without the opportunity of restoration, the professional certification privileges of an engineer or architect who, while on probation, professionally certifies an application, plans, construction documents or other document that contains false information or is not in compliance with all applicable provisions of law or who otherwise demonstrates incompetence or a lack of knowledge of applicable laws.



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NYC Administrative Code § 28-104.2.1.3.2.3

§ 28-104.2.1.3.2.3 Construction.

Nothing herein shall be construed to limit the commissioner's power, consistent with state and local law, to adopt rules that include additional grounds to limit the filing privileges of or otherwise sanction registered design professionals, after the opportunity for a hearing, who it determines, knowingly or negligently submit applications or other documents to the department that contain false information or are not in compliance with all applicable provisions of law or that otherwise demonstrate incompetence or a lack of knowledge of applicable law or standards.



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TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 10: MEANS OF EGRESS
SECTION FC 1001: GENERAL

NYC Administrative Code § 29-FC 1001

1001.1 Scope.

This chapter shall govern the maintenance of means of egress from all buildings, structures and premises in all occupancy classifications.

1001.2General. Buildings, structures and premises, or parts thereof, shall be provided with a means of egress system as required by the construction codes, including the Building Code. The maintenance of means of egress from all buildings, structures and premises and all occupancies shall be in accordance with this chapter.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 10: MEANS OF EGRESS
SECTION FC 1002: DEFINITIONS

NYC Administrative Code § 29-FC 1002

1002.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

EMERGENCY ESCAPE AND RESCUE OPENING. An operable window, door or other similar device that provides for a means of escape and access for rescue in the event of an emergency.

EXIT. That portion of a means of egress system which is separated from other interior spaces of a building or structure by fire-resistance-rated construction and opening protectives as required to provide a protected path of egress travel between the exit access and the exit discharge. Exits include vertical exits, exterior exit doors at ground level, exit enclosures, exit passageways, exterior exit stairs, exterior exit ramps and horizontal exits, but do not include access stairs, aisles, exit access doors opening to corridors or corridors. This term shall include the locations on a premises at which egress may be had from an enclosed outdoor space.

EXIT ACCESS. That portion of a means of egress system that leads from any occupied portion of a building, structure or premises to an exit.

EXIT DISCHARGE. That portion of a means of egress system between the termination of an exit and a public way.

MEANS OF EGRESS. A continuous and unobstructed path of vertical and horizontal egress travel from any occupied portion of a building, structure or premises to a public way. A means of egress consists of three separate and distinct parts: the exit access, the exit and the exit discharge.



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CHAPTER 2 NEW YORK CITY FIRE CODE
CHAPTER 1: ADMINISTRATION
SECTION FC 101: GENERAL

NYC Administrative Code § 29-FC 101

101.1 Title.

This code, including any appendices hereto, shall be known as the New York City Fire Code, hereinafter referred to as "this code" or "the code". All section numbers in this code shall be deemed to be preceded by the designation "FC".

101.2 Scope. This code governs:

1. The manufacturing, storage, handling, use, sale and transportation of hazardous materials and combustible materials, except for the installation of storage tanks and auxiliary storage tanks for oil-burning equipment.
2. The design, installation, operation and maintenance of devices, equipment and systems designed to prevent, mitigate, control and extinguish fire, explosions or other life safety hazards.
3. Emergency preparedness and planning, including the orderly evacuation of occupants of buildings, structures or premises in the event of fire, explosion, biological, chemical or hazardous material incident or release, natural disaster or other emergency, or the threat thereof.
4. The prevention, mitigation and control of hazards to firefighters and emergency responders during emergency operations.
5. The operation and maintenance of any manual, automatic or other fire alarm or fire extinguishing device, equipment or system.

101.3 Intent. The purpose of this code is to establish reasonable minimum requirements and standards for life safety and property protection, to accomplish the purposes set forth in Section 101.2.

101.4 Severability. If a section, subsection, sentence, clause or phrase of this code is adjudged by any court of competent jurisdiction to be invalid, such judgment shall not affect, impair, or invalidate the remainder thereof, but shall

be confined in its operation to the section, subsection, sentence, clause or phrase thereof directly involved in the controversy in which such judgment shall have been rendered.



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CHAPTER 1: ADMINISTRATION
SECTION FC 102: APPLICABILITY

NYC Administrative Code § 29-FC 102

102.1 Design and installation provisions.

The design and installation provisions of this code shall apply to:

1. Facilities established and conditions arising on or after the effective date of this code.
2. Facilities and conditions not lawfully existing prior to the effective date of this code.
3. Facilities and conditions lawfully existing prior to the effective date of this code, except as otherwise provided in Section 102.3.

102.2 Administrative, operational and maintenance provisions. The administrative, operational and maintenance provisions of this code, including permit and certification requirements, shall apply to:

1. Facilities, operations, conditions, uses and occupancies established or arising on or after the effective date of this code.
2. Facilities, operations, conditions, uses and occupancies established or existing prior to the effective date of this code.

102.2.1 Existing permits and certificates continued. Permits and certificates for facilities, operations, conditions, uses and occupancies issued pursuant to the New York City Fire Prevention Code and in effect on the effective date of this code shall remain in effect until they expire unless sooner revoked or suspended in accordance with this code. Renewal of such permits and certificates shall be in accordance with the provisions of this code.

102.2.2 New permits and certificates. In any case where a provision of this code requires a permit or certificate for a facility, operation, condition, use or occupancy and no permit or certificate was previously required therefor pursuant to the New York City Fire Prevention Code, such facility, operation, condition, use or occupancy may be continued

without such permit or certificate until July 1, 2009.

102.3 Lawfully existing facilities and conditions. Facilities, or parts thereof, lawfully existing on the effective date of this code, as to which the design or installation of a facility would not be allowed or approved under this code may be continued in compliance with the New York City Fire Prevention Code and other laws, rules and regulations or permit conditions applicable at the time such facility was lawfully allowed or approved, and as such provisions may be amended from time to time. Manufacturing, storage, handling or use of materials in premises under conditions that would not be allowed or approved under this code, but which conditions lawfully existed in such premises on the effective date of this code, may be continued in compliance with the requirements of the New York City Fire Prevention Code and other laws, rules and regulations or permit conditions applicable at the time such condition was lawfully allowed or approved, and as such provisions may be amended from time to time.

Exceptions:

1. Facilities and conditions lawfully existing prior to the effective date of this code shall comply with the requirements of this code when specifically required by this code.

2. Facilities and conditions lawfully existing prior to the effective date of this code shall comply with the requirements of this code when the commissioner determines such facility or condition to constitute a life safety hazard.

3. Facilities and conditions existing prior to the effective date of this code shall comply with the requirements of this code when the part of the building, structure, facility or premises in which the facility is located or the condition exists undergoes a change in use or occupancy on or after such effective date.

4. Facilities and conditions existing prior to the effective date of this code shall comply with the requirements of this code when the part of the building, structure, facility or premises in which the facility is located or the condition exists, undergoes alteration, whether made voluntarily, or as a result of damage, deterioration or other cause, on or after such effective date.

102.4 Application of construction codes. The design and construction of buildings, structures, facilities or other premises shall comply with the requirements of the construction codes.

102.5 Reserved.

102.6 Relationship with other applicable codes, standards and rules.

102.6.1 Referenced codes. Any codes or other provisions of law referenced in this code, including those referenced in Chapter 45, shall be considered part of the requirements of this code to the prescribed extent of each such reference. Where differences or inconsistencies arise between the provisions of this code and any other code or provision of law referenced in this code, the more restrictive provision shall govern.

102.6.1.1 Construction codes and Electrical Code references. References in this code to the construction codes or the Electrical Code shall not be deemed to be a grant of authority to the commissioner to enforce such codes, provided, however, that the department may require proof of compliance with the requirements of such codes pursuant to Section 105.3.9.

102.6.2 Appendices and referenced standards. Any appendix to this code and any referenced standard in Chapter 45 shall be considered part of the requirements of this code to the prescribed extent of each such reference. The provisions of any appendix or referenced standard may be amended by the commissioner pursuant to the rule making process set forth in the charter. Where differences or inconsistencies arise between the referenced standards, the provisions of this code or any rules promulgated thereunder, the provisions of this code or such rules shall govern.

102.6.3Rules. The commissioner may promulgate rules in accordance with the charter and this code.

102.7Subjects not regulated by this code. Where no applicable fire safety or other safety standards or requirements are set forth in this code, or applicable laws, codes, rules or regulations enforced by the commissioner, facilities, operations and conditions in a building, structure, facility or other premises shall comply with nationally recognized fire safety or other safety standards of the particular industry, as approved. Nothing herein shall derogate from the authority of the commissioner to determine compliance with the requirements of the codes, standards, or rules for those facilities, operations and conditions within such buildings, structures, facilities or other premises within the commissioner's jurisdiction or responsibility.

102.8Matters not adequately provided for in this code. Requirements that are essential for fire safety in an existing or proposed building, structure, or premises, or in connection with the regulation of any material, operation or facility, which are not specifically provided for by this code may be established by the commissioner.

102.9Internal references and inconsistent provisions. Where one chapter, section or other provision of this code requires compliance with or otherwise references another chapter, section or other provision of this code, such reference shall be construed in a manner that harmonizes the various provisions and furthers the purpose of this code.



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Chapter 10: MEANS OF EGRESS
SECTION FC 1025: EMERGENCY ESCAPE AND RESCUE

NYC Administrative Code § 29-FC 1025

1025.1 General.

Emergency escape and rescue openings as required by the Building Code shall be provided in Group R occupancies.

1025.2Reserved.

1025.3Reserved.

1025.4Operational constraints. Emergency escape and rescue openings and windows or other openings onto fire escapes, as that term is defined in the New York State Multiple Dwelling Law, shall be operational from the inside of the room without the use of keys or tools. Bars, grilles, grates or similar devices are permitted to be placed over emergency escape and rescue openings and windows or other openings onto fire escapes, provided the minimum net clear opening size complies with the requirements of the construction codes, including the Building Code and the New York State Multiple Dwelling Law, and such devices are releasable or removable from the inside without the use of a key, tool or force greater than that which is required for normal operation of the escape and rescue opening, window or other opening.

1025.5Certificate of approval. Bars, grilles, grates or similar devices placed over emergency escape and rescue openings, and windows or other openings onto fire escapes, shall be of a type for which a certificate of approval has been issued in accordance with this code.



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SECTION FC 1027: MAINTENANCE OF THE MEANS OF EGRESS

NYC Administrative Code § 29-FC 1027

1027.1 General.

The means of egress for buildings, structures or premises, or parts thereof, shall be maintained in accordance with the construction codes, including the Building Code and this section.

1027.2 Prohibition. It shall be unlawful to obstruct or impede access to any required means of egress, including any exit, exit access or exit discharge.

1027.3 Unobstructed and unimpeded egress required. All required means of egress, including each exit, exit access and exit discharge, shall be continuously maintained free from obstructions and impediments to immediate use in the event of fire or other emergency.

1027.3.1 Door hardware. Door hardware and other devices and physical components of the means of egress shall be maintained in good working order at all times.

1027.3.2 Security devices. It shall be unlawful for a security device to emit any substance that could obscure a means of egress in any building, structure or premises. Security devices affecting means of egress shall be subject to the approval of the Commissioner of Buildings in consultation with the commissioner.

1027.3.3 Snow and ice. All required means of egress shall be maintained free from the accumulation of snow and ice.

1027.3.4 Overcrowding. Premises shall not be caused, allowed or maintained in such a manner as to become overcrowded, such that the number of persons present on the premises and/or their location thereon obstructs or impedes access to any means of egress.

1027.4 Furnishings and decorations. Furnishings, decorations or other objects shall not be placed so as to obstruct exits, access thereto, egress therefrom, or visibility thereof. Hangings and draperies shall not be placed over exit doors

or otherwise be located to conceal or obstruct an exit except as authorized by the commissioner. Mirrors shall not be placed on exit doors. Mirrors shall not be placed in or adjacent to any exit in such a manner as to confuse the direction of exit.

1027.4.1 Corridor storage. It shall be unlawful to store combustible materials or combustible waste in corridors except as authorized by this code or by the commissioner by rule.

1027.5 Existing window gates and other restrictions. Bars, grilles, grates or similar devices installed on windows and other openings onto fire escapes prior to the effective date of this code shall be in accordance with the applicable laws, rules and regulations in effect at the time of installation, and Section 1025.4.

1027.6 Maintenance of window gates and other restrictions. Bars, grilles, grates or similar devices placed over emergency escape and rescue openings, and windows or other openings onto fire escapes shall be maintained in good working order.



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CHAPTER 1: ADMINISTRATION
SECTION FC 104: DUTIES AND POWERS OF COMMISSIONER

NYC Administrative Code § 29-FC 104

104.1 Enforcement.

The commissioner shall be responsible for the interpretation and enforcement of this code. The commissioner may adopt policies, procedures, rules and regulations in order to clarify or implement the application of its provisions. Such interpretations, policies, procedures, rules and regulations shall be in compliance with the intent and purpose of this code and shall, except in those instances in which a modification has been granted, not have the effect of waiving requirements specifically provided for in this code.

104.2 Applications and approvals. The commissioner shall receive, review and, if satisfactory, approve, applications for permits, certificates and other approvals, and design and installation documents required to be submitted to the commissioner by this code or the construction codes, issue permits, inspect buildings, structures, facilities, premises, marine vessels and vehicles for the purpose of enforcing compliance with the requirements of this code, and otherwise administer, implement and enforce the provisions of this code.

104.2.1 Acceptance of professional certification. The commissioner shall not accept professional certification of compliance with the requirements of this code and the rules in lieu of required department inspections, witnessing of tests, or approval of design and installation documents, except as otherwise provided in this section. Professional certification may only be accepted with respect to fire alarm system devices or equipment that are not part of the building's core fire alarm system. The commissioner shall adopt a written policy setting forth procedures by which professionally certified fire alarm system devices or equipment will be audited by the department to ensure the accuracy of such professional certifications. For purposes of this section, "professional certification" or "professionally certified" means the submission to the department of a signed, personal verification by a registered design professional that accompanies an application and/or design and installation documents filed with the department that attests that such application or design and installation documents do not contain any false information and that such application or design and installation documents are in compliance with all applicable laws, rules and regulations.

104.2.1.1 Disqualification for false certification. The commissioner may adopt rules setting forth the penalty for

submission of false or fraudulent documents certifying compliance with the requirements of this code and the rules. Penalties may include disqualification from submission of professionally certified applications, as set forth in FC104.2.1. Nothing contained herein shall be deemed to prohibit the submission of design and installation documents by registered design professionals for department review and approval.

104.3Right of entry.The commissioner and his or her authorized representatives, in the discharge of their duties, shall have the right to enter upon and inspect, at all reasonable times, any building, structure, facility, premises, marine vessel, watercraft, vehicle or any part thereof, for the purpose of determining compliance with the requirements this code and other applicable laws, rules and regulations enforced by the department. If access is not obtained, the commissioner shall have recourse to remedies provided by law to secure entry.

104.4Identification.When entering property pursuant to Section 104.3, officers and employees of the department shall identify themselves by exhibiting the badge or other official identification of the department; and other authorized representatives of the commissioner shall identify themselves by producing and exhibiting their authority in writing signed by the commissioner.

104.5Notices and orders.Notices, orders and violations may be issued by or in the name of the commissioner in accordance with Title 15 of the New York City Administrative Code to enforce the provisions of this code or the rules.

104.5.1Seizure of contraband material.The commissioner may order the seizure, destruction or other arrangement for disposal thereof of any device, equipment or other article, the manufacture, storage, handling, use, transportation or sale of which is prohibited by this code or the rules, or which is manufactured, stored, handled, used, transported or sold in violation thereof.

104.6Official records.The department shall keep official records of applications received, approvals, inspections, administrative decisions, permits and certificates issued, modifications approved, fees collected, and notices, orders and violations, and such other records as the commissioner may prescribe. Such official records shall be retained for the period required for retention of public records.

104.7Approved devices and equipment.All devices, equipment or other articles approved by the commissioner shall be designed, constructed, installed and used in accordance with such approval. Devices, equipment and other articles required by the provisions of this code to be of a type for which a certificate of approval has been issued shall be designed, constructed, installed and used in accordance with such certificate approval conditions, Section 112 and the rules.

104.7.1Device, equipment and system reuse.Devices, equipment and systems shall not be reused or reinstalled unless they have been reconditioned, tested and placed in good and proper working condition. Devices, equipment and systems that are unsafe to operate or use shall not be operated or used.

104.7.2Technical assistance.To determine the acceptability of technologies, processes, products, facilities, materials and uses attending the design, operation or use of a building, structure, facility or other premises subject to inspection by the commissioner, the commissioner may require the owner to provide, at the owner's expense, a technical opinion and report prepared by a registered design professional or other individual or organization whose qualifications are acceptable to the commissioner. Such individual or organization shall evaluate the safety of the design, operation or use of the building, structure, facility or other premises and the facilities, operations and conditions situated or conducted thereon, as applicable.

104.8Modifications.When the circumstances, conditions, limitations or surroundings of any business, occupation, trade, industry or premises to which this code applies are unusual, or such as to render it impracticable to enforce all the provisions applicable thereto, the commissioner may waive or modify such provisions to such extent as the commissioner may deem necessary consistent with public safety.

104.8.1Application for modification.Any owner or other person subject to a provision of this code may request the modification of such provision in accordance with this section.

104.8.1.1Submission.Any person seeking a modification shall submit a written request to the commissioner stating the grounds thereof supported by relevant evidence and citation to this code or any other law, rule or regulation or other legal authority. Any additional information or other supplemental submission requested by the commissioner shall be filed with the department within twenty (20) days of the date of the request, or within such other time as may be prescribed by the commissioner.

104.8.1.2Determination.The commissioner shall render a written determination denying the request, or granting such modification as the commissioner determines is necessary and appropriate upon such terms and conditions as the commissioner may prescribe.

104.8.1.3Stay of enforcement.The filing of such request for a modification shall not stay the enforcement of the provision. The person filing such modification may request a stay of enforcement of such provision. Such request shall be in writing and shall be subject to the same requirements as a modification. The commissioner shall expeditiously render a written determination of such request for a stay, giving due consideration to the interests of public safety, the costs of compliance, and the apparent merits of the request.

104.8.2Board of standards and appeals variances.Notwithstanding any other provision of law, rule or regulation, no application for a variance shall be granted by the board of standards and appeals in approving changes in bulk storage in excess of the standards set forth in this code or the rules, as it may apply to the storage of liquefied natural gas, synthetic or substitute natural gas or naptha in the liquid or gaseous state.

104.9Alternative devices, equipment and systems.The provisions of this code and the rules are not intended to prevent the design, installation or use of any device, equipment or system not specifically prescribed or prohibited by this code or the rules, provided that any such alternative has been approved by the commissioner. The commissioner may approve such an alternative device, equipment or system where the commissioner finds that the proposed design, installation or use is satisfactory and complies with the intent of the provisions of this code or the rules, and that the device, equipment or system offered is, for the purpose intended, at least the equivalent of that prescribed in this code or the rules in quality, strength, effectiveness, fire resistance, durability and safety.

104.10Fire investigations.The commissioner may investigate the cause, origin and circumstances of any fire, explosion or other life safety hazard.

104.11Authority at fires and other emergencies.The firefighting personnel in charge at the scene of a fire or other emergency involving the protection of life or property, or any part thereof, shall have the authority to direct such operation as necessary to extinguish or control any fire, perform any rescue operation, investigate the existence of suspected or reported fires, gas leaks or other hazardous conditions or situations, or take any other action necessary in the reasonable performance of duty. In the exercise of such power, firefighting personnel may prohibit any person, vehicle, marine vessel or object from approaching the scene and may remove, or cause to be removed or kept away from the scene, any vehicle, vessel or object which could impede or interfere with the operations of the department and, in the judgment of firefighting personnel, any person not actually and usefully employed in the extinguishing of such fire or in the preservation of property in the vicinity thereof.

104.11.1Barricades.The firefighting personnel in charge at the scene of a fire or other emergency may place ropes, guards, barricades or other obstructions across any street, alley, place or private property in the vicinity of such operation so as to prevent accidents or interference with the lawful efforts of the department to manage and control the situation.

104.11.2Obstructing representatives of the department.It shall be unlawful to obstruct, interfere with or otherwise hamper any representative of the department in conducting any inspection, issuing any notice, order or violation, or

otherwise enforcing the provisions of this code, or any other law, rule or regulation enforced by the department, or otherwise executing the performance of his or her lawful duties.

104.11.3 Systems and devices. No person shall render a life safety device, equipment or system inoperative during an emergency except as directed by the firefighting personnel in charge of the scene of a fire or other emergency.

104.12 Cooperation of other departments. Upon request of the commissioner, it shall be the duty of all departments to cooperate with the department at all times and to furnish the department with such information, reports and assistance as the commissioner may require.



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SECTION FC 105: PERMITS AND OTHER APPROVALS

NYC Administrative Code § 29-FC 105

105.1 General.

Permits and other approvals shall be required as set forth in Section 105.

105.1.1 Permits required. It shall be unlawful to manufacture, store, handle, use, sell or transport a hazardous material or combustible material, or to conduct an operation or to maintain a facility for which a permit is required pursuant to the provisions of this code without such permit. Permits required by this code shall be obtained from the commissioner. Permit and other applicable fees shall be paid prior to issuance of the permit. Issued permits shall be kept on the premises designated therein at all times and shall be readily available for inspection by any representative of the department.

105.1.2 Types of permits. There shall be two types of permits as follows:

1. Site-specific permit. Such permit authorizes the permit holder to manufacture, store, handle, use or sell hazardous materials or combustible materials, or conduct an operation or maintain a facility at a specific premises or location, for which a permit is required by Section 105.6.

2. Citywide permit. Such permit authorizes the permit holder to store, handle, use, sell or transport hazardous materials, or conduct an operation on a citywide basis, for which a permit is required by Section 105.6. A citywide permit is valid to store, handle, use, sell or transport hazardous materials or to conduct an operation at one or more locations provided the duration of such activity at any individual location does not exceed 30 days. Periods of activity in excess of 30 days at any one location shall require a sitespecific permit.

105.1.3 Permits for the same premises or location. When more than one permit is required for the same premises or other location or portion thereof, the commissioner may consolidate such permits into a single permit; provided that each type of hazardous material, operation or facility is listed in the permit, and provided further that the total fees payable for such single permit shall be determined by adding the fees for the permits consolidated into the single permit.

105.1.4 Approval of design and installation documents. Where approval of design and installation documents is required by this code or other law, rule and regulation, other than in connection with a permit application, applications shall be made for such approval in accordance with Section 105.4.

105.1.5 Insurance. The commissioner may require applicants for permits or other approvals to obtain and furnish proof of general liability insurance, in such amounts and in accordance with such requirements, as may be set forth in this code or the rules, otherwise required by law, or required as a condition of the permit or other approval. The permit or other approval shall expire by operation of law if any such required insurance lapses, expires or is cancelled during the term of the permit or other approval.

105.2 Permit application. Application for a permit required by this code shall be made to the commissioner in such form and detail as the commissioner may prescribe. Applications for permits shall be accompanied by design and installation documents and/or such other information or documentation as may be prescribed by this code, the rules or the department. Applications for permits relating to the storage, handling, use or transportation of high explosives shall be accompanied by proof of United States citizenship.

105.2.1 Reserved.

105.2.2 Inspection authorized. Before a permit or other approval is issued, the commissioner may inspect the building, structure, facility, premises, marine vessel, vehicle, or any portion thereof to confirm the facts set forth in the application, determine compliance with the requirements of this code, the rules and other applicable laws, rules or regulations enforced by the commissioner, or to evaluate whether any restrictions should be imposed as a condition of the permit or other approval. The department may require the applicant to arrange any such inspection, and require the applicant to attend such inspection with his or her design professionals, contractor or other appropriate representatives.

105.2.3 Time limitation on application. An application for a permit or other approval shall be deemed to have been abandoned six months after the date of filing, unless such application has been diligently prosecuted or a permit or other approval shall have been issued; except that the commissioner may grant one or more extensions of time for additional periods not exceeding 90 days each if there is reasonable cause.

105.2.4 Action on application. Completed permit applications for the manufacture, storage, handling, use, transportation or sale of flammable or combustible liquids, combustible materials or hazardous materials or an operation or facility that comply with the requirements of this code and other applicable laws, rules and regulations shall be approved by the commissioner no later than 40 calendar days after the submission thereof, except that on or before the fortieth day, the commissioner may, for good cause, extend such time for an additional 40 calendar days. Permit applications that do not comply with the requirements of this code and other applicable laws, rules and regulations shall be denied or preliminarily denied no later than 40 calendar days from the submission thereof and written notice of such denial or preliminary denial, stating the grounds therefor, shall be promptly given to the applicant. When a permit application has been denied or preliminarily denied and is thereafter revised and resubmitted to meet the stated grounds for denial, the revised completed application shall be approved or denied or preliminarily denied in accordance with the foregoing procedures and time periods.

105.3 Authority granted by permit. A permit shall constitute permission to manufacture, store, handle, use, sell or transport hazardous materials or combustible materials, conduct an operation, or maintain a facility, as applicable, in accordance with this code where a permit is required by Section 105.6. Such permission shall not be construed as authority to violate, cancel or set aside any of the provisions of this code or other applicable laws, rules or regulations.

105.3.1 Permit issuance and renewal. Every permit or renewal thereof granted by the commissioner shall be for a period specified therein, not to exceed two years, and shall expire at the end of such period unless the commissioner approves its renewal. Permits are not transferable and any change in occupancy, operation, tenancy or ownership shall require that a new permit be issued.

105.3.2 through and including 105.3.4 Reserved.

105.3.5 Posting the permit. Permits shall be posted in a conspicuous location on the premises designated therein at all times and shall be readily available for inspection by any representative of the department.

105.3.6 Compliance with the requirements of the code. The issuance or granting of a permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of other law, rule or regulation. Permits purporting to authorize any such violation shall not be valid. The department's approval of design and installation documents or other submission, in connection with or independent of a permit application, shall not prevent the department from requiring the correction of errors in such documents or other submission. Any addition to, or alteration of, approved design and installation documents shall be approved in advance by the department.

105.3.7 Reserved.

105.3.8 Hazardous industries. Except as otherwise provided in this code, no person shall engage in a hazardous industry, trade, occupation, activity or operation requiring the manufacture, storage, handling, sale, use or transportation of hazardous materials or combustible materials without a permit, issued upon such conditions as the commissioner deems necessary in the interest of public safety.

105.3.9 Compliance with the requirements of the construction codes and Electrical Code. The commissioner may require that the applicant for a permit or renewal thereof demonstrate, by submission of a certificate of occupancy or other authorization or approval issued by the Department of Buildings, that the building, structure or premises or portion thereof used for the manufacture, storage, handling or use of flammable or combustible liquids, combustible materials or hazardous materials, and all operations or facilities subject to this code, are designed, constructed and occupied in accordance with the certificate of occupancy, the construction codes and the Electrical Code.

105.3.9.1 Department of Buildings required approval. No permit shall be issued when work requires the approval of the Commissioner of Buildings in connection with a material, operation or facility unless proof is submitted to the department that such work has been approved by the Commissioner of Buildings.

105.4 Design and installation documents. Design and installation documents required to be submitted to the commissioner pursuant to the provisions of this code, the rules or the construction codes, including but not limited to those set forth below, or as directed by the commissioner to demonstrate or document that a device, equipment, system, operation or facility regulated by this code is designed and installed in accordance with this code, shall be submitted in accordance with this section. The time limitations for approval of design and installation documents and for deeming such submissions abandoned shall be as set forth in Section 105.2.4 and Section 105.2.3, respectively.

1. Aerosol products storage facilities:

1.1. General purpose warehouses (Section 2804).

1.2. Aerosol warehouses (Section 2804).

1.3. Liquid storage rooms (Section 2804).

1.4. Liquid warehouses (Section 2804).

1.5. Outside storage (Section 2805).

1.6. Retail display (Section 2806).

2. Aircraft fueling systems (Section 1106).

3. Ammonia diffusion systems for refrigerating systems using ammonia refrigerant (Section 606).
4. Sprinkler systems where the design is specified in this code (Sections 2306, 2307, 2308, 2309, 2310, 2804, 2806 and 3404).
5. Cellulose nitrate film storage facilities (Section 306).
6. CNG motor fuel-dispensing systems (Sections 2201).
7. Combustible fibers storage facilities:
 - 7.1. Loose fiber storage (Section 2904).
 - 7.2. Baled fiber storage (Section 2905).
8. Combustible material storage (Section 315).
9. Commercial cooking system fire extinguishing systems (Section 904).
10. Corrosive materials systems and facilities:
 - 10.1. Storage (Section 3104).
 - 10.2. Handling and use (Section 3105).
11. Cryogenic fluids systems and facilities:
 - 11.1. Storage (Sections 3203 and 3204).
 - 11.2. Handling and use (Sections 3203 and 3205).
 - 11.3. Liquefied natural gas facilities (Section 3206).
12. Dry cleaning systems using Class II and III solvents (Section 1207).
13. Explosion control systems for certain hazardous materials and special uses (Section 911).
14. Explosion (dust) protection systems for combustible metals, metal powders, metal dusts and sulfur (Section 1304).
15. Explosives (Section 3304).
16. Fire alarm systems (Building Code Section 907).
17. Fire apparatus access roads for developments (Section 503).
18. Flammable and combustible liquids systems and facilities:
 - 18.1. Piping, equipment, tanks, plants, terminals, fuel-dispensing facilities and similar facilities where flammable and combustible liquids are manufactured, stored, handled or used, including dispensing (Section 3404).
 - 18.2. Group M occupancy wholesale and retail sales uses (Section 3404).
 - 18.3. Liquid storage rooms (Section 3404).

- 18.4. Liquid storage warehouses (Section 3404).
- 18.5. Outdoor storage (Section 3404).
- 18.6. Bulk plants and terminals (Section 3406).
- 19. Flammable gases systems and facilities:
 - 19.1. Storage (Section 3504).
 - 19.2. Handling and use (Section 3505).
 - 19.3. CNG storage in portable containers (Section 3507).
 - 19.4. Methane gas recovery from landfills (Section 3508).
- 20. Flammable solids systems and facilities:
 - 20.1. Storage (Section 3604).
 - 20.2. Handling and use (Section 3605).
- 21 Flammable spraying, dipping or powder-coating systems and facilities:
 - 21.1. Spray booths (spray finishing)(Section 1504).
 - 21.2. Spray rooms (spray finishing) (Section 1504).
 - 21.3. Dip tanks (Section 1505).
 - 21.4. Spray booths (powder coating) (Section 1507).
 - 21.5. Spray rooms (powder coating) (Section 1507).
- 22. Flaring systems for refrigerating systems using flammable or toxic or highly toxic refrigerants (Section 606).
- 23. Hazardous materials systems and facilities (Sections 2703, 2704 and 2705) (applicable to compressed gases, corrosive materials, cryogenic fluids, explosives, flammable and combustible liquids, flammable gases, flammable solids, highly toxic and toxic materials, LPG, organic peroxides, oxidizers, pyrophoric materials, unstable (reactive) materials and water-reactive solids and liquids):
 - 23.1. Tanks (Section 2703).
 - 23.2. Piping, tubing, valves and fittings (Section 2703).
 - 23.3. Highly toxic and toxic compressed gas rooms (Section 2703).
- 24. Highly toxic and toxic materials systems and facilities:
 - 24.1. Storage, handling and use of highly toxic and toxic solids and liquids (Section 3703).
 - 24.2. Storage, handling and use of highly toxic and toxic compressed gases (Section 3704).
 - 24.3. Ozone gas generators (Section 3705).

- 25. High-piled combustible storage areas (Section 2301).
- 26. Industrial furnaces (Section 2101).
- 27. Liquid motor fuel-dispensing systems:
 - 27.1. Automotive liquid motor fuel-dispensing facilities (Section 2201).
 - 27.2. Marine liquid motor fuel-dispensing facilities (Section 2201).
- 28. LPG (Section 3801).
- 29. Medical gas storage rooms (Section 3006).
- 30. Non-flammable compressed gases systems and facilities (Section 3003).
- 31. Non-water fire extinguishing systems:
 - 31.1. Wet-chemical systems (Section 904).
 - 31.2. Dry chemical systems (Section 904).
 - 31.3. Foam systems (Section 904).
 - 31.4. Carbon dioxide systems (Section 904).
 - 31.5. Halon systems (Section 904).
 - 31.6. Clean-agent systems (Section 904).
- 32. Organic coating manufacturing process facilities (Section 2005).
- 33. Organic peroxides storage and facilities:
 - 33.1. Storage (Section 3904).
 - 33.2. Handling and use (Section 3905).
- 34. Oxidizer systems and facilities:
 - 34.1. Storage (Section 4004).
 - 34.2. Handling and use (Section 4005).
- 35. Oxygen-fuel gas systems (Sections 2601 and 2609).
- 36. Private fire hydrant systems (Section 508).
- 37. Pyrophoric materials systems and facilities:
 - 37.1. Storage (Section 4104).
 - 37.2. Handling and use (Section 4105).
 - 37.3. Storage, handling and use of silane gas (Section 4106).

38. Pyroxylin plastics systems and facilities (Section 4204).

39. Semiconductor fabrication facilities:

39.1. Facilities (Section 1803).

39.2. Fabrication areas (Section 1803).

39.3. Hazardous production material (HPM) rooms (Section 1803).

40. Treatment systems for refrigerating systems using toxic or highly toxic refrigerants (Section 606).

41. Unstable (Reactive) materials systems and facilities:

41.1. Storage (Section 4304).

41.2. Handling and use (Section 4305).

42. Water-mist fire extinguishing systems (Section 904).

43. Water-reactive solids and liquids systems and facilities:

43.1. Storage (Section 4404).

43.2. Handling and use (Section 4405).

105.4.1 Submissions. Design and installation documents shall be submitted in such number and in such form and detail as may be prescribed by the commissioner. The design and installation documents shall be prepared by a registered design professional. The commissioner may require that such submissions be made in an approved electronic format or medium.

105.4.2 Information on design and installation documents. Design and installation documents shall be drawn to scale. Design and installation documents shall indicate the location, nature and extent of the work proposed and demonstrate compliance with the requirements of this code, the rules and other applicable laws, rules and regulations.

105.4.3 Reserved.

105.4.4 Approved documents. The commissioner shall approve, or deny, or preliminarily deny design and installation documents in accordance with the procedures and time periods set forth in Section 105.2.4. Upon review and approval of design and installation documents, the commissioner shall mark such approval upon such documents and/or issue a letter of approval or other form of written authorization. Design and installation documents approved by the commissioner are approved with the intent that such design and installation documents comply in all respects with the requirements of this code, the rules and any other applicable laws, rules or regulations. Review and approval by the commissioner shall not relieve the applicant of the responsibility of compliance with the requirements of this code, the rules and any other applicable laws, rules or regulations.

105.4.5 Corrected documents. Where field conditions necessitate any change from the approved design and installation documents, corrected design and installation documents or other documentation acceptable to the department shall be submitted.

105.4.6 Retention of design and installation documents. One set of design and installation documents shall be retained by the commissioner. One set of approved design and installation documents shall be returned to the applicant, and shall be kept on the site of the building, structure or at the work site at all times and readily available for inspection.

by any representative of the department until the required permit is posted on the premises as required by Section 105.3.5, or where no permit is required, until the work performed under such approved design and installation documents has been inspected and approved by the department.

105.5Revocation.The commissioner may revoke a permit issued under the provisions of this code when:

1. The permit is used for a location or establishment other than that for which it was issued.

2. The permit is used for a purpose or operation other than that listed in the permit.

3. Conditions and limitations set forth in the permit have been violated.

4. There has been a false statement or misrepresentation material to the issuance of the permit.

5. The party engaging in the manufacture, storage, handle, use, sale or transportation of hazardous materials or combustible materials, or conducting an operation or maintaining a facility is different from the party to whom the permit was issued.

6. The permit holder fails, refuses or neglects to timely comply with the commissioner's orders or notices of violation duly served in accordance with this code, or other law, rule or regulation enforced by the department.

7. The permit was issued in error or in violation of this code or other applicable law, rule or regulation.

8. Circumstances or conditions material to the issuance of the permit applied for and issued have changed.

9. Other good cause exists.

105.6Required permits.The commissioner shall issue the following permits for the manufacture, storage, handling, use, transportation and sale of the following materials, the conduct of the following operations, and the design, installation, operation and maintenance of the following facilities in accordance with this code:

Aerosol products. A permit is required to store, handle or use an aggregate quantity of Level 1, 2 or 3 aerosol products in excess of 100 pounds (45.4 kg) net weight.

Amusement buildings. A permit is required to maintain or operate a special amusement building.

Automotive liquid motor fuel-dispensing facility. A permit is required to maintain or operate an automotive liquid motor fuel-dispensing facility.

Aviation operations. A permit is required for the following aviation operations:

1. To operate or maintain an aircraft-fueling vehicle.

2. To operate or maintain a seaplane base.

3. To conduct a helicopter landing at other than an approved heliport, helistop or airport.

4. To conduct a helicopter lift operation.

5. To conduct a hot air balloon operation.

Cellulose nitrate film. A permit is required to store, handle or use cellulose nitrate film in the following quantities:

1. Any amount in a Group A occupancy.

- Exception: Permits are not required for vehicles equipped for and using cryogenic fluids as a fuel for propelling the vehicle or for refrigerating the cargo.
- Table 105.6(2) Permit Amounts for Cryogenic Fluids
- Type of Cryogenic Fluid

Indoors (gallons) Outdoors (gallons) Flammable More than 1 10 Nonflammable 60 100 Oxidizing (includes oxygen) 10
50 Physical or health hazard not indicated above Any Amount Any Amount For SI: 1 gallon = 3.785 L.

Dry cleaning facilities. A permit is required to maintain or operate dry cleaning equipment that utilizes a Class II or Class III solvent.

Explosives. A permit is required to store, handle, use or sell explosives as follows:

1. Store, sell or offer for sale any amount of black powder and smokeless powder.
2. Store, sell or offer for sale any amount of blasting caps.
3. Store, sell or offer for sale 200 or more shells of small arms ammunition.
4. Store, handle, use, sell or offer for sale any amount of explosives, other than those specified in Items 1, 2 and 3 above.

Fireworks. A permit is required for each display or other event involving the handling, discharge or other use, or storage for use, of fireworks.

Flammable and combustible liquids. A permit is required:

1. To store, handle or use amounts of Class I liquids, other than paints, varnishes, lacquers, gasoline and other petroleum-based Class I liquids, in excess of 5 gallons (19 L), except that a permit is not required for the storage or use of Class I liquids in the fuel tank of a motor vehicle, aircraft, or watercraft.

2. To store, handle or use amounts of gasoline and other petroleum-based Class I liquids other than paints, varnishes and lacquers, in excess of 2 1/2 gallons (9.5 L), except that a permit is not required for the storage or use of gasoline or other petroleum-based Class I liquids in the fuel tank of a motor vehicle, aircraft, or watercraft.

3. To store, handle or use amounts of Class II or Class III liquids with a flash point of 300(degrees)F (149(degrees)C) or less, other than paints, varnishes and lacquers, in excess of 10 gallons (38 L), except that a permit is not required for the storage or use of Class II or Class III liquids with a flash point of 300(degrees)F (149(degrees)C) or less in the fuel tank of a motor vehicle, aircraft, or watercraft.

4. To store, handle or use amounts in excess of 20 gallons (76 L) of Class I, Class II or Class III liquids having a flash point of 300(degrees)F (149(degrees)C) or less that are commonly used for painting, varnishing, staining or other similar purposes, including paint, varnish and lacquer.

5. To store, handle or use amounts in excess of 70 gallons of petroleum based Class III liquids with a flash point exceeding 300(degrees)F (149(degrees)C).

6. To operate a bulk plant or terminal or bulk transfer facility where flammable and combustible liquids are blended, produced, processed, transported, stored, dispensed or used.

7. To manufacture flammable or combustible liquids.

8. To store and/or use fuel oil stored on a barge or marine vessel moored to or anchored at privately owned waterfront property.

9. To store and use fuel oil on mobile heating trailers.

Floor finishing. A permit is required to conduct floor finishing or surfacing operations over an area exceeding 350

square feet (33 m²) using Class I or Class II liquids or where the quantity of floor finishing or surfacing products stored, handled or used requires a flammable or combustible liquid permit pursuant to this section.

Fruit and crop ripening. A permit is required to maintain or operate a fruit-, or crop-ripening facility or conduct a fruit-ripening process using ethylene gas.

Fumigation and thermal insecticidal fogging. A permit is required to maintain or operate a facility in which a fumigant or thermal insecticidal fogger is used.

Hazardous materials. A permit is required to store, handle or use hazardous materials in excess of the amounts set forth in Table 105.6(3).3]Table 105.6(3) Permit Amounts for Hazardous Materials Type of Material Amount 1]Type of Material Amount 2]Combustible liquidsSee Section 105.6 for flammable and combustible liquidsCorrosive materials

GasesSee Table 105.6(1)

Liquids55 gallons

Solids1000 poundsExplosive materialsSee Section 105.6 for explosive materialsFlammable materials

GasesSee Table 105.6(1)

LiquidsSee Section 105.6 for flammable and combustible liquids

SolidsSee Table 105.6(4)Highly toxic materials

GasesSee Table 105.6(1)

LiquidsAny Amount

SolidsAny AmountOxidizing materials

GasesSee Table 105.6(1)

Liquids

Class 4Any Amount

Class 31 gallon

Class 210 gallons

Class 155 gallons

Solids

Class 4Any Amount

Class 310 pounds

Class 2100 pounds

Class 1500 poundsOrganic peroxides

Liquids

Class IAny Amount

Class IIAny Amount

Class III1 gallon

Class IV2 gallons

Class VNo Permit Required

Solids

Class I

Class II

Class III

Class IV

Class VAny AmountAny Amount10 pounds20 poundsNo Permit RequiredPyrophoric materials

Gases

Liquids

SolidsSee Table 105.6(1)Any AmountAny AmountToxic materials

Gases

Liquids

SolidsSee Table 105.6(1)10 gallons100 poundsUnstable (reactive) materials

GasesSee Table 105.6(1)

Liquids

Class 4

NYC Administrative Code § 29-FC 105

Class 3

Class 2

Class 1 Any Amount Any Amount 5 gallons 10 gallons

Solids

Class 4

Class 3

Class 2

Class 1 Any Amount Any Amount 50 pounds 100 pounds Water-reactive Materials

Gases See Table 105.6(1)

Liquids

Class 3

Class 2

Class 1 Any Amount 5 gallons 55 gallons

Solids

Class 3

Class 2

Class 1 Any Amount 50 pounds 500 pounds For SI: 1 gallon = 3.785 L, 1 pound = 0.454 kg.] Table 105.6(4) Permit Amounts for Flammable Solids Forms of Flammable Solid Indoors (pounds) Outdoors (pounds) Pigs, ingots, billets, heavy castings 1,000 100 Light castings, light metallic products 125 100 Scraps, shavings, powders, dusts 1 100

Hazardous production material (HPM) facilities. A permit is required to store, handle or use hazardous production materials.

High-piled storage. A permit is required to use an area exceeding 500 square feet (46 m²) in a building or structure or part thereof as a high-piled storage area.

Hot work operations. A permit is required to conduct hot work using oxygen and a flammable gas.

Industrial furnaces. A permit is required to maintain or operate an industrial furnace regulated by Chapter 21.

Laboratory units. A permit is required to store, handle or use hazardous materials in a laboratory unit in amounts exceeding 1 gallon (3.8 L) of flammable liquid, 1 gallon (3.8 L) of combustible liquid or 75 SCF (2.12 m³) of flammable gas.

Liquefied petroleum gas (LPG). A permit is required to store, handle or use amounts of LPG in excess of the amounts set forth in Table 105.6(1).

Exception: A permit is not required for stationary installations in Group R-3 occupancies.

Lumber yards. A permit is required to store amounts of lumber exceeding 100,000 board feet (8,333 ft³) (236 m³).

Marine liquid motor fuel-dispensing facility. A permit is required to maintain or operate a marine liquid motor fuel dispensing facility.

Methane recovery. A permit is required for the recovery of methane from landfills and related processing.

Natural gas liquefaction facility. A permit is required to maintain or operate a natural gas liquefaction facility.

Open flames. A permit is required to use open flames:

1. In any public assembly occupancy.
2. In any other place of public gathering.
3. In a covered mall building.

Organic coatings. A permit is required to conduct an organic-coating manufacturing operation producing more than 1 gallon (4 L) of an organic coating in one day.

Places of assembly. A permit is required to maintain or operate a place of assembly.

Portable fueled space heaters. A permit is required to store, handle or use portable fueled space heaters as follows:

1. Fueled by a combustible liquid.
2. Fueled by compressed natural gas (CNG).
3. Fueled by liquefied petroleum gas (LPG).
4. Fueled by piped natural gas, except in Group R-3 occupancies.

Pyrotechnic material. A permit is required to store, handle or sell, including storage for sale, any quantity of pyrotechnic materials, articles and devices, other than pyrotechnic materials, articles and devices used solely for a purpose other than to create a special effect.

Pyroxylin plastics. A permit is required to store, handle and/or use pyroxylin plastics as follows:

1. To store, handle and/or use more than 25 pounds (11 kg) of raw pyroxylin plastic.
2. To use any amount of raw pyroxylin plastic for the assembly or manufacture of articles.

Refrigerating system. A permit is required to maintain or operate a refrigerating system that uses a group A1, A2,

A3, B1, B2 or B3 refrigerant or that is mounted on or suspended from a roof or ceiling.

Exceptions:

1. A refrigerating system of less than five horsepower that uses a group A1 refrigerant and that is not mounted on or suspended from a roof or ceiling.
2. A refrigerating system installed in the residence portion of any building, installed in motor vehicles, marine vessels, watercraft or tank cars, or employing water or air as a refrigerant.

Repair garages. A permit is required to maintain or operate a repair garage.

Special effects. A permit is required for:

1. The discharge or other use for any purpose of any material, article or device of an explosive, flammable or combustible nature used to create a special effect, including fireworks meeting the definition of fireworks, 1.4G, and pyrotechnic materials, articles or devices.
2. The storage for use in a special effects display or other event of any material, article or device of an explosive, flammable or combustible nature, including fireworks meeting the definition of fireworks, 1.4G, and pyrotechnic materials, articles or devices.

Spraying or dipping. A permit is required to conduct a spraying or dipping operation utilizing flammable or combustible liquids or the application of combustible powders regulated by Chapter 15.

Sulfur. A permit is required to store, handle or use sulfur in amounts that exceed 200 pounds (90.8 kg).

Tar kettles. A permit is required to store, handle or use a tar kettle.

Tire-rebuilding plants. A permit is required to maintain or operate a tire-rebuilding plant.

Tires, scrap tires and tire byproducts. A permit is required to store tires, scrap tires and tire byproducts, except tires mounted on vehicles, in amounts that exceed:

1. 2,500 cubic feet (71 m³) of total volume of scrap tires or 1,000 tires, whichever is less, either outdoors, or in buildings of noncombustible construction that are protected throughout by a sprinkler system.
2. 250 cubic feet (7.1 m³) of total volume of scrap tires or 100 tires, whichever is less, in buildings of combustible construction, or in buildings of noncombustible construction that are not protected throughout by a sprinkler system.

Transportation of hazardous materials. A permit is required to transport hazardous materials, as follows:

1. Any marine vessel transporting upon the navigable waters within the city, any amount of explosives for delivery at a wharf, pier, bulkhead, or other structure over or contiguous to such navigable waters, or to a marine vessel lying thereto, in excess of the amount required for the vessel's own use.
2. Any motor vehicle transporting a flammable liquid in a quantity exceeding 1,000 pounds (454 kg) aggregate gross weight, except vehicles transporting paint products prominently labeled as such in accordance with applicable laws, rules and regulations.
3. Any motor vehicle transporting a combustible liquid in a quantity exceeding 1,000 pounds (454 kg) aggregate gross weight, except vehicles transporting paint products prominently labeled as such in accordance with applicable laws, rules and regulations.

4. Any motor vehicle transporting a compressed gas in an amount exceeding the limits set forth in Tables 105.6(1) or 105.6(2).

5. Any motor vehicle transporting any amount of explosives, except small arms ammunition.



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NEW YORK CITY CODE, CHARTER AND RULES

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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK

TITLE 29: NEW YORK CITY FIRE CODE

CHAPTER 2 NEW YORK CITY FIRE CODE

CHAPTER 1: ADMINISTRATION

SECTION FC 106: INSPECTIONS

NYC Administrative Code § 29-FC 106

106.1 Inspection authority.

The commissioner may enter and examine any building, structure, facility, premises, marine vessel, watercraft or vehicle in accordance with Section 104.3 for the purpose of enforcing this code or any other law, rule or regulation enforced by the commissioner.

106.2 Reserved.

106.3 Concealed work. Whenever any installation subject to inspection, testing and/or approval in accordance with this code, the construction codes or any other law, rule or regulation prior to use is covered or concealed without having first been inspected, tested and/or approved, the commissioner may require that such work be exposed for inspection.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
CHAPTER 1: ADMINISTRATION
SECTION FC 107: MAINTENANCE

NYC Administrative Code § 29-FC 107

107.1 Maintenance of safeguards.

Whenever or wherever any device, equipment or system is installed, condition is established, or action is taken, whether or not required for compliance with the requirements of this code or the rules, such device, equipment, system, condition, or action shall thereafter be continuously maintained in accordance with this code and the rules.

107.2 Testing and operation. Devices, equipment and systems requiring periodic inspection, testing or operation to ensure maintenance shall be inspected, tested or operated as set forth in this code and the rules.

107.2.1 Test and inspection records. Required test and inspection records shall be available at all times for inspection by any representative of the department or such records as the commissioner designates shall be filed with the department.

107.2.2 Reinspection and testing. Where any work, installation or test required to be witnessed by a representative of the department does not pass an initial inspection or test, the necessary corrections shall be made so as to achieve compliance with the requirements of this code or other law, rule or regulation enforced by the commissioner. The non-complying condition shall then be corrected and arrangements made for reinspection and/or retesting.

107.3 Supervision. Maintenance and testing shall be under the supervision of a competent person who shall ensure that such maintenance and testing are conducted at specified intervals in accordance with this code and the rules. When required by specific provisions of this code or the rules, such person shall be certified by the department or the Department of Buildings.

107.4 Tampering with or rendering equipment inoperable. It shall be unlawful for any person to deface, obscure, remove or otherwise tamper with or render inoperable or inaccessible any fire protection system, fire hydrant, fire detection and alarm system, portable fire extinguisher or other fire appliance and related appurtenances, except as necessary during emergencies, maintenance, repairs, alterations, drills, prescribed testing or as otherwise authorized by

the commissioner.

Exception: Non-emergency use of fire hydrants approved by the Department of Environmental Protection.

107.4.1 Temporary covering of fire protection devices. Coverings placed on or over fire protection devices to protect them from damage during construction operations shall be removed immediately upon the completion of each work shift.

107.4.2 Other tampering. Locks, gates, doors, barricades, chains, enclosures, signs, tags or seals required by this code, the rules, permit or order of the commissioner shall not be removed, defaced, obscured, unlocked and/or otherwise rendered illegible or inoperable.

107.5 Owner/occupant responsibility. The owner shall be responsible at all times for the safe maintenance of a building, structure and premises in accordance with this code. Correction and abatement of violations of this code and the rules shall be the responsibility of the owner. If an occupant creates, or allows to be created, hazardous conditions in violation of this code or the rules, the occupant shall also be responsible for the abatement of such hazardous conditions.

107.6 Overcrowding. It shall be unlawful to cause overcrowding, maintain an indoor or outdoor space in an overcrowded condition, or allow an indoor or outdoor area or space to become overcrowded. The commissioner may order remedial actions necessary to abate the overcrowding condition and prevent future recurrence of such condition, including suspending or terminating the event or other gathering, vacating the premises, enforcing the lawful use and maximum occupancy of the premises and/or requiring the provision of fire guards.

107.7 Recordkeeping. Recordkeeping required by this code, the rules or the referenced standards, including records of staff training, inspections, tests, servicing and other operation or maintenance of devices, equipment, systems or facilities, shall be maintained on the premises or other approved location for a minimum of 3 years, unless a different period of time is specified in such code, rules or referenced standards.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
CHAPTER 1: ADMINISTRATION
SECTION FC 109: VIOLATIONS

NYC Administrative Code § 29-FC 109

109.1 Violations.

The provisions of this code and the rules shall be enforced in accordance with this chapter, Title 15 of the New York City Administrative Code and the rules.

109.2 Penalties. Penalties for violations of this code and the rules shall be in accordance with this chapter, Title 15 of the New York City Administrative Code and the rules.

109.2.1 Transportation of extremely hazardous materials. Except for transportation subject to Section 2707.4 and in addition to any other penalties provided by law, rule or regulation, a person who transports explosives, fireworks, chlorine, or any hazardous material in violation of this code or the rules shall be guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not less than one thousand dollars and not more than ten thousand dollars, or imprisonment for not more than six months or both, for each offense.

109.2.2 Failure to provide fire protection systems. In addition to any other penalties provided by law, rule or regulation, any person who shall violate, or refuse, or neglect to comply with any provision of law requiring a sprinkler system, fire alarm system or emergency lighting in a Group A occupancy shall upon conviction thereof be punished by a fine of not less than five hundred dollars nor more than ten thousand dollars for the first violation, not less than one thousand dollars nor more than ten thousand dollars for the second violation, not less than fifteen hundred dollars nor more than ten thousand dollars for the third violation, and not less than two thousand dollars nor more than ten thousand dollars for the fourth violation, and every subsequent violation, or, for any such violation by imprisonment for not more than six months, or by both such fine and imprisonment.

109.2.3 Criminal liability. In the event that any person is burned by the explosion of any material the sale of which is prohibited by this code, or which has not been approved as herein provided, and death ensues therefrom, in addition to any other penalties provided by law, rule or regulation, the person found guilty of selling the material shall be deemed guilty of a felony, and, upon conviction, shall be punished by a fine of not less than one thousand dollars, nor more than

five thousand dollars, or by imprisonment for a term not less than one year nor more than five years; and in case of a bodily injury the person injured may maintain an action for damages against the person violating the provisions of this code.

109.2.4 Civil penalty for use of fireworks without a permit. Notwithstanding any other provision of law, and in addition to any criminal penalties that may apply, any person who violates Section 105.6 by discharging or otherwise using fireworks without a permit shall be liable for a civil penalty of seven hundred fifty dollars, which may be recoverable in a proceeding before the New York City Environmental Control Board. For the purposes of subdivision e of Section 15-230 of the Administrative Code, such violation shall be deemed to be hazardous.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 11: AVIATION FACILITIES AND OPERATIONS
SECTION FC 1101: GENERAL

NYC Administrative Code § 29-FC 1101

1101.1 Scope.

This chapter shall govern the design, installation, operation and maintenance of aviation facilities, including aircraft landing sites, airports, heliports, helistops, helicopter landings, seaplane bases and helicopter lift operations.

1101.2 Regulations not covered. Except as otherwise provided in this chapter or any other federal, state or local law, rule or regulation, aviation facilities and related operations shall be operated or conducted in accordance with nationally recognized standards.

1101.3 General. Aircraft landing sites, airports, heliports, helistops and seaplane bases shall be designed, installed, operated and maintained in accordance with this chapter. Aviation operations, including helicopter landings, helicopter lift operations and hot air balloon operations, shall be conducted in accordance with this chapter.

1101.4 Permits. Permits shall be obtained for aircraft fueling vehicles, seaplane base operations, helicopter landing operations, helicopter lift operations and hot air balloon operations, as set forth in Section 105.6.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 11: AVIATION FACILITIES AND OPERATIONS
SECTION FC 1102: DEFINITIONS

NYC Administrative Code § 29-FC 1102

1102.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

AIRCRAFT LANDING SITE. An area of land or water or a structural surface that is designed or used for the landing or takeoff of aircraft, other than helicopters, and any appurtenant areas, but which is not designed or used for fueling, defueling, maintenance, repairs or storage of such aircraft.

AIRCRAFT OPERATION AREA. Any area used or intended for use for the parking, taxiing, takeoff, landing or other aviation-related operations.

AIRPORT. An area of land or structural surface that is designed or used for the landing and takeoff of aircraft with an overall length greater than 39 feet (11 887 mm) and an overall exterior fuselage width greater than 6.6 feet (2012 mm), and any appurtenant areas that are designed or used for aviation facilities and operations.

AVIATION FACILITY. Any premises upon which an aircraft landing site, airport, heliport, helistop, seaplane base or other aviation-related operation is located or conducted.

DISCHARGE AREA. Any portion of a premises or other location to which an external load is to be delivered by helicopter.

EXTERNAL LOAD. Cargo transported by, but not within, the helicopter.

HELICOPTER LIFT OPERATION. The movement of an external load with the use of a helicopter.

HELIPORT. An area of land or water or a structural surface that is designed or used for the landing and takeoff of helicopters, and any appurtenant areas which are designed or used for heliport facilities and operations.

HELISTOP. An area of land or water or a structural surface that is designed or used for the landing or takeoff of helicopters, but which is not designed or used for fueling, defueling, maintenance, repairs or storage of helicopters, including any staging or other appurtenant areas.

HOT AIR BALLOON OPERATION. The filling of balloons with hot air for purposes of display or flight.

HYDRANT-FUELING VEHICLE. A type of aircraft fueling vehicle that is equipped to transfer fuel between a fuel hydrant and an aircraft.

SEAPLANE BASE. An area of water that is used for the landing or takeoff of airplanes, and any appurtenant areas of land or water designed or used for fueling, defueling, maintenance, repair or storage of seaplanes.

STAGING AREA. Any portion of a premises or other location from where an external load is to be lifted by helicopter.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 11: AVIATION FACILITIES AND OPERATIONS
SECTION FC 1103: GENERAL PRECAUTIONS

NYC Administrative Code § 29-FC 1103

1103.1 Sources of ignition.

It shall be unlawful to use or maintain an open flame, flameproducing device or other source of ignition in an aircraft hangar or other location within 50 feet (15 240 mm) of an aircraft-fueling or defueling operation.

1103.2Smoking.It shall be unlawful to smoke in an aircraft hangar or other location used for aircraftfueling or defueling, cleaning, paint removal or painting operations. "No Smoking" signs shall be provided in accordance with Section 310.

1103.3Maintenance.The aircraft operation area and related areas shall be kept free from combustible waste at all times.

1103.4Fire apparatus access roads.Fire apparatus access roads shall be provided and maintained in accordance with Chapter 5 and the construction codes, including the Building Code. Fire apparatus access roads and aircraft parking positions shall be designed in a manner so as to preclude the possibility of fire vehicles traveling under any portion of a parked aircraft.

1103.5Dispensing of flammable and combustible liquids.Flammable and combustible liquids shall be dispensed and otherwise stored, handled and used in accordance with this chapter and Chapter 34. Automotive liquid motor fuel-dispensing facilities shall be designed, installed, operated and maintained in accordance with Chapter 22.

1103.6Combustible material storage.Combustible materials stored in aircraft hangars shall be stored in approved locations and containers.

1103.7Hazardous material storage.Hazardous materials shall be stored in accordance with Chapter 27.



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Chapter 11: AVIATION FACILITIES AND OPERATIONS
SECTION FC 1104: AIRCRAFT MAINTENANCE

NYC Administrative Code § 29-FC 1104

1104.1 Transferring flammable and combustible liquids.

Flammable and combustible liquids shall not be dispensed into or removed from a container, tank, vehicle or aircraft, except in approved locations.

1104.2Application of flammable and combustible liquid finishes.The application of flammable or Class II combustible liquid finishes shall be conducted in an approved location, using methods and procedures in accordance with Chapter 15.

1104.3Cleaning parts.Class IA flammable liquids shall not be used to clean aircraft, aircraft parts or aircraft engines. Cleaning with other flammable and combustible liquids shall be in accordance with Section 3405.3.6.

1104.4Spills.The following actions shall be taken in response to spills of flammable and combustible liquids and other hazardous materials, in addition to the procedures set forth in Section 1106.11.

1104.4.1Cessation of work.Activities in the affected area not related to the mitigation of the spill shall cease until the spilled material has been removed or the hazard has been mitigated.

1104.4.2Vehicle movement.Aircraft or other vehicles shall not be moved through the spill area until the spilled material has been removed or the hazard has been mitigated.

1104.4.3Mitigation.Spills shall be reported, documented and mitigated in accordance with this chapter and Section 2703.3, and any other applicable law, rule or regulation.

1104.5Running engines.Aircraft engines shall not be operated in aircraft hangars, except in approved engine test areas.

1104.6Open flame.Repair of aircraft requiring the use of open flames, spark-producing devices or the heating of

parts above 500(degrees)F (260(degrees)C) shall only be performed outdoors or in an area complying with the requirements of the construction codes, including the requirements of the Building Code for a Group F-1 occupancy.



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Chapter 11: AVIATION FACILITIES AND OPERATIONS
SECTION FC 1105: PORTABLE FIRE EXTINGUISHERS

NYC Administrative Code § 29-FC 1105

1105.1 General.

Portable fire extinguishers suitable for flammable or combustible liquid and electrical-type fires shall be provided as set forth in Sections 1105.2 through 1105.7 and Section 906. Portable fire extinguishers required by this section shall be inspected and maintained in accordance with Section 906.

1105.2On towing vehicles.Vehicles used for towing aircraft shall be equipped with a minimum of one listed portable fire extinguisher complying with the requirements of Section 906 and having a minimum rating of 20-B:C.

1105.3On welding apparatus.Welding apparatus shall be equipped with a minimum of one listed portable fire extinguisher complying with the requirements of Section 906 and having a minimum rating of 2-A:20-B:C.

1105.4On aircraft-fueling vehicles.Aircraft-fueling vehicles shall be equipped with a minimum of two listed portable fire extinguishers complying with the requirements of Section 906, each having a minimum rating of 20-B:C. A portable fire extinguisher shall be readily accessible from either side of the vehicle.

1105.5On hydrant-fueling vehicles.Hydrant-fueling vehicles shall be equipped with a minimum of one listed portable fire extinguisher complying with the requirements of Section 906, and having a minimum rating of 20-B:C.

1105.6At fuel-dispensing stations.Portable fire extinguishers shall be provided as follows:

1. Where the open-hose discharge capacity of the fueling system is not more than 200 gallons per minute (13 L/s), a minimum of two listed portable fire extinguishers complying with the requirements of Section 906 and having a minimum rating of 20-B:C shall be provided.

2. Where the open-hose discharge capacity of the fueling system is more than 200 gallons per minute (13 L/s) but not more than 350 gallons per minute (22 L/s), a minimum of one listed wheeled portable fire extinguisher complying with the requirements of Section 906 and having a minimum extinguishing rating of 80-B:C, and a minimum agent

capacity of 125 pounds (57 kg), shall be provided.

3. Where the open-hose discharge capacity of the fueling system is more than 350 gallons per minute (22 L/s), a minimum of two listed wheeled portable fire extinguishers complying with the requirements of Section 906 and having a minimum rating of 80-B:C each, and a minimum agent capacity of 125 pounds (57 kg) of each, shall be provided.

1105.6.1 Location of portable fire extinguishers. Portable fire extinguishers at aircraft fuel-dispensing stations shall be located such that pumps or dispensers are not more than 75 feet (22 860 mm) from one such extinguisher.

1105.7 Fire extinguisher access. Portable fire extinguishers required by this chapter shall be accessible at all times. Where necessary, provisions shall be made to clear accumulations of snow, ice and other forms of weather-related obstructions.

1105.7.1 Cabinets. Cabinets and enclosed compartments used to house portable fire extinguishers shall be clearly marked with the words FIRE EXTINGUISHER in letters at least 2 inches (51 mm) high. Cabinets and compartments shall be readily accessible at all times.



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Chapter 11: AVIATION FACILITIES AND OPERATIONS
SECTION FC 1106: AIRCRAFT AND MOTOR VEHICLE FUELING

NYC Administrative Code § 29-FC 1106

1106.1 Motor vehicle fuel-dispensing facilities.

Motor vehicle fuel-dispensing facilities at aviation facilities shall be designed, installed, operated and maintained in accordance with Chapter 22.

1106.2 Aircraft-fueling systems. Aircraft-fueling systems shall be designed and constructed in accordance with NFPA 407.

Exception: Aircraft fueling systems may be designed and constructed as a full service automotive liquid motor vehicle fuel-dispensing facility in accordance with Chapter 22, subject to such conditions as the commissioner may require.

1106.3 Design of aircraft-fueling vehicles. Aircraft-fueling vehicles shall be designed in accordance with Section 1106 and NFPA 407.

1106.3.1 Transfer apparatus. Aircraft-fueling vehicles shall be equipped and maintained with an approved transfer apparatus.

1106.3.1.1 Internal combustion type. Where such transfer apparatus is operated by an individual unit of the internal-combustion-motor type, such power unit shall be located as remotely as practicable from pumps, piping, meters, air eliminators, water separators, hose reels, and similar equipment, and shall be housed in a separate compartment from any of the aforementioned items. The fuel tank in connection therewith shall be suitably designed and installed, and the maximum fuel capacity shall not exceed 5 gallons (19 L) where the tank is installed on the engine. The exhaust pipe, muffler and tail pipe shall be shielded.

1106.3.1.2 Gear operated. Where operated by gears or chains, the gears, chains, shafts, bearings, housing and all parts thereof shall be of an approved design and shall be installed and maintained in an approved manner.

1106.3.1.3Vibration isolation.Flexible connections for the purpose of eliminating vibration are allowed if the material used therein is designed, installed, operated and maintained in an approved manner, provided such connections do not exceed 24 inches (610 mm) in length.

1106.3.2Pumps.Pumps of a positive-displacement type shall be provided with a bypass relief valve set at a pressure of not more than 35 percent in excess of the normal working pressure of such unit. Such units shall be equipped and maintained with a pressure gauge on the discharge side of the pump.

1106.3.3Dispensing hoses and nozzles.Hoses shall be designed for the transferring of hydrocarbon liquids and shall not be any longer than necessary to provide efficient fuel transfer operations. Hoses shall be equipped with an approved shutoff nozzle. Fuel-transfer nozzles shall be self-closing and designed to be actuated by hand pressure only. Notches and other devices shall not be used for holding a nozzle valve handle in the open position. Nozzles shall be equipped with a bonding cable complete with proper attachment for aircraft to be serviced.

1106.3.4Protection of electrical equipment.Electric wiring, switches, lights and other sources of ignition, when located in a compartment housing piping, pumps, air eliminators, water separators, hose reels or similar equipment, shall be enclosed in a vapor-tight housing. Electrical motors located in such a compartment shall be of a type approved for use as specified in the Electrical Code.

1106.3.5Venting of equipment compartments.Compartments housing piping, pumps, air eliminators, water separators, hose reels and similar equipment shall be adequately ventilated at floor level or within the floor itself.

1106.3.6Accessory equipment.Ladders, hose reels and similar accessory equipment used for aircraft-fueling operations shall be of an approved type, as follows:

1. Ladders constructed of noncombustible material are allowed to be used with or attached to aircraft-fueling vehicles, provided the manner of attachment or use of such ladders is approved and does not constitute an additional fire or accident hazard in the operation of such fueling vehicles.

2. Hose reels used in connection with fueling vehicles shall be constructed of noncombustible materials and shall be provided with a packing gland or other device which will preclude fuel leakage between reels and fuel manifolds.

1106.3.7Electrical bonding provisions.Transfer apparatus shall be metallically interconnected with tanks, chassis, axles and springs of aircraft-fueling vehicles.

1106.3.7.1Bonding cables.Aircraft-fueling vehicles shall be provided and maintained with a substantial heavy-duty electrical cable of sufficient length to be bonded to the aircraft to be serviced. Such cable shall be metallically connected to the transfer apparatus or chassis of the aircraft-fueling vehicle on one end and shall be provided with a suitable metal clamp on the other end, to be fixed to the aircraft.

1106.3.7.2Bonding cable protection.The bonding cable shall be bare or have a transparent protective sleeve and be stored on a reel or in a compartment provided for no other purpose. It shall be carried in such a manner that it will not be subjected to sharp kinks or accidental breakage under conditions of general use.

1106.3.8Smoking.Smoking in aircraft-fueling vehicles is prohibited. Signs to this effect shall be conspicuously posted in the driver's compartment of all fueling vehicles.

1106.3.9Smoking equipment.Smoking equipment such as cigarette lighters and ash trays shall not be provided in aircraft-fueling vehicles.

1106.4Operation, maintenance and use of aircraft-fueling vehicles.The operation, maintenance and use of aircraft-fueling vehicles shall be in accordance with Sections 1106.4.1 through 1106.4.5 and other applicable provisions

of this chapter.

1106.4.1 Proper maintenance. Aircraft-fueling vehicles and all related equipment shall be properly maintained and kept in good repair. Accumulations of oil, grease, fuel and other flammable or combustible waste are prohibited. Maintenance and servicing of such equipment shall be accomplished in approved areas.

1106.4.2 Vehicle integrity. Tanks, pipes, hoses, valves and other fueling equipment shall be maintained leak free at all times.

1106.4.3 Removal from service. Aircraft-fueling vehicles and related equipment which are in violation of Section 1106.4.1 or 1106.4.2 shall be immediately defueled, removed from service and properly repaired or disposed of.

1106.4.4 Identification of operator. Aircraft-fueling vehicles that are operated by a person, firm or corporation other than the permittee or the permittee's authorized employee shall be provided with a legible sign visible from outside the vehicle showing the name of the person, firm or corporation operating such unit.

1106.4.5 Training. Aircraft-fueling vehicles shall be attended and operated by competent personnel familiar with the safety hazards of each type of fuel used at the facility.

1106.5 Fueling and defueling. Aircraft-fueling and defueling operations shall be conducted in accordance with Sections 1106.5.1 through 1106.5.4.

1106.5.1 Positioning of aircraft-fueling vehicles. Aircraft-fueling vehicles shall not be parked or otherwise allowed to stop or stand in a position where such vehicle would obstruct egress from an aircraft, including emergency exits. Aircraft-fueling vehicles shall not be parked or otherwise permitted to stop or stand under any portion of an aircraft.

1106.5.1.1 Fueling vehicle egress. A clear path shall be maintained for aircraft-fueling vehicles to allow ready access to and egress from the fueling area.

1106.5.1.2 Aircraft vent openings. A clear space of at least 10 feet (3048 mm) shall be maintained between aircraft fuel-system vent openings and an aircraft-fueling vehicle.

1106.5.1.3 Parking. Prior to leaving the cab, the operator of an aircraft-fueling vehicle shall set the parking brake. At least two chock blocks not less than 5 inches by 5 inches by 12 inches (127 mm by 127 mm by 305 mm) in size and dished to fit the contour of the tires shall be utilized and positioned in such a manner so as to preclude movement of the vehicle in any direction.

1106.5.2 Electrical bonding. Aircraft-fueling vehicles shall be electrically bonded to the aircraft being fueled or defueled. Bonding connections shall be made prior to making fueling connections and shall not be disconnected until the fuel-transfer operations are completed and the fueling connections have been removed. Where a hydrant service vehicle or cart is used for fueling, the hydrant coupler shall be connected to the hydrant system prior to bonding the fueling equipment to the aircraft.

1106.5.2.1 Conductive hose. In addition to the bonding cable required by Section 1106.5.2, conductive hose shall be used for all fueling operations.

1106.5.2.2 Bonding conductors on transfer nozzles. Transfer nozzles shall be equipped with approved bonding conductors which shall be clipped or otherwise positively engaged with the bonding attachment provided on the aircraft adjacent to the fuel tank cap prior to removal of the cap.

Exception: In the case of overwing fueling where no appropriate bonding attachment adjacent to the fuel fill port has been provided on the aircraft, the fueling operator shall touch the fuel tank cap with the nozzle spout prior to removal of the cap. The nozzle shall be kept in contact with the fill port until fueling is completed.

1106.5.2.3 Funnels. It shall be unlawful to use funnels in aircraft-fueling operations.

1106.5.3 Training. All personnel engaged in fuel storage and aircraft-fueling operations shall receive appropriate hazard and fire safety training relating to such storage and fueling operation, including training in the use of fire extinguishing equipment. The owner or operator of the aviation facilities shall maintain on the premises a record of all such training and make such records available for inspection by any department representative.

1106.5.4 Transfer personnel. During fuel-transfer operations, a qualified person shall be in control of each transfer nozzle and another qualified person shall be in immediate control of the fuel-pumping equipment to shut off or otherwise control the flow of fuel from the time fueling operations are begun until they are completed.

Exceptions:

1. For underwing refueling, the person stationed at the point of fuel intake is not required.

2. For overwing refueling, the person stationed at the fuel pumping equipment shall not be required when the person at the fuel dispensing device is within 75 feet (22 800 mm) of the emergency shutoff device, is not on the wing of the aircraft and has a clear and unencumbered path to the fuel pumping equipment; and, the fuel dispensing line does not exceed 50 feet (15 240 mm) in length.

1106.5.4.1 Monitoring during fueling. The fueling operator shall monitor the panel of the fueling equipment and the aircraft control panel during pressure fueling or shall monitor the fill port during overwing fueling.

1106.6 Emergency fuel shutoff. Emergency fuel shutoff controls and procedures shall comply with the requirements of Sections 1106.6.1 through 1106.6.4.

1106.6.1 Accessibility. Emergency fuel shutoff controls shall be readily accessible at all times when the fueling system is being operated.

1106.6.2 Notification of the department. The owner or operator of the aviation facility shall establish a procedure by which the department will be notified in the event of an emergency involving the activation of an emergency fuel shutoff control.

1106.6.3 Determining cause. Prior to reestablishment of normal fuel flow, the cause of emergency fuel shutoff conditions shall be determined and corrected.

1106.6.4 Testing. Emergency fuel shutoff devices shall be operationally tested at intervals not exceeding three months. The fueling-system operator shall maintain suitable records of these tests. These records shall be maintained on the premises and made available for inspection by any representative of the department.

1106.7 Protection of hoses. Before an aircraft-fueling vehicle is moved, fuel transfer hoses shall be properly placed on the approved reel or in the compartment provided, or stored on the top decking of the fueling vehicle if proper height rail is provided for security and protection of such equipment. Fuel-transfer hose shall not be looped or draped over any part of the fueling vehicle, except as herein provided. Fuel-transfer hose shall not be dragged when a fueling vehicle is moved from one fueling position to another.

1106.8 Loading and unloading of aircraft-fueling vehicles. Aircraft-fueling vehicles shall be loaded only at an approved loading rack, except that aircraft-fueling vehicles may be loaded from the fuel tanks of an aircraft during defueling operations. Such loading racks shall be in accordance with Chapter 34.

1106.8.1 Unloading of aircraft-fueling vehicles. The fuel cargo of such vehicles shall be unloaded only by approved transfer apparatus into the fuel tanks of aircraft, approved underground storage tanks or approved aboveground storage tanks.

1106.9Passengers.Passenger traffic is not allowed during the time that fuel transfer operations are in progress.

1106.10Sources of ignition.It shall be unlawful to smoke, or light or maintain an open flame, within 50 feet (15 240 mm) of any location where fuel is being transferred. Electrical and motordriven devices shall not be connected to or disconnected from an aircraft at any time fueling operations are in progress on such aircraft.

1106.11Fuel spill prevention and procedures.Fuel spill prevention and the procedures for handling spills shall comply with the requirements of Sections 1106.11.1 through 1106.11.7.

1106.11.1Fueling equipment maintenance.Aircraft fueling equipment shall be maintained and kept free from leaks. Fueling equipment that malfunctions or leaks shall be immediately defueled, removed from service and properly repaired or disposed of.

1106.11.2Transporting fuel nozzles.Fuel nozzles shall be carried utilizing appropriate handles. Dragging fuel nozzles along the ground is prohibited.

1106.11.3Drum fueling.Fueling from drums or other containers is prohibited.

1106.11.4Fuel spill procedures.The owner or operator of the aviation facility shall establish comprehensive procedures to implement in the event of a fuel spill, which shall include the following actions:

1. Upon observation of a fuel spill, the aircraft-fueling operator shall immediately stop the delivery of fuel by releasing hand pressure from the fuel flow-control valve.

2. Failure of the fuel control valve to stop the continued spillage of fuel shall be cause for the activation of the appropriate emergency fuel shutoff device.

3. A supervisor shall respond to the fuel spill area immediately.

1106.11.5Notification of the department.The department shall be notified of any fuel spill which is considered a hazard to people or property or which meets one or more of the following criteria:

1. Any dimension of the spill is greater than 10 feet (3048 mm).

2. The spill area is greater than 50 square feet (4.65 m²).

3. The release of fuel is continuing.

1106.11.6Investigation required.An investigation shall be conducted by the owner or operator of the aviation facility into the cause of all spills requiring notification of the department, the response thereto by the persons in charge of the aircraft fueling operation and other aviation facility personnel. Should it be determined that corrective measures are necessary to prevent future incidents of the same nature, such measures shall be implemented in a timely manner.

1106.11.7Multiple fuel delivery vehicles.Simultaneous delivery of fuel from more than one aircraft-fueling vehicle to a single aircraft-fueling manifold is prohibited unless proper backflow prevention devices are installed to prevent fuel flow into the aircraft-fueling vehicles.

1106.12Aircraft engines and heaters.Aircraft onboard engines and combustion heaters shall be shut down prior to commencing fueling operations and shall remain off until the fueling operation is completed.

Exception: In an emergency, a single jet engine is allowed to be operated with the onboard engine running during fueling operations where all of the following conditions are met:

1. The emergency shall have resulted from an onboard failure of the aircraft's auxiliary power unit.
2. Restoration of auxiliary power to the aircraft by ground support services is not available.
3. The engine to be operated is either at the rear of the aircraft or on the opposite side of the aircraft from the fueling operations.
4. The emergency operation is in accordance with a written procedure approved by the commissioner.

1106.13 Vehicle and equipment restrictions. During aircraft-fueling operations, only aircraft-fueling vehicles or other equipment actively involved in the fueling operation are allowed within 50 feet (15 240 mm) of the aircraft being fueled. Other aircraft-fueling vehicles or equipment are prohibited in this area until the fueling operation is complete.

Exception: Aircraft-fueling operations utilizing single-point refueling with a sealed, mechanically locked fuel line connection and the fuel is not a Class I flammable liquid.

1106.13.1 Overwing fueling. Vehicles or equipment shall not be allowed beneath the trailing edge of the wing when aircraft fueling takes place over the wing and the aircraft fuel-system vents are located on the upper surface of the wing.

1106.14 Electrical equipment. Electrical equipment, including but not limited to, battery chargers, ground or auxiliary power units, fans, compressors or tools, shall not be operated, nor shall they be connected or disconnected from their power source, during fueling operations.

1106.14.1 Other equipment. Electrical or other spark-producing equipment shall not be used within 10 feet (3048 mm) of fueling equipment, aircraft fill or vent points, or spill areas unless that equipment is intrinsically safe and approved for use in an explosive atmosphere.

1106.15 Reserved.

1106.16 Lightning. The commissioner may require the owner or operator of an aviation facility to establish criteria for the suspension and resumption of aircraft-fueling operations and other written procedures to implement in the event of lightning flashes at or near the aviation facility.

1106.17 Fuel-transfer locations. Aircraft-fueling operations shall be prohibited indoors.

Exception: In aircraft hangars designed in accordance with the Building Code for Group F-1 occupancies, aircraft fuel-transfer operations are allowed where:

1. Necessary to accomplish aircraft fuel-system maintenance operations. Such operations shall be performed in accordance with nationally recognized standards; or
2. The fuel being used has a flash point greater than 100(degrees)F (37.8(degrees)C).

1106.17.1 Position of aircraft. Aircraft being fueled shall be positioned such that any fuel system vents and other fuel tank openings are a minimum of:

1. Twenty-five feet (7620 mm) from buildings or structures other than jet bridges; and
2. Fifty feet (15 240 mm) from air intake vents for boiler, heater or incinerator rooms.

1106.17.2 Fire equipment access. Access for fire service equipment to aircraft shall be maintained during aircraft-fueling operations.

1106.18 Defueling operations. The requirements for aircraft-fueling operations contained in this section shall also

apply to aircraft-defueling operations. Additional procedures shall be established by the owner or operator of the aviation facility to prevent overfilling of the cargo tank or other vehicle used in the defueling operation.

1106.19 Maintenance of aircraft-fueling hose. Aircraft-fueling hoses shall be maintained in accordance with Sections 1106.19.1 through 1106.19.4.

1106.19.1 Inspections. Hoses used to fuel or defuel aircraft shall be inspected periodically to ensure their serviceability and suitability for continued service. The owner or operator of the aviation facility shall maintain records of all inspections and tests performed on fueling hoses.

1106.19.1.1 Daily inspection. Hoses shall be inspected daily. This inspection shall include a complete visual scan of the exterior for evidence of damage, blistering or leakage. Each coupling shall be inspected for evidence of leaks, slippage or misalignment.

1106.19.1.2 Monthly inspection. A more thorough inspection, including pressure testing, shall be performed on each hose on a monthly basis. This inspection shall include examination of the fuel delivery inlet screen for rubber particles, which may indicate deterioration of the hose lining.

1106.19.2 Damaged hose. Hose that has been damaged shall be immediately removed from service.

1106.19.3 Repairing hose. Hoses are allowed to be repaired by removing the damaged portion and recoupling the undamaged end. When recoupling hoses, only couplings designed and approved for the size and type of hose in question shall be used. Hoses repaired in this manner shall be visually inspected and hydrostatically tested prior to being placed back in service.

1106.19.4 New hose. New hose shall be visually inspected prior to being placed into service.

1106.20 Aircraft-fueling vehicles parking. Unattended aircraft-fueling vehicles shall be parked in areas that provide for both the unencumbered dispersal of vehicles in the event of an emergency and the control of leakage such that adjacent buildings and storm drains are not contaminated by leaking fuel.

1106.20.1 Parking area design. Parking areas for aircraft-fueling vehicles shall be designed and utilized such that a clearance of 10 feet (3048 mm) is maintained between each parked vehicle for department access. In addition, a minimum clearance of 50 feet (15 240 mm) shall be maintained between aircraft-fueling vehicles and parked aircraft and structures other than those used for the maintenance of aircraft-fueling vehicles. Aircraft-fueling vehicles shall not be stored in a building or structure.

1106.21 Radar equipment. Aircraft-fueling operations shall be prohibited while the weathermapping radar of that aircraft is operating. Aircraft-fueling or other operations in which flammable liquids, vapors or mists may be present shall not be conducted within 300 feet (91 440 mm) of an operating aircraft surveillance radar. Aircraft-fueling operations shall not be conducted within 300 feet (91 440 mm) of airport flight traffic surveillance radar equipment. Aircraft-fueling or other operations in which flammable liquids, vapors or mists may be present shall not be conducted within 100 feet (30 480 mm) of airport ground traffic surveillance radar equipment.

1106.21.1 Direction of radar beams. The beam from ground radar equipment shall not be directed toward fuel storage or loading racks.

Exceptions:

1. Fuel storage and loading racks in excess of 300 feet (91 440mm) from airport flight traffic surveillance equipment.
2. Fuel storage and loading racks in excess of 100 feet (30 480 mm) from airport ground traffic surveillance

equipment.



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Chapter 11: AVIATION FACILITIES AND OPERATIONS
SECTION FC 1107: HELISTOPS AND HELIPORTS

NYC Administrative Code § 29-FC 1107

1107.1 General.

Helistops and heliports shall be maintained in accordance with this section. Helistops and heliports on buildings shall be constructed in accordance with the construction codes, including the Building Code.

1107.2Clearances.The touchdown area shall be surrounded on all sides by a clear area having minimum average width at roof level of 15 feet (4572 mm) but no width less than 5 feet (1524 mm). The clear area shall be maintained.

1107.3Flammable and Class II combustible liquid spillage.Landing areas on buildings or structures shall be maintained so as to confine flammable or Class II combustible liquid spillage to the landing area itself, and provisions shall be made to drain such spillage away from exits or stairways serving the helicopter landing area or from a structure housing such exit or stairway.

1107.4Exits.Exits and stairways shall be maintained in accordance with the construction codes, including the Building Code.

1107.5Standpipe systems.Where a building with a rooftop helistop or heliport is equipped with a standpipe system, the system shall be extended to the roof level on which the helistop or heliport is located. All portions of the helistop and heliport area shall be within 150 feet (45 720 mm) of a standpipe system outlet connection.

1107.6Foam protection.Foam fire-protection capabilities shall be provided for rooftop heliports as required by the construction codes, including the Building Code. Such systems shall be designed, installed, operated and maintained in accordance with Chapter 9.

1107.6.1Initial foam fire extinguishing system test.Upon installation, a foam fire extinguishing system shall be tested in accordance with Chapter 9. The test shall be conducted at the owner's risk by his or her representative before a representative of the department.

1107.6.2 Periodic foam fire extinguishing system test. The foam fire extinguishing system shall be inspected, tested and maintained in accordance with Chapter 9. Additionally, the foam fire extinguishing system shall be tested at least once every two years, as required in Section 3406.4.10.7.

1107.7 Portable fire extinguishers. A minimum of one portable fire extinguisher having a minimum 80-B:C rating shall be provided for each permanent takeoff and landing area and for the aircraft parking areas. Installation, inspection and maintenance of these portable fire extinguishers shall be in accordance with Section 906.

1107.8 Federal approval. Before operating helicopters from helistops and heliports, approval shall be obtained from the Federal Aviation Administration and any other federal, state or city authority having jurisdiction.



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SECTION FC 1108: SEAPLANE BASE OPERATIONS

NYC Administrative Code § 29-FC 1108

1108.1 General.

Seaplane bases shall be operated in accordance with this section.

1108.2Hours of operation.Seaplane bases shall be operated during daylight hours only, under visual flight rules, and shall be further restricted to the hours of 8 am through 8 pm, Monday through Friday, except as authorized by the commissioner.

1108.3Arrival and departure notification.Aircraft arriving at or departing from a seaplane base shall make such notifications prior to such arriving or departing as the commissioner may require.

1108.4Emergency procedures manual.The permit holder shall prepare an emergency procedures manual and obtain the approval of the department and the mayor's office of emergency management for such manual prior to commencing a seaplane base operation. An approved copy of the manual shall be maintained at the seaplane base facility at an approved location.



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SECTION FC 1109: HELICOPTER LANDING OPERATIONS

NYC Administrative Code § 29-FC 1109

1109.1 General.

Helicopter landing operations, at other than an approved heliport or helistop, shall be conducted in accordance with this section.

1109.2Permit application.The owner or operator of the helicopter conducting the helicopter landing operation shall make a permit application to the department at least 20 days prior to the proposed landing. The permit applications shall be on such form and include such information and documentation as the commissioner may require, including the following:

1. A site map of the area in which the helicopter landing operation is proposed to be conducted.
2. Proof of a liability and casualty insurance policy in an amount to be determined by the commissioner but not less than two million dollars. Such insurance policy shall cover the permit holder and the permit holder's employees, agents and contractors for any loss, damage or injury to persons or property by reason of the conduct of the helicopter landing operation, or the failure to comply with any requirement of this chapter or the rules, or the terms and conditions of the permit.
3. A copy of the pilot's license issued by the Federal Aviation Administration.
4. A copy of the aircraft's airworthiness certificate issued by the Federal Aviation Administration.
5. An affidavit of the property owner authorizing the helicopter landing operation on their property.

1109.3Required clearances.The location at which the helicopter landing operations are to be conducted is subject to the approval of the department. The commissioner may specify the open space clearances to be provided.



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SECTION FC 111: ORDER TO DISCONTINUE WORK

NYC Administrative Code § 29-FC 111

111.1 Order.

Whenever the commissioner finds any work regulated by this code or the rules being performed in a manner contrary to the provisions of such code or the rules, any design and installation document approved by the department, or any condition of a permit, or otherwise being performed in an unsafe manner, the commissioner may issue an order to discontinue work.

111.2Issuance.An order to discontinue work shall be in writing and shall be issued to the owner or other person authorizing, supervising or engaging in the work. Upon issuance of an order to discontinue work, the cited work shall immediately cease. The order to discontinue work shall state the reason for the order, and the conditions under which the cited work may resume.

111.3Emergencies.Where an emergency exists, the commissioner shall not be required to give written notice prior to ordering the work discontinued.



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SECTION FC 1110: HELICOPTER LIFT OPERATIONS

NYC Administrative Code § 29-FC 1110

1110.1 General.

Helicopter lift operations shall be conducted in accordance with this section.

1110.1.1 Department of Buildings approval. Helicopter lift operations shall not be conducted except when the commissioner of buildings has authorized such operation.

1110.2 Permit application. The owner or operator of the helicopter used to conduct the lift operation shall make application to the department for a permit at least 20 days prior to the proposed lift operation. The permit application shall be on such form and include such information and documentation as the commissioner may require, including the following:

1. A site map of the area in which the lifting operation is proposed to be conducted.
2. Proof of a liability and casualty insurance policy in an amount to be determined by the commissioner but not less than five million dollars. Such insurance policy shall cover the permit holder and the permit holder's employees, agents and contractors from any loss, damage or injury to persons or property by reason of the conduct of the lift operation, or the failure to comply with any requirement of this chapter or the rules, or the terms and conditions of the permit.
3. A copy of the pilot's license issued by the Federal Aviation Administration.
4. A copy of the aircraft's airworthiness certificate issued by the Federal Aviation Administration.
5. An affidavit of the property owner authorizing the helicopter lift operation on their property.

1110.3 Helicopter fueling. It shall be unlawful to fuel helicopters in the staging or discharge area.

1110.3.1 Portable fuel tanks. Portable fuel tanks or drums within or on the exterior of the helicopter are prohibited.

Auxiliary fuel storage tanks may be used provided they are an integral part of the aircraft's fuel system and of a type meeting the requirements of the Federal Aviation Administration.

1110.4Smoking.It shall be unlawful to smoke within 100 feet (30 480 mm) of a fuel storage area or fueling operation. It shall be unlawful to smoke within 100 feet (30 480 mm) of the helicopter staging area or discharge area while lift operations are being conducted.

1110.5Staging and discharge areas.The location of the staging and discharge areas, and their distance from any buildings or other impediments to flight, shall be subject to the approval of the commissioner, and shall be arranged and operated as set forth in Sections 1110.5.1 and 1110.5.2.

1110.5.1Emergency access.Entrances to and exits from any premises or other location wherein lifting operations are being conducted shall be safeguarded in accordance with applicable laws, rules and regulations, but shall not be obstructed in a manner that prevents access or egress in the event of an emergency.

1110.5.2Restricted locations.Bulk plants or terminals or other premises where hazardous operations or occupancies are maintained shall not be used as a staging area or discharge area unless approved by the commissioner.

1110.6Fire protection.An adequate supply of water shall be provided at the location where lifting operations are conducted. When the discharge area or other area of the lifting operation requires the use of a fire pump or other auxiliary equipment to augment the water supply, such equipment shall be under the personal supervision of a certificate of fitness holder.

1110.6.1Foam protection.An air foam nozzle, pick-up tube and a minimum of 5 gallons (19 L) of foam, suitable for the fuel hazard presented, shall be available on site.

1110.6.2Portable fire extinguishers.Both the staging area and discharge area shall be provided with a minimum of 2 portable fire extinguishers each having a minimum 80-B:C rating.

1110.6.3Department monitoring.Lift operations permitted pursuant to this section may be monitored by representatives of the department to ensure compliance with the requirements of this chapter and the rules. Such representatives shall be allowed within the perimeter of the lift operation for such purpose.

1110.7Communication.Radio and/or other two-way wireless communication shall be maintained between the helicopter pilot and the ground at all times during the lift operation. The department representatives monitoring the lifting operation shall be provided with the ability to monitor such communications.

1110.8Discontinuance.Department representatives may temporarily suspend or cancel any lifting operation if, in their judgment, conditions exist that endanger public safety.



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SECTION FC 1111: HOT AIR BALLOON OPERATIONS

NYC Administrative Code § 29-FC 1111

1111.1 General.

Hot air balloon operations shall be conducted in accordance with this section.

1111.1.1Storage, handling and use of flammable gas.The storage, handling and use of LPG or other flammable gas for hot air balloon operations shall additionally be conducted in accordance with Chapter 35 and 38, as applicable, and the rules.

1111.2Permit application.The owner or operator of the hot air balloon, or in the case of an event involving multiple owners or operators of hot air balloons, the sponsor of such event, shall make application to the department for a permit at least 20 days prior to any anticipated or scheduled operation. Permit applications shall be on such form and include such information and documentation as the commissioner may require, including the following:

1. A site map of the area in which the hot air balloon operation is proposed to be conducted.
2. Proof of a liability and casualty insurance policy in an amount to be determined by the commissioner but not less than two million dollars. Such insurance policy shall cover the permit holder and the permit holder's employees, agents and contractors from any loss, damage or injury to persons or property by reason of the conduct of the lifting operation, or the failure to comply with any requirement of this chapter or the rules, or the terms and conditions of the permit.
3. A copy of the pilot's license issued by the Federal Aviation Administration.
4. A copy of the aircraft's airworthiness certificate issued by the Federal Aviation Administration.
5. An affidavit of the property owner authorizing the hot air balloon operation on their property.
6. All information and documentation required for issuance of a permit for LPG storage, handling and use in connection with the hot air balloon operation pursuant to Chapter 38 and the rules.

1111.3Required clearances.The location at which hot air balloon operations are to be conducted are subject to the approval of the department, provided, however, that a balloon shall not be secured or filled unless there is at least 150 feet (45 720 mm) of open space in all directions when measured from the center of the balloon.

1111.4Securing of balloons.Balloons shall have at least a three-point tie down to substantially immovable objects.

1111.5Weather conditions.Hot air balloon operations shall be conducted only under weather conditions conducive to such operation and in no circumstance when prevailing winds exceed 15 miles (24.135 km) per hour.

1111.6Discontinuance.Department representatives may temporarily suspend or cancel any hot air balloon operation if, in their judgment, conditions exist that endanger public safety.



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SECTION FC 112: CERTIFICATE OF APPROVAL

NYC Administrative Code § 29-FC 112

112.1 Approval of articles, equipment and devices.

Where required by this code, the manufacturer of any article, equipment or device installed in any facility or used in connection with any material or operation shall obtain a certificate of approval for the design, installation, operation and/or maintenance of such article, equipment or device.

112.2 Conditions of approval. The commissioner may set forth in the certificate of approval conditions on the approved purpose or use of such article, equipment or device, or type, class or kind thereof, as may be necessary in the interest of public safety. The commissioner may include under a single certificate of approval more than one type, class or kind of article, equipment or device of a similar design or common characteristic.

112.3 Markings. Each article, equipment or device, or type, class or kind thereof, for which a certificate of approval has been issued shall have the number of such certificate plainly stamped or otherwise affixed upon it.

112.4 List of acceptable laboratories, articles and devices. A current list of all testing services and laboratories acceptable to the commissioner for the purpose of testing articles, equipment and devices, and a current list of all acceptable articles, equipment and devices shall be maintained by the department and made available for public inspection.

112.5 Application. Applications for a new or renewal certificate of approval required by the provisions of this code or the rules shall be made to the commissioner, in such form and detail as the commissioner may prescribe, including such information and documentation as the commissioner may require. An application for a certificate of approval shall include complete drawings of and specifications for the article, equipment or device for which approval is sought and, unless the commissioner determines that it is impracticable, the article, equipment or device itself shall be attached to or submitted with the application. The commissioner may require that the article, equipment or device be examined, tested or demonstrated at the applicant's expense in a manner prescribed by the commissioner, including examination and testing by a testing laboratory acceptable to the commissioner. In those instances where a testing or performance

standard is not prescribed by this code or the rules, the article, equipment or device or type, class or kind of article, equipment or device shall have been examined and tested in a manner acceptable to the commissioner.

112.6 Issuance. The commissioner may grant an application for a certificate of approval upon a determination that the application article, equipment or device is designed for the purpose for which it is to be used and can be safely operated in accordance with this code, the rules and other applicable laws, rules and regulations.

112.6.1 Term of certificate. Every certificate or renewal thereof granted by the commissioner shall be for a period as specified therein, not to exceed 3 years, and shall expire at the end of such period unless the commissioner approves its renewal.

112.6.2 Time for submission of renewal applications. Applicants may apply for renewal during the period from 60 days prior to a certificate's expiration date to not more than one year after such date. The commissioner shall not renew certificates that have been expired for more than one year. Applicants holding such certificates must apply for an original certificate and comply with all the original certificate requirements.

112.6.3 Renewal. Certificate renewals shall be at the discretion of the commissioner in the interest of public safety. The department may reevaluate the design and safety of the article, equipment or device in light of changes in applicable laws, rules or regulations, new technology, and safety concerns arising from the use of the article, equipment or device.

112.7 Expired certificates. It shall be unlawful to install articles, equipment or devices authorized by a certificate after the term of such certificate has expired.

112.8 Certificate revocation and suspension. The commissioner may, at any time, revoke or suspend a certificate for good cause. The certificate holder shall be afforded notice and an opportunity to be heard prior to any such suspension or revocation except that, in the circumstance of an imminent threat to public safety, such notice and opportunity to be heard may be given promptly after such revocation or suspension.



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SECTION FC 113: CERTIFICATES OF FITNESS AND QUALIFICATION

NYC Administrative Code § 29-FC 113

113.1 Supervision required.

The commissioner may require that a material, operation or facility subject to the provisions of this code, the rules, or other laws, rules and regulations enforced by the department, be manufactured, stored, handled, used, maintained, inspected and tested, transported, conducted by, or operated under the supervision of, a person holding a certificate pursuant to this section. The commissioner may require such supervision to be personal supervision or general supervision of the material, operation or facility. Where a reference in this code is made to a certificate of fitness without identifying the type of certificate, such reference shall be to the certificate of fitness designated by the commissioner as appropriate to conduct or supervise the material, operation or facility.

113.1.1 Work location. Except as otherwise provided in this code or the rules, the commissioner may issue certificates for one or more designated work locations.

113.2 Duties. In addition to any other responsibilities specified in this code or the rules, a certificate holder shall be responsible for:

1. The safe manufacturing, storage, handling, use, operation, maintenance, inspection, testing, repair and/or supervision of the material, operation or facility for which the certificate is required, in accordance with this code, the rules, and any other applicable laws, rules and regulations.
2. Notifying the department of any explosion, fire, reportable leak or other release of hazardous material, or other emergency related to the duties of his or her certificate.
3. Keeping such certificate upon his or her person or otherwise readily available for inspection by any representative of the department, at all times while conducting or supervising the material, operation or facility for which the certificate is required.

113.3Applications. Applications for new or renewal certificates required by the provisions of this code or the rules shall be made to the commissioner, in such form and detail as the commissioner may prescribe, including such information and documentation as the commissioner may require.

113.4Minimum qualifications. Applicants for certificates shall comply with the following minimum requirements:

1. Be at least 18 years of age, or such age above the age of 18 as may be required by law, rule or regulation.
2. Have a reasonable understanding of the English language and be able to answer satisfactorily such questions as may be asked of such applicant upon his or her examination.
3. Present such evidence of his or her character, habits and past employment, as may be satisfactory to the commissioner.
4. Present such evidence of his or her qualifications as set forth in the rules or the department's notice of examination for such certificate.
5. Pass an examination, administered by the department or other entity that tests the applicant's knowledge of the code, law, rules and regulations governing the regulated material, operation or facility, and the precautions and other actions necessary to ensure the proper and safe performance of his or her duties as a certificate holder.
6. When applying for a certificate of fitness relating to storage, handling and use of explosives, present proof of United States citizenship.

113.5Investigation. Applicants are subject to an investigation by the department in connection with their application and their qualifications and fitness for the certificate.

113.6Fingerprinting. Applicants for a certificate of fitness for the storage, use and handling of explosives, fireworks, pyrotechnics and special effects shall be fingerprinted and a criminal background check conducted for the purposes authorized by law. The commissioner may require such fingerprinting and criminal background check for other certificates.

113.7Issuance. The commissioner may grant an application for a certificate upon a determination that the applicant possesses the qualifications and fitness required for such certificate, as set forth in the code and the rules.

113.7.1Term of certificate. Every certificate or renewal thereof granted by the commissioner shall be for a period as specified therein, not to exceed 3 years, and shall expire at the end of such period unless the commissioner approves its renewal.

113.7.2Time for submission of renewal applications. Applicants may apply for renewal during the period from 60 days prior to a certificate's expiration date to not more than one year after such date. The commissioner shall not renew certificates that have been expired for more than one year. Persons holding such certificates must apply for an original certificate and comply with all of the original certificate requirements.

113.7.3Renewal. Certificate renewals shall be at the discretion of the commissioner in the interest of public safety based on a review of the certificate holder's qualifications and fitness. The department may review certificate holder's qualifications and fitness and may require a certificate holder to complete a department-approved continuing education program and/or provide other proof of the holder's continuing qualifications and fitness.

113.8Expired certificates. It shall be unlawful to perform or provide such supervision for a material, operation or facility authorized by a certificate after the term of such certificate has expired.

113.9Certificate revocation and suspension. The commissioner may, at any time, revoke or suspend a certificate for

misconduct, or other good cause. The certificate holder shall be afforded notice and an opportunity to be heard prior to any such suspension or revocation except that, in the circumstance of an imminent threat to public safety, such notice and opportunity to be heard may be given promptly after such revocation or suspension.



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SECTION FC 114: CERTIFICATES OF LICENSE

NYC Administrative Code § 29-FC 114

114.1 Supervision required.

The commissioner may require that the installation, alteration, testing and repair of liquid motor fuel storage and dispensing equipment and systems, and flammable or combustible liquid storage systems, be conducted by a person holding a certificate of license or by an employee of such certificate holder working under his or her direct supervision.

114.2 Duties. In addition to any other responsibilities specified in this code or the rules, a certificate of license holder shall be responsible for:

1. The proper and safe installation, alteration, testing and repair of liquid motor fuel storage and dispensing equipment and systems, and flammable or combustible liquid storage systems in accordance with this code, the rules, and any other applicable laws, rules and regulations.
2. Verifying that all required approvals from the department have been obtained prior to installing, altering, testing or repairing liquid motor fuel storage and dispensing equipment, and flammable or combustible liquid storage systems.
3. Notifying the department of any explosion, fire, reportable leak or other release of hazardous material, or other emergency related to the duties of his or her certificate.

114.3 Applications. Applications for new or renewal certificates required by the provisions of this code or the rules shall be made to the commissioner, in such form and detail as the commissioner may prescribe, including such information and documentation as the commissioner may require.

114.4 Minimum qualifications. Applicants for certificates shall comply with the following minimum requirements:

1. Be at least 18 years of age.
2. Have a reasonable understanding of the English language and be able to answer satisfactorily such questions as

may be asked of such applicant upon his or her examination.

3. Present such evidence of his or her character and past employment, as may be satisfactory to the commissioner.

4. Present such evidence of his or her qualifications set forth in the rules or the department's notice of examination for such certificate.

5. Pass an examination, administered by the department or other entity, that tests the applicant's knowledge of the code, law, rules and regulations governing the installation, alteration, testing and repair of liquid motor fuel storage and dispensing equipment and systems and flammable and combustible liquid storage systems the precautions and other actions necessary to ensure the proper and safe performance of his or her duties as a certificate holder.

114.5Investigation.Applicants and their principals are subject to an investigation by the department in connection with their application and their qualifications and fitness for the certificate.

114.6Fingerprinting.The commissioner may require the fingerprinting and criminal background check of applicants for a certificate for purposes authorized by law.

114.7Issuance.The commissioner may grant an application for a certificate of license upon a determination that the applicant possesses the qualifications and fitness required for such certificate, as set forth in the code and the rules.

114.7.1Term of certificate.Every certificate or renewal thereof granted by the commissioner shall be for a period as specified therein, not to exceed 2 years, and shall expire at the end of such period unless the commissioner approves its renewal.

114.7.2Time for submission of renewal applications.Applicants may apply for renewal during the period from 60 days prior to a certificate's expiration date to not more than one year after such date. The commissioner shall not renew certificates that have been expired for more than one year. Persons holding such certificates must apply for an original certificate and comply with all of the original certificate requirements.

114.7.3Renewal.Certificate renewals shall be at the discretion of the commissioner in the interest of public safety based on a review of the certificate holder's qualifications and fitness. The department may review certificate holder's qualifications and fitness and may require a certificate holder to complete a department-approved continuing education program and/or provide other proof of the holder's continuing qualifications and fitness.

114.8Expired certificates.It shall be unlawful to engage in the business authorized by a certificate after the term of such certificate has expired.

114.9Certificate revocation and suspension.The commissioner may, at any time, revoke or suspend a certificate for misconduct or other good cause. The certificate holder shall be afforded notice and an opportunity to be heard prior to any such suspension or revocation except that, in the circumstance of an imminent threat to public safety, such notice and opportunity to be heard may be given promptly after such revocation or suspension.

114.10Insurance.The commissioner may require certificate holders to obtain and furnish proof of general liability insurance, in such amounts and in accordance with such requirements, as may be set forth in the code or the rules, otherwise required by law, or required as a condition of the certificate issuance. The certificate shall expire by operation of law if any such required insurance lapses, expires or is cancelled during the term of the certificate.



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TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
CHAPTER 1: ADMINISTRATION
SECTION FC 115: COMPANY CERTIFICATES

NYC Administrative Code § 29-FC 115

115.1 Duties.

A certificate holder shall be responsible for the safe manufacturing, storage, handling, use, operation, maintenance, inspection, testing, repair and/or supervision of the activity for which the certificate is required, in accordance with this code, the rules and any other applicable laws, rules or regulations.

115.2Applications. Applications for new or renewal certificates required by the provisions of this code or the rules shall be made to the commissioner, in such form and detail as the commissioner may prescribe, including such information and documentation as the commissioner may require.

115.3Minimum qualifications. Applicants and their principals shall submit evidence acceptable to the commissioner of such experience and qualifications as set forth in this code, the rules or the department's notice of examination for such certificate.

115.4Investigation. Applicants and their principals are subject to an investigation by the department in connection with their application and their qualifications and fitness for the certificate.

115.5Fingerprinting. The commissioner may require the fingerprinting and criminal background check of applicants for a certificate and their principals.

115.6Issuance. The commissioner may grant an application for a company certificate upon a determination that the applicant possesses all of the qualifications for such certificate, as set forth in the code and the rules.

115.6.1Term of certificate. Every certificate or renewal thereof granted by the commissioner shall be for a period as specified therein, not to exceed 2 years, and shall expire at the end of such period unless the commissioner approves its renewal.

115.6.2Time for submission of renewal applications. Applicants may apply for renewal during the period from 60

days prior to a certificate's expiration date to not more than one year after such date. The commissioner shall not renew certificates that have been expired for more than one year. Persons holding such certificates must apply for an original certificate and comply with all the original certificate requirements.

115.6.3Renewal.Certificate renewals shall be at the discretion of the commissioner in the interest of public safety based on a review of the certificate holder's qualifications and fitness. The department may review certificate holder's qualifications and fitness and may require a certificate holder to complete a department-approved continuing education program and/or provide other proof of the holder's continuing qualifications and fitness.

115.7Expired certificates.It shall be unlawful to engage in the business authorized by a certificate after the term of such certificate has expired.

115.8Certificate revocation and suspension.The commissioner may, at any time, revoke or suspend a certificate for misconduct or other good cause. The certificate holder shall be afforded notice and an opportunity to be heard prior to any such suspension or revocation except that, in the circumstance of an imminent threat to public safety, such notice and opportunity to be heard may be given promptly after such revocation or suspension.

115.9Misrepresentation as department employees.No person may falsely represent himself or herself to be a member or agent of the department.

115.10Insurance.The commissioner may require certificate holders to obtain and furnish proof of general liability insurance, in such amounts and in accordance with such requirements, as may be set forth in the code or the rules, otherwise required by law, or required as a condition of the certificate issuance. The certificate shall expire by operation of law if any such required insurance lapses, expires or is cancelled during the term of the certificate.



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CHAPTER 2 NEW YORK CITY FIRE CODE
CHAPTER 1: ADMINISTRATION
SECTION FC 116: EXPEDITOR REGISTRATION CERTIFICATES

NYC Administrative Code § 29-FC 116

116.1 Registration.

No person may submit, file, request, negotiate or otherwise seek approval of applications for issuance of permits, or other approvals, including approval of design and installation documents, without first having obtained an expeditor registration certificate in accordance with this section and the rules. It shall be unlawful to hold oneself out to the public or otherwise represent that one is "registered with the fire department", "registered" or make any similar representation in such a manner as to convey the impression that such person is registered with the department unless such person is registered in accordance with this section.

Exceptions: The following persons are exempt from the provisions of this section:

1. Any person or entity making application on his, her or its own behalf. If the applicant is a partnership or corporation, the general partners and principal officers thereof shall be included within this exception. Principal officers of a corporation shall include the president, vice presidents, secretary and treasurer.
2. The occupants of a premises that is the subject of the application, if authorized by the owner to file the application.
3. Registered architects licensed by the New York State Department of Education.
4. Professional engineers licensed by the New York State Department of Education.
5. Attorneys admitted to practice in New York State.
6. Master plumbers licensed by the Commissioner of Buildings, when such application relates to work performed under their license.
7. Master fire suppression piping contractors licensed by the Commissioner of Buildings, when such application

relates to work performed under their license.

8. Master electricians licensed by the Commissioner of Buildings, when such application relates to work performed under their license.

9. Certificate of license holders, when such application relates to work performed under their license.

10. Fire safety director or fire safety/emergency action plan director certificate holders when the application relates to the fire safety and evacuation plan or emergency action plan of the building for which they are registered.

116.2Applications. Applications for new or renewal expeditor registration certificates required by Section 116.1 shall be made to the commissioner, in such form and detail as the commissioner may prescribe, including such information and documentation as the commissioner may require.

116.3Investigation. Applicants are subject to an investigation by the department in connection with their application and their qualifications and fitness for the certificate.

116.4Fingerprinting. The commissioner may require fingerprinting and a criminal background check for a certificate for purposes authorized by law.

116.5Issuance. The commissioner may grant an application for a certificate upon a determination that the applicant possesses all of the qualifications for such certificate, as set forth in the code and the rules, qualifying the applicant to appear before the department to submit, file, request, negotiate or otherwise seek approval of applications for issuance of permits, or other approvals.

116.5.1Term of certificate. Every certificate or renewal thereof granted by the commissioner shall be for a period as specified therein, not to exceed 2 years, and shall expire at the end of such period unless the commissioner approves its renewal.

116.5.2Time for submission of renewal applications. Applicants may apply for renewal during the period from 60 days prior to a certificate's expiration date to not more than one year after such date. The commissioner shall not renew certificates that have been expired for more than one year. Persons holding such certificates must apply for an original certificate and comply with all the original certificate requirements.

116.5.3Renewal. Certificate renewals shall be at the discretion of the commissioner in the interest of public safety based on a review of the certificate holder's qualifications and fitness.

116.6Expired certificates. It shall be unlawful to engage in the business authorized by a certificate when the term of such certificate has expired.

116.7Certificate revocation and suspension. The commissioner may, at any time, revoke or suspend a certificate for misconduct or other good cause. The certificate holder shall be afforded notice and an opportunity to be heard prior to any such suspension or revocation except that, in the circumstance of an imminent threat to public safety, such notice and opportunity to be heard may be given promptly after such revocation or suspension.



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CHAPTER 1: ADMINISTRATION
SECTION FC 117: FEES

NYC Administrative Code § 29-FC 117

117.1 Fees.

Fees shall be as set forth in Appendix A.

117.2 Fee exemptions. Exemptions from department fees shall be in accordance with Sections 117.2.1 through 117.2.3.

117.2.1 Permit, inspection and performance test fee exemption. The provisions of this code as to the payment of fees for permits, inspections or witnessing of required system performance tests shall not apply to premises used and owned or operated by a church, corporation or association organized and operated exclusively for religious, charitable or educational purposes that is qualified as an exempt organization pursuant to United States Internal Revenue Code Section 501(c)(3), provided that no part of the net earnings inures to the benefit of any private shareholder or individual, and provided further, that this exemption shall apply only to such portions of the premises as are used by such church, corporation or association for religious, charitable or educational purposes.

117.2.2 Individual certificate fee exemption. Employees of the city who submit evidence satisfactory to the commissioner that they require such certificate as a condition of their continued employment with the city shall be exempt from payment of any application, written examination, practical examination and renewal fees. This fee exemption shall not include any required late renewal or fingerprinting fees. Certificate holders converting their certificate from fee-exempt to non-fee-exempt status shall be required to pay all applicable original application, written examination and practical examination fees previously waived.

117.2.3 Company certificate fee exemption. Agencies of the city that require certificates to conduct the business of their agency shall be exempt from payment of certificate fees.

117.3 Penalties and fees for late renewal. Failure to timely render payment of fees for any certificate, permit or other approval issued by the commissioner, or service provided by the department, shall be sufficient grounds for denial of a

certificate, permit or other approval or service, or renewal thereof. Fees for late renewal shall be in accordance with Sections 117.3.1 through 117.3.2.2.

117.3.1Late renewal of certificates.In addition to the payment of the renewal fee, any applicant renewing a certificate more than 90 days but less than one year after its expiration date shall be subject to a late filing charge of 50 percent of the renewal fee or 25 dollars, whichever is greater.

117.3.2Late renewal of permits.Fees for late permit renewal shall be in accordance with Sections 117.3.2.1 and 117.3.2.2, except the commissioner may waive the payment of late filing fees or prior annual fees, or both, upon a determination that the late renewal was caused by circumstances beyond the control of the applicant.

117.3.2.1Renewal within one year.In addition to the payment of the renewal fee, any applicant renewing a permit more than 90 days but less than one year after its expiration date shall be subject to a late filing charge of 50 percent of the renewal fee.

117.3.2.2Renewal after one year.In addition to the payment of the renewal fee, any applicant renewing a permit later than one year after its expiration date shall be subject to a late filing charge of 100 percent of the renewal fee. Such applicant shall be liable also for all the annual fees which should have been paid from the date on which the permit expired to the date on which such permit was renewed.

117.3.3Late payment of fees for services.All fees for services rendered by the department, including inspections and witnessing of tests, shall be paid within 30 days of receipt of the bill therefor. Any disputes regarding such bill shall be submitted in writing within 20 days of the date of receipt thereof. Failure to timely remit payment shall subject the owner or other person receiving such service to be additionally liable to the department for interest on the compensation due and owing to the department. Such interest shall be computed for the period from the date of the bill to the date of payment, based on the amount of the bill and the rate of interest set forth in Section 5004 of the New York Civil Practice Law and Rules.

117.4Liens on property for permit and inspection fees.Liens on property for permit and inspection fees shall be as follows:

1. Any unpaid fee for an inspection performed by the department pursuant to law or rule, any unpaid fee for the issuance or renewal pursuant to this code of a permit to manufacture, store, handle, use or sell hazardous materials or combustible materials, or conduct an operation or maintain a facility on land or in a building specified therein, and any unpaid penalties imposed for late payment of any such renewal fees shall constitute a lien upon the land and buildings upon or in respect to which such inspection was performed, or upon the land and buildings specified in such permit, as hereinafter provided.

2. There shall be filed in the office of the department a record of all fees for inspections performed by or on behalf of the department, all fees for permits to manufacture, store, handle, use or sell hazardous materials or combustible materials, or conduct an operation or maintain a facility on land or in a building issued or renewed by the department, and all penalties for late payment of any such renewal fees imposed by the department. Such records shall be kept on a building by building basis and shall be accessible to the public during normal business hours. An entry of a fee on the records of the department shall constitute notice to all parties.

3. All such unpaid fees shall constitute a lien upon the land and building upon or in respect to which such inspection was performed, or upon the land and buildings specified in such permit, when the amount thereof shall have been definitely computed as a statement of account by the department, and the department shall cause to be filed in the office of the city collector an entry of the account stated in the book in which such charges against the premises are to be entered. Such lien shall have a priority over all other liens and encumbrances except for the lien of taxes and assessments. However, no lien created pursuant to this section shall be enforced against a subsequent purchaser in good faith or mortgagee in good faith unless such transaction occurred after the date of entry of a fee on the records of the

department pursuant to Section 117.4(2).

4. A notice thereof, stating the amount due and the nature of the charge, shall be mailed by the city collector, within 5 days after such entry, to the last known address of the person whose name appears on the records in the office of the city collector as being the owner or agent or as a person designated by the owner to receive tax bills or, where no name appears, to the premises, addressed to either the owner or the agent.

5. If such charge is not paid within 30 days from the date of entry, it shall be the duty of the city collector to receive interest thereon at a rate of 15 percent per annum, to be calculated to the date of payment from the date of entry.

6. Such charges and the interest thereon shall continue to be, until paid, a lien on the premises. Such lien shall be a tax lien within the meaning of Sections 11-319 and 11-401 of the New York City Administrative Code and may be sold, enforced or foreclosed in the manner provided in Chapters 1, 3 and 4 of Title 11 of the New York City Administrative Code or may be satisfied in accordance with Section 1354 of the New York State Real Property Actions and Proceedings Law.

7. Such notice mailed by the city collector pursuant to this section shall have stamped or printed thereon a reference to this section of this code.

8. In any proceedings to enforce or discharge a lien created pursuant to this section, the validity of the lien shall not be subject to challenge based on the lawfulness of the inspection, or the propriety and accuracy of the fee for which a lien is claimed, except as provided in this section.

9. No such challenge may be made except by the owner of the property, or a mortgagee or lienor whose mortgage or lien would, but for the provisions of this section, have priority over the department's lien.

117.5Disposition of revenues.All fees, fines and forfeitures and all proceeds of suits for penalties, which may be paid or collected pursuant to this code, shall be paid into the general fund of the city established pursuant to Section 109 of the New York City Charter.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 12: DRY CLEANING
SECTION FC 1201: GENERAL

NYC Administrative Code § 29-FC 1201

1201.1 Scope.

This chapter shall govern the installation, operation and maintenance of dry cleaning facilities.

1201.2Permits.Permits shall be required as set forth in Section 105.6.

1201.3General.Dry cleaning facilities shall be designed, installed, operated and maintained in accordance with this chapter.

1201.4Supervision.Dry cleaning facilities using Class II or III solvents in dry cleaning systems shall be under the general supervision of a certificate of fitness holder. Such certificate of fitness holder shall be an employee of the dry cleaning facility. The certificate of fitness holder shall monitor the equipment and facilities, ensure that the equipment and facilities are operated and maintained in accordance with this section, and instruct all employees who use or supervise the use of equipment in the proper operation and maintenance of such equipment.

Exception. Dry cleaning facilities may be operated under the general supervision of a person who is not an employee of the dry cleaning facility, provided that such person:

1. Holds a certificate of fitness.
2. Is an authorized representative of the manufacturer of the dry cleaning equipment, and provides the owner of the dry cleaning facility with appropriate proof of such authority.
3. Instructs all employees of the dry cleaning facility who use or supervise the use of the equipment in the proper operation and maintenance of the equipment.
4. Personally conducts a monthly inspection of the equipment and facility to ensure that they are being operated and maintained in accordance with this section.

5. Records each monthly inspection in a logbook maintained on the premises by the owner of the dry cleaning facility, by making the following entries: the date of the inspection, the name, address, and certificate of fitness number and expiration date of the person conducting the inspection and the certification that the equipment and facility are being operating and maintained in accordance with this section.

1201.4.1Proof of qualification. Photocopies of the certificates of fitness of all persons responsible for the supervision of a dry cleaning facility, and of the proof that such person is an authorized representative of the manufacturer, where applicable, shall be maintained on the premises and made available for inspection by any representative of the department.



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Chapter 12: DRY CLEANING
SECTION FC 1202: DEFINITIONS

NYC Administrative Code § 29-FC 1202

1202.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

DRY CLEANING. The process of removing dirt and stains or otherwise cleaning apparel, textiles, rugs and other items with nonaqueous liquid solvents.

DRY CLEANING FACILITY. A facility in which dry cleaning and associated operations are conducted, including the office, receiving area and storage rooms.

DRY CLEANING ROOM. An occupiable space within a building used for dry cleaning, the installation, storage and/or use of dry cleaning equipment and/or the storage of dry cleaning solvents.

DRY CLEANING SYSTEM. Equipment used to perform dry cleaning, including immersion or agitation in solvent of the items to be cleaned, and the extraction of solvent from such items.



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Chapter 12: DRY CLEANING
SECTION FC 1203: CLASSIFICATIONS

NYC Administrative Code § 29-FC 1203

1203.1 Dry cleaning solvent classifications.

Dry cleaning solvents shall be classified according to their flash points as follows:

1. Class I solvents are flammable liquids having a flash point below 100(degrees)F (38(degrees)C).
2. Class II solvents are combustible liquids having a flash point at or above 100(degrees)F (38(degrees)C) and below 140(degrees)F (60(degrees)C).
3. Class IIIA solvents are combustible liquids having a flash point at or above 140(degrees)F (60(degrees)C) and below 200(degrees)F (93(degrees)C).
4. Class IIIB solvents are combustible liquids having a flash point at or above 200(degrees)F (93(degrees)C).
5. Class IV solvents are liquids that are neither flammable nor combustible.

1203.2 Classification of dry cleaning systems and facilities. Dry cleaning systems shall be classified based on the use of solvents as follows:

1. Type I-systems using Class I solvents.
2. Type II-systems using Class II solvents.
3. Type III-A-systems using Class IIIA solvents.
4. Type III-B-systems using Class IIIB solvents.
5. Type IV-systems using Class IV solvents in which dry cleaning is not conducted by the public.

6. Type V-systems using Class IV solvents in which dry cleaning is conducted by the public.

1203.2.1 Multiple solvents. Dry cleaning facilities using more than one class of dry cleaning system shall be classified based on the numerically lowest type of system.

1203.2.2 Spotting and pretreating operations. Spotting and pretreating operations conducted in accordance with Section 1206 shall not affect the classification of the dry cleaning system or facility.

1203.3 Design. Dry cleaning facilities shall be designed and constructed in accordance with the construction codes, including the Building Code, and located in accordance with the Zoning Resolution, including Sections 32-15(A) and 32-25(D).



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Chapter 12: DRY CLEANING
SECTION FC 1204: GENERAL REQUIREMENTS

NYC Administrative Code § 29-FC 1204

1204.1 Prohibited dry cleaning systems.

It shall be unlawful to install, operate or maintain a Type I dry cleaning system.

1204.1.1 Allowed use of Class I solvents. Class I solvents stored, handled and used in the amounts authorized by Section 1206 are allowed in dry cleaning facilities.

1204.2 Building services and systems. Building services and systems shall be designed, installed, operated and maintained in accordance with this section, Chapter 6 and the construction codes, including the Building Code.

1204.2.1 Ventilation. Ventilation shall be provided in accordance with the construction codes, including Section 502 of the Mechanical Code, and United States Department of Labor regulations, as set forth in 29 CFR Section 1910.1000, as applicable.

1204.2.2 Heating. In Type II dry cleaning facilities, heating shall be by indirect means using steam or hot water.

1204.2.3 Electrical wiring and equipment. Electrical wiring and equipment in dry cleaning rooms or other portions of the facility exposed to flammable vapors shall be installed in accordance with the Electrical Code.

1204.2.4 Bonding and grounding. Storage tanks, treatment tanks, filters, pumps, piping, ducts, dry cleaning units, stills, tumblers, drying cabinets and other dry cleaning equipment, where not inherently electrically conductive, shall be bonded together and grounded. Isolated equipment shall be grounded.

1204.2.5 Smoking prohibited. It shall be unlawful to smoke in a dry cleaning facility. "NO SMOKING" signs shall be provided in accordance with Section 310.



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Chapter 12: DRY CLEANING
SECTION FC 1205: OPERATING AND MAINTENANCE REQUIREMENTS

NYC Administrative Code § 29-FC 1205

1205.1 General.

Dry cleaning systems shall be operated and maintained in compliance with the requirements of this section, the manufacturer's specifications and the construction codes, including the Building Code.

1205.1.1 Written instructions. The manufacturer's manuals for the installation, operation and maintenance of the equipment shall be maintained on the premises and made available for inspection by any representative of the department.

1205.1.1.1 Type II, III-A, III-B and IV systems. Type II, III-A, III-B and IV dry cleaning systems shall be operated in accordance with the instructions provided by the manufacturer. The owner shall ensure that all persons operating dry cleaning equipment comply with such instructions.

1205.1.1.2 Type V systems. Operating instructions for customer use of Type V dry cleaning systems shall be conspicuously posted in a location near the dry cleaning equipment. A telephone number shall be provided for emergency assistance.

1205.1.2 Equipment identification. The manufacturer shall permanently affix to dry cleaning equipment nameplates indicating the class of solvent for which each piece of equipment is designed. The name of the dry cleaning solvent approved for use in dry cleaning equipment shall be clearly and conspicuously marked or posted at the fill connection of the equipment.

1205.1.3 Prohibited operations. It shall be unlawful to dry clean by immersion and agitation in open systems.

1205.1.4 Prohibited use of solvent. Only solvents of a type listed for a particular piece of equipment shall be used in that equipment.

1205.1.5 Equipment maintenance and housekeeping. Proper operating practices and maintenance shall be observed

in order to prevent the leakage of solvent or the accumulation of lint. The handling of waste generated by dry cleaning operations and the maintenance of facilities shall comply with the requirements of this section.

1205.1.5.1Floors.Class I and II liquids as defined in Section 3402 shall not be used for cleaning floors.

1205.1.5.2Filters.Filter residue and other waste containing solvent shall be stored in covered metal containers and disposed of lawfully.

1205.1.5.3Lint.Lint and other waste shall be removed from traps daily, deposited in approved waste cans and disposed of lawfully. Lint traps shall remain in place while the dry cleaning equipment is in operation.

1205.1.5.4Customer areas.In Type V dry cleaning systems, customer areas shall be kept free of rubbish and other combustible waste.

1205.2Type II systems.Type II dry cleaning systems shall be operated in accordance with the following additional requirements.

1205.2.1Inspection of items.Items to be dry cleaned shall be searched thoroughly, and foreign materials, including matches and metallic substances, shall be removed.

1205.2.2Transfer.In removing dry cleaned items from the washer, provision shall be made to minimize the dripping of solvent onto the floor. Where items are transferred from a washer to a drain tub, a nonferrous metal drip apron shall be placed so that the apron rests on the drain tub and the cylinder of the washer.

1205.2.3Ventilation.A mechanical ventilation system shall be installed in dry cleaning rooms and in drying rooms in accordance with the construction codes, including the Mechanical Code. The ventilation system shall operate automatically when the dry cleaning equipment is in operation and shall have manual controls at an approved location.

1205.3Type III, IV and V systems.Type III, IV and V dry cleaning systems shall be provided with an automatically activated exhaust ventilation system as required and in accordance with the construction codes, including the Mechanical Code.

1205.4Periodic inspection and testing.All dry cleaning equipment using Class II or III solvents shall be inspected and tested on at least an annual basis. The owner of the dry cleaning facility shall remove from service any equipment that is found to be defective, and shall promptly repair such equipment or remove it from the premises. Such equipment shall not be returned to service until it has been inspected and tested. All such inspection and testing shall be performed by a person holding a certificate of fitness.

1205.4.1Inspection reports.The individual performing the inspection and testing of equipment shall prepare a written report identifying any defects in the condition and operation of the equipment and/or certifying that the equipment can be safely operated in accordance with this chapter. A certification that all equipment in service is in proper working order in accordance with this chapter shall be maintained on the premises for 3 years and made available for inspection by any representative of the department.

1205.5Filling and emptying.The filling and emptying of dry cleaning equipment with Class II or III solvents shall be performed by a certificate of fitness holder. Each filling and emptying of dry cleaning equipment with a Class II or III solvent shall be recorded in a logbook. Such records shall include the date of the filling or emptying, the type and amount of dry cleaning solvent, the equipment filled or emptied, and the name and certificate number of the certificate of fitness holder who performed the filling or emptying. The records shall be maintained on the premises for 3 years and made available for inspection by any representative of the department.



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SECTION FC 1206: SPOTTING AND PRETREATING

NYC Administrative Code § 29-FC 1206

1206.1 General.

The storage, handling and use of dry cleaning solvents for spotting and pretreating operations in any dry cleaning facility shall comply with the requirements of this section, based on the classification of the solvent.

1206.2Class I solvents.The maximum quantity of Class I solvents allowed at any dry cleaning facility shall be 1 gallon (4 L). Class I solvents shall be stored in approved metal containers or safety cans of not more than 2 quarts (2 L) capacity.

1206.3Class II and III solvents.Spotting and pretreating, including scouring and brushing, shall be conducted with Class II or III solvents. The maximum quantity of Class II or III solvents allowed at any work station shall be 1 gallon (4 L). In an occupancy other than a Group H-2 occupancy, the aggregate quantities of solvents shall not exceed the maximum allowable quantity per control area for use-open systems.

1206.3.1Spotting tables.Scouring, brushing or spotting tables on which items are soaked in solvent shall have a liquid-tight top with a curb on all sides not less than 1 inch (25 mm) high. The top of the table shall be pitched to ensure thorough draining to a 1.5-inch (38 mm) drain connected to an approved container.

1206.3.2Special handling.Items that may be damaged from being washed in the washing equipment may be manually cleaned in scrubbing tubs. Scrubbing tubs shall comply with the following requirements:

1. Only Class II or III liquids shall be used.
2. The total amount of solvent used in such tubs shall not exceed 3 gallons (11 L).
3. Scrubbing tubs shall be secured to the floor.
4. Scrubbing tubs shall be provided with permanent 1.5-inch (38 mm) drains. Such drains shall be provided with a

trap and shall be connected to an approved container.

1206.3.3 Ventilation. Scrubbing tubs, scouring, brushing or spotting operations shall be located such that solvent vapors are captured and exhausted by the ventilating system.

1206.3.4 Bonding and grounding. Metal scouring, brushing and spotting tables and scrubbing tubs shall be permanently and effectively bonded and grounded.

1206.4 Reserved.

1206.5 Prohibited spotting and pretreating operation. It shall be unlawful to store, handle or use any Class I, Class II or Class III solvent for spotting or pretreating operations in any Type V dry cleaning facility or in connection with the use of any Type V dry cleaning system.



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SECTION FC 1207: DRY CLEANING SYSTEMS

NYC Administrative Code § 29-FC 1207

1207.1 General equipment requirements.

Dry cleaning systems, including dry cleaning units, washing equipment, stills, drying cabinets, tumblers, and their appurtenances, including pumps, piping, valves, filters and solvent coolers, shall be designed, installed, operated and maintained in accordance with NFPA 32, the manufacturer's specifications, and the construction codes, including the Building Code.

1207.2Type II systems.Type II dry cleaning and solvent tank storage rooms shall not be located below grade or above the lowest floor level of the building and shall comply with the requirements of Sections 1207.2.1 through 1207.2.3.

Exception: Solvent storage tanks installed underground, in vaults or in special enclosures in accordance with Chapter 34.

1207.2.1Firefighting access.Type II dry cleaning facilities shall be located so that access is provided and maintained from at least one side for firefighting and fire control purposes in accordance with Section 503 and the construction codes, including the Building Code.

1207.2.2Means of egress.Type II dry cleaning rooms shall have not less than two means of egress through doors located at opposite ends of the room, at least one of which shall lead directly to the outdoors.

1207.2.3Spill control and secondary containment.Curbs, drains, or other provisions for spill control and secondary containment shall be provided in accordance with Section 2704.2 to collect solvent leakage and fire protection water and direct it to a safe location.

1207.3Solvent storage tanks.Solvent storage tanks for Class II, IIIA and IIIB liquids shall conform to the requirements of Chapter 34 and be located underground, or outdoors, aboveground.

Exception: Indoor storage tanks in compliance with the requirements of NFPA 32 and Chapter 34.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 12: DRY CLEANING
SECTION FC 1208: FIRE PROTECTION

NYC Administrative Code § 29-FC 1208

1208.1 General.

Where required by this section, fire protection devices, equipment and systems shall be designed, installed, operated and maintained in accordance with Chapter 9 and the construction codes, including the Building Code.

1208.2Sprinkler system.Dry cleaning facilities containing Type II, Type III-A or Type III-B dry cleaning systems shall be protected throughout by a sprinkler system.

1208.3Fire extinguishing systems.Type II dry cleaning systems in Type II dry cleaning facilities shall be protected by a fire extinguishing system.

1208.4Portable fire extinguishers.Portable fire extinguishers shall be provided and maintained in accordance with this section and Section 906. A minimum of two 2-A:10-B:C portable fire extinguishers shall be provided near the doors inside dry cleaning rooms containing Type II, Type III-A and Type III-B dry cleaning systems.



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TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 13: COMBUSTIBLE DUST-PRODUCING OPERATIONS
SECTION FC 1301: GENERAL

NYC Administrative Code § 29-FC 1301

1301.1 Scope.

This chapter shall govern combustible dust-producing operations, and the equipment and processes utilized in connection with such operations in order to minimize and mitigate dust explosion hazards.

1301.2Permits.Permits shall be required as set forth in Section 105.6.

1301.3General.Combustible dust-producing operations shall be conducted in accordance with this chapter. All devices, equipment, systems and processes utilized in connection with such operations shall be designed, installed, operated and maintained in accordance with this chapter.



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Chapter 13: COMBUSTIBLE DUST-PRODUCING OPERATIONS

SECTION FC 1302: DEFINITIONS

NYC Administrative Code § 29-FC 1302

1302.1 Definition.

The following term shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

COMBUSTIBLE DUST. Finely divided solid material that is 420 microns or less in diameter, will pass through a U.S. standard No. 40 sieve and, when dispersed in air in sufficient concentrations, can be ignited by a flame, spark or other source of ignition.



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Chapter 13: COMBUSTIBLE DUST-PRODUCING OPERATIONS

SECTION FC 1303: PRECAUTIONS

NYC Administrative Code § 29-FC 1303

1303.1 Sources of ignition.

It shall be unlawful to smoke, or use heating or other devices employing an open flame or spark-producing equipment, in areas where combustible dust is generated, processed or otherwise stored, handled or used.

1303.2Housekeeping.Accumulation of combustible dust shall be kept to a minimum indoors. Accumulated combustible dust shall be collected by vacuum cleaning or other means that will not place combustible dust into suspension in air. Forced air or similar methods shall not be used to remove dust from surfaces.



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Chapter 13: COMBUSTIBLE DUST-PRODUCING OPERATIONS

SECTION FC 1304: EXPLOSION PROTECTION

NYC Administrative Code § 29-FC 1304

1304.1 Standards.

Prevention and control of dust explosions shall be in compliance with the applicable operation and maintenance requirements of the codes and standards listed in Table 1304.1. Table 1304.1 Explosion Protection Standards Standard Subject NFPA 61 Agriculture and Food Products NFPA 69 Explosion Prevention NFPA 85 Boiler and Combustion Systems Hazards NFPA 120 Coal Preparation Plants NFPA 484 Standard for Combustible Metals, Metal Powders, and Metal Dusts NFPA 654 Chemical, Dye, Pharmaceutical and Plastics NFPA 655 Sulfur Electrical Code Electrical Installations



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Chapter 14: FIRE SAFETY DURING CONSTRUCTION, ALTERATION AND DEMOLITION
SECTION FC 1401: GENERAL

NYC Administrative Code § 29-FC 1401

1401.1 Scope.

This chapter shall govern fire safety measures during the construction, alteration, or demolition of buildings, structures, premises and facilities.

1401.2General. Buildings, structures, premises and facilities undergoing construction, alteration or demolition shall comply with the fire safety measures set forth in this chapter, and shall additionally comply with the requirements of NFPA 241 as to measures not specifically addressed herein.

1401.3Permits. Permits shall be required as set forth in Section 105.6.

1401.4Prohibitions. It shall be unlawful at a construction site to store, handle or use portable fueled heating devices or equipment:

1. For purposes of human comfort or any other purpose other than construction-related curing and drying.
2. Utilizing a flammable liquid as a fuel.



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Chapter 14: FIRE SAFETY DURING CONSTRUCTION, ALTERATION AND DEMOLITION

SECTION FC 1402: DEFINITIONS

NYC Administrative Code § 29-FC 1402

1402.1 Definitions.

The following term shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

CONSTRUCTION SITE. Any location at which a building, structure, premises or facility is undergoing construction, alteration or demolition.



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Chapter 14: FIRE SAFETY DURING CONSTRUCTION, ALTERATION AND DEMOLITION
SECTION FC 1403: PORTABLE FUELED SPACE HEATERS

NYC Administrative Code § 29-FC 1403

1403.1 Design.

Portable fueled space heaters shall be designed, listed and labeled in accordance with the construction codes, including the Mechanical Code and the Fuel Gas Code, and standards promulgated by the commissioner by rule, as applicable. Portable fueled space heaters shall be installed, operated and maintained in accordance with this chapter, the terms of the listing, and manufacturer's specifications.

1403.2 Portable oil-fueled heaters. Portable oil-fueled space heaters may be used at construction sites for construction-related curing and drying purposes. Such heaters shall be stored, handled and used in accordance with the rules.

1403.3 Portable gas-fueled heaters. Portable gas-fueled space heaters utilizing liquefied petroleum gas (LPG), compressed natural gas (CNG) and piped natural gas may be used at construction sites for construction-related curing and drying purposes. Such heaters shall be stored, handled and used in accordance with the rules.

1403.4 Refueling. Refueling operations shall be conducted in accordance with Section 3405. Portable fueled space heaters shall be shut down and cool to the touch before refueling.

1403.5 Installation. Clearance to combustibles from portable fueled space heaters shall be maintained in accordance with the manufacturer's specifications. When in operation, portable fueled space heaters shall be fixed in place and protected from overturning, movement or damage in accordance with the manufacturer's specifications.

1403.5.1 Protection of heating element. The heating element or combustion chamber shall have a permanent device to prevent accidental contact by persons or material.

1403.6 Supervision. The handling and use of portable fueled space heaters shall be under the personal supervision of a person holding a certificate of fitness. The storage of portable fueled space heaters, and the fuel therefore, shall be

under the general supervision of a certificate of fitness holder.



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SECTION FC 1404: PRECAUTIONS AGAINST FIRE

NYC Administrative Code § 29-FC 1404

1404.1 Smoking.

Smoking shall be prohibited at all construction sites. Signs shall be posted in accordance with Section 310.

1404.2Waste disposal.Combustible waste, including rubbish and construction and demolition material, shall not be accumulated within buildings and shall be removed from buildings at the end of each work shift, but at least once a day. Combustible waste, including rubbish and construction and demolition material, shall be removed from the premises or stored in noncombustible containers.

1404.3Open fires.It shall be unlawful to ignite or maintain an open fire at a construction site.

1404.4Spontaneous ignition.Materials susceptible to spontaneous ignition, such as oily rags, shall be stored in a container listed for such use.

1404.5Fire watch.The commissioner may require, for demolition operations that are hazardous in nature, that persons holding a certificate of fitness as fire guard be provided to serve as an onsite fire watch. Fire guard personnel shall be provided with at least one approved means for notification of the department and their sole duty shall be to perform constant patrols and watch for the occurrence of fire.

1404.6Cutting and welding.Operations involving the use of cutting and welding shall be performed in accordance with Chapter 26.

1404.7Electrical.Temporary wiring for electrical power and lighting installations at construction sites shall comply with the requirements of the Electrical Code.



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SECTION FC 1405: FLAMMABLE AND COMBUSTIBLE LIQUIDS

NYC Administrative Code § 29-FC 1405

1405.1 Storage of flammable and combustible liquids.

Storage of flammable and combustible liquids shall be in accordance with Section 3404.

1405.2 Class I and Class II liquids. The storage, handling and use of flammable and combustible liquids at construction sites shall be in accordance with Section 3406.2. Adequate ventilation shall be provided for operations involving the application of materials containing flammable solvents.

1405.3 Housekeeping. Flammable and combustible liquid storage areas shall be maintained clear of vegetation and combustible waste. Such storage areas shall not be used for the storage of combustible materials.

1405.4 Precautions against fire. Sources of ignition and smoking shall be prohibited in flammable and combustible liquid storage areas. Signs shall be posted in accordance with Section 310.

1405.5 Handling at point of final use. Class I and II liquids shall be stored in approved safety containers.

1405.6 Leakage and spills. Leaking containers shall be immediately repaired or taken out of service. Spills shall be cleaned up immediately and all liquid and waste material disposed of lawfully.



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SECTION FC 1406: FLAMMABLE GASES AND OXYGEN

NYC Administrative Code § 29-FC 1406

1406.1 Flammable gases.

The storage, handling and use of flammable gases shall comply with the requirements of Chapters 26, 35 and 38, as applicable.

1406.2 Oxygen. The storage, handling and use of oxygen shall comply with the requirements of Sections 1406.2.1 through 1406.2.3, and Chapters 26 and 30, as applicable.

1406.2.1 Portable liquid oxygen containers. The storage, handling and use of portable liquid oxygen containers shall be in accordance with Sections 1406.2.1.1 through 1406.2.1.9.

1406.2.1.1 Design and installation documents. A sketch showing the following information shall be submitted to the department for approval in connection with an application for a permit for oxygen storage.

1. Number and size of containers.
2. Enclosure, manifold and service piping construction.
3. Location of risers and outlets.
4. Location of all equipment and devices including vaporizers, valves and safety relief devices.

1406.2.1.2 Indoor storage restrictions. Not more than one liquid oxygen container having a maximum water capacity of 6.2 cubic feet (0.176 m³) may be installed indoors. Such container shall be connected for use with a flammable gas. Storage in excess of one liquid oxygen container shall be located outdoors.

1406.2.1.3 Ventilation. The room used for the storage, handling and use of a liquid oxygen container shall be equipped with ventilation direct to the outdoors, and shall not contain any combustible material or flammable gas.

1406.2.1.4Manifolds and vaporizers.Manifolds and vaporizers shall be constructed of materials suitable for oxygen service at a pressure of 250 psig (1724 kPa). Such manifolds and vaporizers shall have a minimum bursting pressure of 1,000 psig (6895 kPa) and shall be protected with safety relief devices which will relieve at or below 500 psig (3448 kPa).

1406.2.1.4.1Test.The assembled vaporizer and manifold shall be pressure tested at 500 psig (3448 kPa) with an oil free and non-flammable material as the testing medium.

1406.2.1.5Service piping from the oxygen manifold.Service piping from the oxygen manifold shall be copper tubing, stainless steel, wrought iron or steel, and shall run vertically outside the building to the floor or floors being serviced, where outlets may be provided for hose connections to approved torches. The service piping shall be properly secured, protected from damage from mechanical injury and properly labeled. Any connection between service piping and the manifold shall be made using not more than 5 feet (1524 mm) of hose capable of withstanding pressure up to at least 1,000 psig (6895 kPa).

1406.2.1.5.1Service pressure.Service piping shall be suitable for 250 psig (1724 kPa) service unless an intervening pressure regulator is provided at the manifold, and shall withstand a test of two times the maximum operating pressure, using an oil free and non-flammable material as the testing medium.

1406.2.1.6Hose and connectors.Hose and connectors capable of withstanding pressure up to at least 1,000 psig (6895 kPa) and of a design suitable for oxygen service at a pressure of 250 psig (1724 kPa) shall be used to connect the outlets on the service piping to the blowpipes. Hose shall be rejected for use if it shows excessive wear, loose connections, leaks or burns; hose subjected to a flash back in use shall be tested to twice the service pressure, but not less than 200 psig (1379 kPa), before being returned to service.

1406.2.1.7Signs.Signs shall be posted in the vicinity of liquid oxygen container storage and use, reading: DANGER-LIQUID OXYGEN-NO SMOKING-NO OPEN FLAMES.

1406.2.1.8Operating instructions.Legible operating instructions shall be posted near any liquid oxygen manifold.

1406.2.1.9Affidavit.An affidavit shall be provided by the installer and/or contractor to certify that the vaporizer, valves, piping, hose and safety devices are of an approved type, that they meet the specifications for bursting test and design pressure, and that they have been satisfactorily tested in accordance with this section.

1406.2.2Oxygen trailers.The storage and use of oxygen trailers shall be in accordance with Sections 1406.2.2.1 through 1406.2.2.5.

1406.2.2.1Design, construction, testing and maintenance.Oxygen trailer containers shall be designed, constructed, tested and maintained in accordance with the United States Department of Transportation specifications and regulations.

1406.2.2.2Instructions.Legible operating instructions shall be posted in the trailer and on or near any oxygen manifold used indoors.

1406.2.2.3License plates.Oxygen trailers shall at all times have affixed to them a motor vehicle license plate as issued in accordance with New York State or other applicable motor vehicle license plate laws, rules or regulations.

1406.2.2.4Notification.The owner or operator of an oxygen trailer shall notify the department, in writing, of the delivery of the trailer to a construction site, at least 48 hours in advance of such delivery. Such notification shall include:

1. Contractor's name, address and telephone number.
2. Location of the construction site.

3. Quantity and frequency of oxygen delivery to the construction site.

4. Expected duration of oxygen storage and use at the construction site.

1406.2.2.5Oxygen trailers having a capacity exceeding 20,000 SCF (566 m³).The distance between oxygen trailers having a total aggregate capacity exceeding 20,000 SCF (566 m³) and exposures shall be in accordance with NFPA 50.

1406.2.3Supervision.The handling and use of portable liquid oxygen containers and oxygen trailers shall be under the personal supervision of a certificate of fitness holder. The storage of liquid oxygen containers and oxygen trailers shall be under the general supervision of a certificate of fitness holder.



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SECTION FC 1407: EXPLOSIVE MATERIALS

NYC Administrative Code § 29-FC 1407

1407.1 Storage and handling.

Explosive materials shall be stored, handled and used in accordance with Section 1418 and Chapter 33.

1407.2Blasting operations.Blasting operations shall be conducted in accordance with Chapter 33.

1407.3Demolition using explosives.Fire hoses and nozzles for use by demolition personnel, connected to an approved water supply under pressure, shall be provided and maintained at the demolition site whenever explosives are used for demolition. Such fire hoses, nozzles and water supply shall be available prior to explosives arriving at the site. Such fire hoses and nozzles shall be capable of a continuous flow of 180 gallons (681 L) per minute with a minimum reach of 35 feet (10 668 mm) from the nozzle and be capable of being brought to bear anywhere on the construction site. Hose shall be pressure tested to withstand at least 600 pounds per square inch gauge (psig) (2413 kPa).



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SECTION FC 1408: CONSTRUCTION SITE FIRE SAFETY MANAGER

NYC Administrative Code § 29-FC 1408

1408.1 Fire safety manager.

Where a site safety manager or site safety coordinator is required by the Building Code, the owner shall designate a person to be the fire safety manager for the construction site. The fire safety manager may be the site safety manager or site safety coordinator required by the Building Code. The fire safety manager shall be responsible for ensuring compliance with the requirements of this code, including this chapter, and the rules. The fire safety manager shall conduct an inspection of the construction site and all fire safety measures on at least a daily basis, and maintain a record of same in a bound log book or other approved system of recordkeeping. The log book or other approved recordkeeping shall be made available for inspection by any representative of the department. Where fire watch service is provided, the fire safety manager shall be responsible for the general supervision of the fire guards.

1408.2Pre-fire plans.The fire safety manager shall develop and maintain at the construction site an approved pre-fire plan, and make it available for examination by any representative of the department. The department shall be notified of any changes in site conditions materially affecting the procedures set forth in such plan.

1408.3Training.The fire safety manager shall ensure that construction site personnel are acquainted with the operation of portable fire extinguishers and other fire protection equipment on the construction site.

1408.4Fire protection devices.The fire safety manager shall ensure that all fire protection equipment and systems are readily available and periodically inspected and tested, and maintained in accordance with this code, the rules and the Building Code.

1408.5Hot work operations.The fire safety manager shall be responsible for supervising the issuance of authorizations for hot work operations in accordance with Chapter 26.

1408.6Impairment of fire protection systems.The fire safety manager or impairment coordinator shall comply with the requirements of Section 901 in the event of impairment of any fire protection system.

1408.7 Temporary covering of fire protection devices. Coverings placed on or over fire protection devices to protect them from damage during construction processes shall comply with the requirements of Chapter 9 and shall be immediately removed upon the completion of the construction processes in the room or area in which the devices are installed.



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SECTION FC 1409: FIRE ALARM REPORTING

NYC Administrative Code § 29-FC 1409

1409.1 Emergency telephone.

A telephone not requiring a coin to operate, or other approved clearly identified means to notify the department, shall be provided at an approved location. The street address of the construction site and the emergency telephone number of the fire department shall be posted adjacent to the telephone or other approved device.



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SECTION FC 1410: ACCESS FOR FIREFIGHTING

NYC Administrative Code § 29-FC 1410

1410.1 Required access.

Approved vehicle access for fire apparatus shall be provided to all construction sites. Vehicle access shall be provided to within 100 feet (30 480 mm) of temporary or permanent fire department connections. Vehicle access shall be provided by either temporary or permanent roads, capable of supporting vehicle loading under all weather conditions. Vehicle access shall be maintained until permanent fire apparatus access roads are available.

1410.2Key boxes.Key boxes shall be provided as required by Chapter 5 and the Building Code.



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SECTION FC 1411: MEANS OF EGRESS AND ELEVATORS

NYC Administrative Code § 29-FC 1411

1411.1 Stairways.

Stairways at construction sites shall be provided, maintained, and made available for department use in accordance with the construction codes, including the Building Code.

1411.2 Maintenance. Required means of egress shall be maintained during construction, alteration and demolition in accordance with this code and the Building Code.

1411.3 Elevators. Elevators at construction sites shall be provided, maintained, and made available for department use in accordance with the construction codes, including the Building Code.



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SECTION FC 1412: WATER SUPPLY FOR FIRE PROTECTION

NYC Administrative Code § 29-FC 1412

1412.1 Water supply.

An approved water supply for fire protection, either temporary or permanent, shall be made available prior to hazardous materials or combustible material arriving at the site. Any water source intended for firefighting operations, including standpipe outlets, street hydrants and yard hydrants, shall not be used for construction, alteration or demolition purposes, unless approved.



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SECTION FC 1413: STANDPIPES

NYC Administrative Code § 29-FC 1413

1413.1 Standpipe systems.

Standpipe systems for use at construction sites shall be provided, maintained, and made available for department use in accordance with this code, and the construction codes, including the Building Code.

1413.2 Demolition operations. Where a building or structure with an existing standpipe system is being demolished, such system shall be maintained for the use of the department in accordance with the construction codes, including the Building Code.



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SECTION FC 1414: SPRINKLER SYSTEM

NYC Administrative Code § 29-FC 1414

1414.1 Sprinkler systems.

Sprinkler systems for use at construction sites shall be provided, maintained, and made available for department use, in accordance with this code, and the construction codes, including the Building Code.

1414.2 Completion before occupancy. In buildings or structures where a sprinkler system is required by this code or the construction codes, including the Building Code, it shall be unlawful to occupy any portion of a building or structure until the sprinkler system installation has been tested and approved.

1414.3 Operation of valves. Sprinkler control valves shall be operated only by authorized personnel. Such operation shall be under the general supervision of the fire safety manager where one is required pursuant to Section 1408. When the sprinkler system valves are being regularly closed and opened to facilitate connection of newly completed or disconnected segments, the sprinkler control valves shall be inspected at the end of each work day to ascertain that the system is in good working order.



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SECTION FC 1415: PORTABLE FIRE EXTINGUISHERS

NYC Administrative Code § 29-FC 1415

1415.1 Where required.

Buildings or structures under construction, alteration or demolition shall be provided with not less than one approved portable fire extinguisher in accordance with Section 906 and sized for not less than ordinary hazard as follows:

1. At each stairway on all floor levels where combustible materials are being stored or combustible waste is being generated.
2. At the entrance of each storage and construction shed.
3. Additional portable fire extinguishers shall be provided where flammable and combustible liquids are stored, handled and used.



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SECTION FC 1416: INTERNAL-COMBUSTION-POWERED EQUIPMENT

NYC Administrative Code § 29-FC 1416

1416.1 Conditions of use.

Internal-combustion-powered construction equipment shall be used in accordance with the following requirements:

1. Equipment shall be located so that exhausts do not discharge against combustible material.
2. Exhausts shall be piped to the outdoors.
3. Equipment shall not be refueled while in operation.
4. Fuel for equipment shall be stored in an approved outdoor area, and shall be moved in approved containers not to exceed 5 gallons (19 L).



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SECTION FC 1417: SAFEGUARDING ROOFING OPERATIONS

NYC Administrative Code § 29-FC 1417

1417.1 General.

Roofing operations utilizing heat-producing systems or other ignition sources shall be performed by a competent person. Roofing operations involving hot work shall comply with the requirements of Chapters 26, 35 and 38, as applicable.

1417.2 Tar kettles. Tar kettles shall be handled and used in accordance with Section 303.

1417.3 Portable fire extinguishers for roofing operations. Portable fire extinguishers shall be provided in accordance with Section 906. There shall be not less than one multi-purpose portable fire extinguisher with a minimum 3-A 40-B:C rating on the roof being covered or repaired.

1417.4 Prohibited operations. It shall be unlawful to install any roofing material using a torch on a roof of combustible construction, or otherwise engage in roofing operations on roofs of combustible construction using hot work equipment.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 14: FIRE SAFETY DURING CONSTRUCTION, ALTERATION AND DEMOLITION
SECTION FC 1418: SMALL ARMS AMMUNITION FOR POWDER-ACTUATED TOOLS

NYC Administrative Code § 29-FC 1418

1418.1 Storage, handling and use.

Small arms ammunition shall be stored, handled and used for powder-actuated tools at a construction site, as follows:

1. The main store of small arms ammunition shall be kept in a locked metal box interlined with 1/2 inch (12.7 mm) of non-combustible insulating material.
2. The small arms ammunition storage box shall be kept away from heat and shall not be stored in the same storage area or storage facility containing compressed gases or flammable liquids.
3. The storage area or storage facility in which the locked metal small arms ammunition box is stored shall bear a permanent sign bearing the words "DANGER-AMMUNITION" in 2-inch (50.8-mm) white letters on a red background.
4. Powder-actuated tools shall not be used in an explosive atmosphere.
5. The certificate of fitness holder shall establish a safe zone behind a work area in which powder-actuated tools are to be used by evacuating the area or placing a barrier constructed of 1/2 inch (12.7 mm) steel plate.
6. At least one portable fire extinguisher having a minimum 2-A rating shall be provided in the area where small arms ammunition is stored.

1418.1.1 Supervision. Powder-actuated tools utilizing small arms ammunition shall be used only by a certificate of fitness holder. Small arms ammunition shall be handled only by a certificate of fitness holder. Storage of small arms ammunition shall be under the general supervision of a certificate of fitness holder.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 15: FLAMMABLE FINISHES
SECTION FC 1501: GENERAL

NYC Administrative Code § 29-FC 1501

1501.1 Scope.

This chapter shall govern the following operations, and the design, installation, operation and maintenance of any building, structure or premises wherein such operations are conducted:

1. The application of flammable or combustible paint, varnish, lacquer, stain, fiberglass resins or other flammable or combustible liquid applied by means of spray apparatus in continuous or intermittent processes.
2. Dip-tank operations in which articles or materials are passed through contents of tanks, vats or containers of flammable or combustible liquids, including coating, finishing, treatment and similar processes.
3. The application of combustible powders when applied by powder spray guns, electrostatic powder spray guns, fluidized beds or electrostatic fluidized beds.
4. Floor finishing operations.
5. The application of dual-component coatings or Class I or II liquids when applied by brush or roller in quantities exceeding 1 gallon (4 L).
6. Spraying and dipping operations.

1501.2Permits.Permits shall be required as set forth in Section 105.6.

1501.3General.Flammable finishing operations governed by this chapter shall be conducted in accordance with this chapter. The buildings, structures and premises in which such flammable finishing operations are conducted shall be designed, installed, operated and maintained in accordance with this chapter.

1501.4Supervision.The following finishing operations shall be conducted by or under the personal supervision of a

certificate of fitness holder:

1. Spray-finishing and dipping operations.
2. Floor finishing operations requiring a permit.



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TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 15: FLAMMABLE FINISHES
SECTION FC 1502: DEFINITIONS

NYC Administrative Code § 29-FC 1502

1502.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

DETEARING. A process for rapidly removing excess wet coating material from a dipped or coated object or material by passing it through an electrostatic field.

DIP TANK. A tank, vat or other container of flammable or combustible liquid in which articles or materials are immersed for the purpose of coating, finishing, treating and similar processes.

ELECTROSTATIC FLUIDIZED BED. A container holding powder coating material that is aerated from below so as to form an air-supported expanded cloud of such material which is electrically charged with a charge opposite to the charge of the object to be coated. Such object is transported through the container immediately above the charged and aerated materials in order to be coated.

FLAMMABLE FINISHES. Material coatings in which the material being applied is a flammable liquid, combustible liquid, combustible powder or flammable or combustible gel coatings.

FLOOR FINISHING OPERATION. Any activity involving the finishing of a floor, including but not limited to cleaning, stripping, sealing, painting, varnishing, lacquering, staining and waxing.

FLUIDIZED BED. A container holding powder coating material that is aerated from below so as to form an air-supported expanded cloud of such material through which the preheated object to be coated is immersed and transported.

LIMITED SPRAYING SPACE. An area in which spraying operations for touch-up or spot painting of a surface area are conducted.

RESIN APPLICATION AREA. An area where reinforced plastics are used to manufacture products by hand lay-up or spray-fabrication methods.

ROLL COATING. The process of coating, spreading and impregnating fabrics, paper or other materials as they are passed directly through a tank or trough containing flammable or combustible liquids, or over the surface of a roller revolving partially submerged in a flammable or combustible liquid.

SPRAY AREA. A room or other area in which spraying operations are conducted that generate flammable vapors or combustible residues, dusts or deposits, including spray spaces, spray booths, spray rooms, ducts exhausting from spraying processes, any area in the direct path of spray, any area containing dangerous quantities of air-suspended powder, combustible residue, dust, deposits, vapor or mists as a result of spraying operations or other such areas approved for spraying operations.

SPRAY BOOTH. A mechanically ventilated appliance of varying dimensions and construction provided to enclose or accommodate a spraying operation and to confine and limit the escape of spray vapor and residue and to exhaust it safely.

SPRAY ROOM. A room designed to accommodate spraying operations constructed in accordance with the Building Code and separated from the remainder of the building by a minimum 1-hour fire barrier.

SPRAY SPACE. The interior of spray booths, the interior of exhaust ducts or any area in the direct path of spray operations.

VAPOR AREA. An area containing flammable vapors in the vicinity of dip tanks, drain boards or associated drying, conveying or other equipment during operation or shutdown periods, the dimensions of which are as determined by the commissioner, taking into consideration the characteristics of the liquid, the degree of sustained ventilation and the nature of the operations.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 15: FLAMMABLE FINISHES
SECTION FC 1503: PROTECTION OF OPERATIONS

NYC Administrative Code § 29-FC 1503

1503.1 General.

Operations covered by this chapter shall be protected as required by this section and the Electrical Code.

1503.2 Sources of ignition. Protection against sources of ignition shall be provided in accordance with Sections 1503.2.1 through 1503.2.8.

1503.2.1 Electrical wiring and equipment. Electrical wiring and equipment shall comply with the requirements of this chapter and the Electrical Code.

1503.2.1.1 Spray spaces and vapor areas. Electrical wiring and equipment in spray spaces and vapor areas shall be of an explosion-proof type approved for use in such hazardous locations. Such areas shall be considered to be Class I, Division 1 or Class II, Division 1 hazardous locations in accordance with the Electrical Code.

1503.2.1.2 Electrical wiring and equipment in resin application areas. Electrical wiring and equipment located in resin application areas shall be in accordance with the Electrical Code.

1503.2.1.3 Areas subject to deposits of residues. Electrical equipment in the vicinity of spray areas and dip tanks or associated drain boards or drying operations which are subject to splashing or dripping of liquids shall be specifically approved for locations containing deposits of readily ignitable residue and explosive vapors.

Exceptions:

1. This provision shall not apply to wiring in rigid conduit, threaded boxes or fittings not containing taps, splices or terminal connections.

2. This provision shall not apply to electrostatic equipment allowed by Section 1506.

1503.2.1.3.1 Resin application areas. In resin application areas, electrical wiring and equipment that is subject to deposits of combustible residues shall be listed for such exposure and shall be installed as required for hazardous (classified) locations. Electrical wiring and equipment not subject to deposits of combustible residues shall be installed as required for ordinary hazard locations.

1503.2.1.4 Areas adjacent to spray booths. Electrical wiring and equipment located outside of, but within 5 feet (1524 mm) horizontally and 3 feet (914 mm) vertically of openings in a spray booth or a spray room shall be approved for Class I, Division 2 or Class II, Division 2 hazardous locations, whichever is applicable.

1503.2.1.5 Areas subject to overspray deposits. Electrical equipment in spray areas located such that deposits of combustible residues could readily accumulate thereon shall be specifically approved for locations containing deposits of readily ignitable residue and explosive vapors in accordance with the Electrical Code.

Exceptions:

1. Wiring in rigid conduit.
2. Boxes or fittings not containing taps, splices or terminal connections.
3. Equipment allowed by Sections 1504 and 1506 and Chapter 21.

1503.2.1.6 Flexible power cords. The use of flexible power cords may be used as authorized by the Electrical Code.

1503.2.2 Open flames and sparks. Open flames and spark-producing devices shall not be located in spray spaces or vapor areas and shall not be located within 20 feet (6096 mm) of such areas unless separated by a permanent partition.

Exception: Drying and baking apparatus complying with the requirements of Section 1504.7.2.

1503.2.3 Hot surfaces. Heated surfaces having a temperature sufficient to ignite vapors shall not be located in vapor areas. Space-heating appliances, steam pipes or hot surfaces in a spray area or a resin application area shall be located such that they are not subject to accumulation of deposits of combustible residues.

Exception: Drying apparatus complying with the requirements of Section 1504.7.2.

1503.2.4 Equipment enclosures. Equipment or apparatus that is capable of producing sparks or particles of hot metal that would fall into a spray space or vapor area shall be totally enclosed.

1503.2.5 Grounding. Metal parts of spray booths, exhaust ducts and piping systems conveying Class I or II liquids shall be electrically grounded in accordance with the Electrical Code. Metallic parts located in resin application areas, including but not limited to exhaust ducts, ventilation fans, spray application equipment, workpieces and piping, shall be electrically grounded.

1503.2.6 Smoking prohibited. It shall be unlawful to smoke in a powder coating area, organic peroxide and dual-component coating area, any spray space, limited spraying space, or vapor area. "No Smoking" signs complying with the requirements of Section 310 shall be conspicuously posted in such areas and other locations.

1503.2.7 Hot work warning signs. Welding, cutting and other hot work operations shall not be conducted in or adjacent to spray areas or dipping or coating operations. Durable signs bearing the following warning shall be conspicuously posted in the vicinity of spray areas and dipping or coating operations: NO WELDING THE USE OF WELDING OR CUTTING EQUIPMENT IN OR NEAR THIS AREA IS DANGEROUS BECAUSE OF FIRE AND EXPLOSION HAZARDS.

1503.2.8 Powered industrial trucks. Powered industrial trucks used in electrically classified areas shall be listed for

such use.

1503.3Storage, handling and use of flammable and combustible liquids.The storage, handling and use of flammable and combustible liquids shall be in accordance with this section and Chapter 34.

1503.3.1Use.Containers supplying spray nozzles shall be of a closed type or provided with metal covers which are kept closed. Containers not resting on floors shall be on noncombustible supports or suspended by wire cables. Containers supplying spray nozzles by gravity flow shall not exceed 10 gallons (37.9 L) in capacity.

1503.3.2Valves.Containers and piping to which a hose or flexible connection is attached shall be provided with a shutoff valve at the connection. Such valves shall be kept shut when hoses are not in use.

1503.3.3Pumped liquid supplies.Where flammable or combustible liquids are supplied to spray nozzles by positive displacement pumps, pump discharge lines shall be provided with an approved relief valve discharging to pump suction or a safe detached location.

1503.3.4Liquid transfer.Where a flammable liquid is transferred from one portable container to another, a bond shall be provided between the two containers. At least one container shall be grounded. Piping systems for Class I and Class II liquids shall be permanently grounded.

1503.3.5Class I liquids as solvents.Class I liquids used as solvents shall be used in spray gun and equipment cleaning machines which have been listed and approved for the purpose or shall be used in spray booths or spray rooms in accordance with Sections 1503.3.5.1 and 1503.3.5.2.

1503.3.5.1Listed devices.Cleaning machines for spray guns and equipment shall not be located in areas open to the public and shall be separated from ignition sources in accordance with their listings or by a distance of 3 feet (914 mm), whichever is greater. The quantity of solvent used in a machine shall not exceed the design capacity of the machine.

1503.3.5.2Within spray booths and spray rooms.Mechanical ventilation equipment shall be operated when solvents are used for cleaning spray nozzles and auxiliary equipment and for a period of time thereafter to allow for the exhaust of the vapors within spray booths and spray rooms.

1503.3.6Class II and Class III liquids.Solvents used outside of spray booths, spray rooms or listed and approved spray gun and equipment cleaning machines shall be restricted to Class II and Class III liquids.

1503.4Operations and maintenance.Spray areas, exhaust fan blades and exhaust ducts shall be kept free from the accumulation of deposits of combustible residues. Where excessive residue accumulates in booths, ducts, discharge points or other spray areas, spraying operations shall be discontinued until the accumulation is removed from such areas and properly disposed of.

1503.4.1Tools.Scrapers, spuds and other tools used for cleaning purposes shall be constructed of non-sparking materials.

1503.4.2Residue.Residue removed during cleaning and debris contaminated with residue shall be immediately removed from the premises and disposed of lawfully.

1503.4.3Waste cans.Approved metal waste cans equipped with self-closing lids shall be provided wherever rags or waste are impregnated with finishing material. Such rags and waste shall be deposited therein immediately after being utilized. The contents of waste cans shall be properly disposed of at the end of each work shift and at least once daily.

1503.4.4Solvent recycling.Solvent distillation equipment used to recycle and clean dirty solvents shall comply with the requirements of Section 3405.4.



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Chapter 15: FLAMMABLE FINISHES
SECTION FC 1504: SPRAY FINISHING

NYC Administrative Code § 29-FC 1504

1504.1 Location of spray-finishing operations.

Spray-finishing operations conducted in buildings used for Group A, E, I or R occupancies shall be located in a spray room protected throughout by a sprinkler system, and separated vertically and horizontally from other areas in accordance with the Building Code. In other occupancies, spray-finishing operations shall be conducted in a spray room, spray booth or limited spraying space approved for such use.

1504.1.1 Spray rooms. Spray rooms shall be constructed and designed in accordance with this section and the construction codes, including the Building Code, and shall comply with the requirements of Sections 1504.2, 1504.3, 1504.4, 1504.5 and 1504.6.

1504.1.1.1 Floor. Combustible floor construction in spray rooms shall be covered by approved, noncombustible, nonsparking material, except that combustible coverings, such as thin paper or plastic and strippable coatings, may be utilized over noncombustible materials to facilitate cleaning operations in spray rooms.

1504.1.1.2 Certificate of approval. Pre-manufactured spray rooms shall be of a type for which a certificate of approval has been issued in accordance with this code, or which was previously approved by the Department of Buildings or the Board of Standards and Appeals, unless such approval is amended or repealed by the commissioner.

1504.1.2 Spray booths. The design and construction of spray booths shall be in accordance with Sections 1504.1.2.1 through 1504.1.2.7, Sections 1504.2 through 1504.6, and NFPA 33.

1504.1.2.1 Construction. Spray booths shall be constructed of approved noncombustible materials. Aluminum shall not be used.

Where walls or ceiling assemblies are constructed of sheet metal, single-skin assemblies shall be no thinner than 0.0478 inch (18 gage) (1.2 mm) and each sheet of double-skin assemblies shall be no thinner than 0.0359 inch (20 gage)

(0.9 mm).

Structural sections of spray booths are allowed to be sealed with latex-based or similar caulks and sealants.

1504.1.2.2 Surfaces. The interior surfaces of spray booths shall be smooth and shall be constructed so as to permit the free passage of exhaust air from all parts of the interior and to facilitate washing and cleaning, and shall be designed to confine residues within the booth. Aluminum shall not be used.

1504.1.2.3 Floor. Combustible floor construction in spray booths shall be covered by approved, noncombustible, non-sparking material, except that combustible coverings, such as thin paper or plastic and strippable coatings, may be utilized over noncombustible materials to facilitate cleaning operations in spray booths.

1504.1.2.4 Means of egress. Means of egress shall be provided in accordance with the construction codes, including the Building Code.

Exception: Means of egress doors from pre-manufactured spray booths shall not be less than 30 inches (762 mm) in width by 80 inches (2032 mm) in height.

1504.1.2.5 Clear space. Spray booths shall be installed so that all parts of the booth are readily accessible for cleaning. A clear space of not less than 3 feet (914 mm) shall be maintained on all sides of the spray booth. This clear space shall be kept free of any storage or combustible construction.

Exceptions:

1. This requirement shall not prohibit locating a spray booth closer than 3 feet (914 mm) to or directly against an interior partition, wall or floor/ceiling assembly, that has a fire-resistance-rating of not less than 1 hour, provided the spray booth can be adequately cleaned and maintained.

2. This requirement shall not prohibit locating a spray booth closer than 3 feet (914 mm) to an exterior wall or a roof assembly provided the wall or roof is constructed of noncombustible material and provided the spray booth can be adequately cleaned and maintained.

1504.1.2.6 Size. The aggregate area of spray booths in a building shall not exceed the lesser of 10 percent of the area of any floor of the building or the basic area allowed for a Group H-2 occupancy without area increases, as set forth in the construction codes, including the Building Code. The area of an individual spray booth in a building shall not exceed the lesser of the aggregate size limit or 1,500 square feet (139 m²).

Exception: One individual booth not exceeding 500 square feet (46 m²).

1504.1.2.7 Certificate of approval. Pre-manufactured spray booths shall be of a type for which a certificate of approval has been issued in accordance with this code, or which was previously approved by the Department of Buildings or the Board of Standards and Appeals, unless such approval is amended or repealed by the commissioner.

1504.1.3 Spray spaces. Spray spaces shall be designed and constructed in accordance with the construction codes, including the Building Code, and Sections 1504.1.3.1, 1504.2, 1504.3, 1504.4, 1504.5 and 1504.6 of this code.

1504.1.3.1 Floor. Combustible floor construction in spray spaces shall be covered by approved, noncombustible, nonsparking material, except that combustible coverings, such as thin paper or plastic and strippable coatings, may be utilized over noncombustible materials to facilitate cleaning operations in spray spaces.

1504.1.4 Limited spraying spaces. Limited spraying spaces shall comply with the requirements of Sections 1504.1.4.1 through 1504.1.4.4.

1504.1.4.1Job size.The aggregate surface area to be sprayed shall not exceed 9 square feet (0.84 m²).

1504.1.4.2Frequency.Spraying operations shall not be of a continuous nature.

1504.1.4.3Ventilation.Positive mechanical ventilation shall be provided in accordance with Section 502.7.2 of the Mechanical Code. Such system shall meet the requirements of this code for handling flammable vapors. Explosion venting is not required.

1504.1.4.4Electrical wiring.Electrical wiring within 10 feet (3048 mm) of the floor and 20 feet (6096 mm) horizontally of the limited spraying space shall be designed for Class I, Division 2 locations in accordance with the Electrical Code.

1504.2Ventilation.Mechanical ventilation of spray areas shall be provided in accordance with Sections 502.7 and 510 of the Mechanical Code.

1504.2.1Operation.Mechanical ventilation shall be kept in operation at all times while spraying operations are being conducted and for a sufficient time thereafter to allow vapors from drying coated articles and finishing material residue to be exhausted. Spraying equipment shall be interlocked with the ventilation of the spray area such that spraying operations cannot be conducted unless the ventilation system is in operation.

1504.2.2Reserved.

1504.2.3Reserved.

1504.2.4Ventilation obstruction.Articles being sprayed shall be positioned in a manner that does not obstruct collection of overspray.

1504.3Filters.Air intake filters that are part of a wall or ceiling assembly shall be listed as Class I or Class II in accordance with UL 900. Exhaust filters shall be provided.

1504.3.1Supports.Supports and holders for filters shall be constructed of noncombustible materials.

1504.3.2Attachment.Overspray collection filters shall be readily removable and accessible for cleaning or replacement.

1504.3.3Maintaining air velocity.Visible gauges, audible alarms or pressure-activated devices shall be installed to indicate or ensure that the required air velocity is being maintained.

1504.3.4Filter rolls.Spray booths equipped with a filter roll that is automatically advanced when the air velocity is reduced to less than 100 linear feet per minute (51 m/s) shall be arranged to shut down the spraying operation if the filter roll fails to advance automatically.

1504.3.5Filter disposal.Discarded filter pads shall be immediately removed from the premises or placed in a noncombustible container with a tight-fitting lid, and disposed of lawfully.

1504.3.6Spontaneous ignition.Spray booths using dry filters shall not be used for spraying materials that are highly susceptible to spontaneous heating and ignition. Filters shall be changed prior to spraying materials that could react with other materials previously collected. Examples of potentially reactive combinations include lacquer when combined with varnishes, stains or primers.

1504.3.7Waterwash spray booths.Waterwash spray booths shall be of an approved design so as to prevent excessive accumulation of deposits in ducts and residue at duct outlets. Such booths shall be arranged so that air and overspray are drawn through a continuously flowing water curtain before entering an exhaust duct to the outdoors.

1504.4Different coatings.Spray booths, spray rooms and spray spaces shall not be alternately utilized for different types of coating materials where the combination of materials is conducive to spontaneous ignition, unless all deposits of one material are removed from the booth, room or space and exhaust ducts prior to spraying with a different material.

1504.5Illumination.Where spray spaces, spray rooms or spray booths are illuminated through glass panels or other transparent materials, only fixed lighting units shall be utilized as a source of illumination.

1504.5.1Glass panels.Panels for light fixtures or for observation shall be of heat-treated glass, wired glass or hammered-wire glass and shall be sealed to confine vapors, mists, residues, dusts and deposits to the spray area. Panels for light fixtures shall be separated from the fixture to prevent the surface temperature of the panel from exceeding 200(degrees)F (93(degrees)C).

1504.5.2Exterior fixtures.Light fixtures attached to the walls or ceilings of a spray area, but which are outside of any classified area and are separated from the spray area by vaportight glass panels, shall be suitable for use in ordinary hazard locations. Such fixtures shall be serviced from outside the spray area.

1504.5.3Integral fixtures.Light fixtures that are an integral part of the walls or ceiling of a spray area are allowed to be separated from the spray area by glass panels that are an integral part of the fixture. Such fixtures shall be listed for use in Class I, Division 2 or Class II, Division 2 locations, whichever is applicable, and also shall be suitable for accumulations of deposits of combustible residues. Such fixtures are allowed to be serviced from inside the spray area.

1504.5.4Portable electric lamps.Portable electric lamps shall not be used in spray areas during spraying operations. Portable electric lamps used during cleaning or repairing operations shall be of a type approved for hazardous locations.

1504.6Fire protection.Spray booths and spray rooms shall be protected throughout by a fire extinguishing system. Such fire extinguishing system shall also protect exhaust plenums, exhaust ducts and both sides of dry filters when such filters are used.

1504.6.1Protection of sprinklers.Sprinkler systems installed in spray areas shall be protected from accumulation of residue from spraying operations in an approved manner. Sprinkler heads shall be inspected at least once per week and cleaned as needed. Bags used as a protective covering shall be 0.003-inch-thick (0.076 mm) polyethylene or cellophane or shall be thin paper. Sprinkler heads contaminated by overspray particles shall be replaced with new sprinkler heads.

1504.6.2Automated spray application operations.Where protecting automated spray application operations, fire extinguishing systems shall be equipped with an approved interlock feature that will, upon discharge of the system, automatically stop the operation of spraying operations and workpiece conveyors into and out of the spray area. Where the building is equipped with a fire alarm system, discharge of the fire extinguishing system shall also activate the building alarm notification appliances.

1504.6.2.1Alarm station.A manual fire alarm and emergency system shutdown station shall be installed to serve each spray area. When activated, the station shall accomplish the functions indicated in Section 1504.6.2. At least one such station shall be readily accessible to operating personnel. Where access to this station is likely to involve exposure to danger, an additional station shall be located adjacent to an exit from the area.

1504.6.3Ventilation interlock prohibited.Makeup air and spray area exhaust systems shall not be interlocked with the fire alarm system and shall remain in operation during a fire alarm condition.

Exception: Where the type of fire extinguishing system used requires that ventilation be discontinued, makeup air and exhaust systems shall shut down and dampers shall close.

1504.6.4Portable fire extinguishers.Portable fire extinguishers complying with the requirements of Section 906 shall be provided for spray areas in accordance with the requirements for an extra (high) hazard occupancy.

1504.7Drying operations.Spray booths and spray rooms shall not be used for the purpose of drying by arrangements which could cause an increase in the surface temperature of the spray booth or spray room, except in accordance with Sections 1504.7.1 through 1504.7.2.3.

1504.7.1Spraying procedure.The spraying procedure shall use low-volume spray application.

1504.7.2Drying apparatus.Fixed drying apparatus shall comply with the requirements of this chapter and the applicable provisions of Chapter 21. When recirculation ventilation is provided in accordance with Section 1504.2.2, the heating system shall not be within the recirculation air path.

1504.7.2.1Interlocks.The spraying apparatus, drying apparatus and ventilating system for the spray booth or spray room shall be equipped with interlocks arranged to:

1. Prevent operation of spraying apparatus while drying operations are in progress.
2. Purge spray vapors from the spray booth or spray room for a period of not less than 3 minutes before drying apparatus is rendered operable.
3. Have the ventilating system maintain a safe atmosphere within the spray booth or spray room during the drying process and automatically shut off drying apparatus in the event of a failure of the ventilating system.
4. Shut off the drying apparatus automatically if the air temperature within the booth exceeds 200(degrees)F (93(degrees)C).

1504.7.2.2Portable infrared apparatus.When portable infrared drying apparatus is used, electrical wiring and portable infrared drying equipment shall comply with the requirements of the Electrical Code. Electrical equipment located within 18 inches (457 mm) of floor level shall be approved for Class I, Division 2 hazardous locations. Metallic parts of drying apparatus shall be electrically bonded and grounded. During spraying operations, portable drying apparatus and electrical connections and wiring thereto shall not be located within spray booths, spray rooms or other areas where spray residue would be deposited thereon.

1504.7.2.3Sources of ignition.Except as otherwise specifically provided in this section, drying or baking units utilizing a heating system having open flames or which are capable of producing sparks, shall not be installed in a spray area.



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Chapter 15: FLAMMABLE FINISHES
SECTION FC 1505: DIPPING OPERATIONS

NYC Administrative Code § 29-FC 1505

1505.1 Location of dip-tank operations.

Dip-tank operations conducted in buildings used for Group A, I or R occupancies shall be located in a room designed for that purpose, protected throughout by a sprinkler system, and separated vertically and horizontally from other areas in accordance with the construction codes, including the Building Code.

1505.2 Ventilation of vapor areas. Vapor areas shall be provided with mechanical ventilation in accordance with Section 502.7.4 of the Mechanical Code.

1505.3 Construction of dip tanks. Dip tanks shall be constructed in accordance with this section, and NFPA 34. Dip tanks, including drain boards, shall be constructed of noncombustible material and their supports shall be of heavy metal, reinforced concrete or masonry.

1505.3.1 Overflow. Dip tanks greater than 150 gallons (568 L) in capacity or 10 square feet (0.93 m²) in liquid surface area shall be equipped with a trapped overflow pipe leading to an approved outdoor location. The bottom of the overflow connection shall not be less than 6 inches (152 mm) below the top of the tank.

1505.3.2 Bottom drains. Dip tanks greater than 500 gallons (1893 L) in liquid capacity shall be equipped with bottom drains that are arranged to automatically and manually drain the tank quickly in the event of a fire unless the viscosity of the liquid at normal atmospheric temperature makes this impractical. Manual operation shall be from a safe, accessible location. Where gravity flow is not practicable, automatic pumps shall be provided. Such drains shall be trapped and discharge to a closed, vented salvage tank or to an approved location outdoors.

Exception: Dip tanks containing Class IIIB combustible liquids where the liquids are not heated above room temperature, and the process area is protected throughout by a sprinkler system.

1505.3.3 Dipping liquid temperature control. Protection against the accumulation of vapors, self-ignition and

excessively high temperatures shall be provided for dipping liquids that are heated directly or heated by the surfaces of the object being dipped.

1505.4Conveyors.Dip tanks utilizing a conveyor system shall be arranged such that in the event of fire, the conveyor system shall automatically cease motion and the required tank bottom drains shall open.

1505.5Portable fire extinguishers.Areas in the vicinity of dip tanks shall be provided with portable fire extinguishers complying with the requirements of Section 906 and suitable for flammable and combustible liquid fires as specified for extra (high) hazard occupancies.

1505.6Fire extinguishing equipment.A fire extinguishing system or dip tank covers in accordance with Section 1505.7 shall be provided for the following dip tanks:

1. Dip tanks less than 150 gallons (568 L) in capacity or 10 square feet (0.93 m²) in liquid surface area.
2. Dip tanks containing a liquid with a flash point below 110(degrees)F (43(degrees)C), used in such manner that the liquid temperature could equal or be greater than its flash point from artificial or natural causes, and having both a capacity of more than 10 gallons (37.9 L) and a liquid surface area of more than 4 square feet (0.37 m²).

1505.6.1Fire extinguishing system.A fire extinguishing system shall be provided for dip tanks with a 150-gallon (568 L) or more capacity, or 10 square feet (0.93 m²) or larger in a liquid surface area. Fire extinguishing system design shall be in accordance with NFPA 34.

1505.7Dip tank covers.Dip tank covers allowed by Section 1505.6 shall be capable of manual operation and shall be automatic-closing by approved automatic-closing devices designed to operate in the event of fire.

1505.7.1Construction.Covers shall be constructed of noncombustible material or be of a tin-clad type with enclosing metal applied with locked joints.

1505.7.2Supports.Chain or wire rope shall be utilized for cover supports or operating mechanisms.

1505.7.3Closed covers.Covers shall be kept closed when tanks are not in use.

1505.8Hardening and tempering tanks.Hardening and tempering tanks shall comply with the requirements of Sections 1505.3 through 1505.5 but shall be exempt from other provisions of Section 1505.

1505.8.1Location.Tanks shall be located as far as practical from furnaces and shall not be located on or near combustible floors.

1505.8.2Hoods.Tanks shall be provided with a noncombustible hood and vent or other approved venting means, terminating outdoors to serve as a vent in case of a fire. Such vent ducts shall be treated as flues, and proper clearances shall be maintained from combustible materials.

1505.8.3Alarms.Tanks shall be equipped with a high-temperature limit switch arranged to sound an alarm when the temperature of the quenching medium reaches 50(degrees)F (10(degrees)C) below the flash point.

1505.8.4Fire protection.Hardening and tempering tanks greater than 500 gallons (1893 L) in capacity or 25 square feet (2.3 m²) in liquid surface area shall be protected by a fire extinguishing system.

1505.8.5Use of air pressure.Air under pressure shall not be used to fill or agitate oil in tanks.

1505.9Flow-coating operations.Flow-coating operations shall comply with the requirements for dip tanks. The area of the sump and any areas on which paint flows shall be considered to be the area of a dip tank.

1505.9.1Paint supply.Paint shall be supplied by a gravity tank not exceeding 10 gallons (37.9 L) in capacity or by direct low-pressure pumps arranged to shut down automatically in case of fire by means of approved heat-actuated devices.

1505.10Roll-coating operations.Roll-coating operations shall comply with the requirements of Section 1505.9. In roll-coating operations utilizing flammable or combustible liquids, sparks from static electricity shall be prevented by electrically bonding and grounding all metallic rotating and other parts of machinery and equipment and by the installation of static collectors or by maintaining a conductive atmosphere such as a high relative humidity.



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TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 15: FLAMMABLE FINISHES
SECTION FC 1506: ELECTROSTATIC APPARATUS

NYC Administrative Code § 29-FC 1506

1506.1 General.

Electrostatic apparatus and devices used in connection with paint-spraying and paint-deteating operations shall be of an approved type.

1506.2Location.Transformers, power packs, control apparatus and all other electrical portions of the equipment, except high-voltage grids and electrostatic atomizing heads and connections, shall be located outside of the spray area or vapor area, or shall comply with the requirements of Section 1503.2.

1506.3Construction of equipment.Electrodes and electrostatic atomizing heads shall be of approved construction, rigidly supported in permanent locations and effectively insulated from ground. Insulators shall be nonporous and noncombustible.

1506.4Clear space.A space of at least twice the sparking distance shall be maintained between goods being painted or deteared and electrodes, electrostatic atomizing heads or conductors. A sign stating the sparking distance shall be conspicuously posted near the assembly.

1506.5Emergency shutdown.Electrostatic apparatus shall be equipped with automatic controls operating without time delay to disconnect the power supply to the high-voltage transformer and signal the operator under any of the following conditions:

1. Stoppage of ventilating fans or failure of ventilating equipment from any cause.
2. Stoppage of the conveyor carrying articles past the high-voltage grid.
3. Occurrence of a ground or an imminent ground at any point of the high-voltage system.
4. Reduction of clearance below that required in Section 1506.4.

1506.6 Ventilation interlock. Hand electrostatic equipment shall be interlocked with the ventilation system for the spray area so that the equipment cannot be operated unless the ventilating system is in operation.

1506.7 Protection for automated liquid electrostatic spray application equipment. Automated liquid electrostatic spray application equipment shall be protected by the installation of an approved, supervised flame detection apparatus that shall, in the event of ignition, react to the presence of flame within 0.5 second and shall accomplish all of the following:

1. Activation of a local alarm in the vicinity of the spraying operation and activation of the building alarm system, if such system is provided.
2. Shutting down of the coating material delivery system.
3. Termination of all spray application operations.
4. Stopping of conveyors into and out of the spray area.
5. Disconnection of power to the high-voltage elements in the spray area and disconnection of power to the system.

1506.8 Barriers. Booths, fencing, railings or guards shall be placed about the equipment such that either by their location or character, or both, isolation of the process is maintained from plant storage and personnel. Railings, fencing and guards shall be of conductive material, adequately grounded, and shall be at least 5 feet (1524 mm) from processing equipment.

1506.9 Signs. Durable signs shall be conspicuously posted to provide the following information:

1. Designate the process zone as dangerous with respect to fire and accident.
2. Identify the grounding requirements for all electrically conductive objects in the spray area, including persons.
3. Restrict access to qualified personnel only.

1506.10 Ventilation. The spray area shall be ventilated in accordance with Section 1504.2.

1506.11 Maintenance. Insulators shall be kept clean and dry. Drip plates and screens subject to paint deposits shall be removable and taken to a safe place for cleaning.

1506.12 Fire protection. Areas used for electrostatic spray finishing with fixed equipment shall be protected throughout by a fire extinguishing system.



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SECTION FC 1507: POWDER COATING

NYC Administrative Code § 29-FC 1507

1507.1 General.

Operations using finely ground particles of protective finishing material applied in dry powder form by fluidized bed, electrostatic fluidized bed, powder spray guns or electrostatic powder spray guns shall comply with the requirements of this section.

1507.2 Location and construction of powder coating rooms and booths. Powder coating operations shall be conducted in enclosed rooms constructed of noncombustible materials, enclosed powder coating facilities which are ventilated, or ventilated spray booths complying with the requirements of Section 1504.1.2.

Exception: Listed spray-booth assemblies that are constructed of other materials shall be allowed.

1507.3 Sources of ignition. When parts are heated prior to coating, the temperature of the parts shall not exceed the ignition temperature of the powder to be used. Precautions shall be taken to minimize the possibility of ignition by static electrical sparks through static bonding and grounding, where possible, of powder transport, application and recovery equipment. Sources of ignition shall additionally comply with the requirements of Section 1503.2.

1507.4 Ventilation. Exhaust ventilation and powder recovery systems shall be provided in accordance with Section 502.7.6 of the Mechanical Code.

1507.5 Drying, curing and fusion equipment. Drying, curing and fusion equipment shall comply with the requirements of Chapter 21.

1507.6 Operation and maintenance. Powder coating areas shall be kept free from the accumulation of powder coating dusts, including horizontal surfaces such as ledges, beams, pipes, hoods, booths and floors.

1507.6.1 Cleaning. Surfaces shall be cleaned in such a manner so as to avoid scattering dusts to other places or creating dust clouds. Vacuum sweeping equipment shall be of a type approved for use in hazardous location.

1507.6.2 Spark-producing metals. Iron or spark-producing metals shall be prevented from being introduced into the powders being applied by magnetic separators, filter-type separators, or by other approved means.

1507.7 Fixed electrostatic-spraying equipment. In addition to Section 1507, Section 1506 shall apply to fixed electrostatic equipment used in powder coating operations.

1507.8 Fire protection. Areas used for powder coating shall be protected throughout by a fire extinguishing system.

1507.9 Additional protection for fixed systems. Automated powder application equipment shall be protected by the installation of an approved, supervised flame detection apparatus that shall react to the presence of flame within 0.5 second and shall accomplish all of the following:

1. Shutting down of energy supplies (electrical and compressed air) to conveyor, ventilation, application, transfer and powder collection equipment.
2. Closing of segregation dampers in associated ductwork to interrupt airflows from application equipment to powder collectors.
3. Activation of an alarm that is audible throughout the powder coating room or booth.

1507.10 Portable fire extinguishers. Portable fire extinguishers complying with the requirements of Section 906 shall be provided for areas used for powder coating in accordance with the requirements for extra (high) hazard occupancy.



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SECTION FC 1508: AUTOMOBILE UNDERCOATING

NYC Administrative Code § 29-FC 1508

1508.1 General.

Automobile undercoating spray operations conducted in areas with approved natural or mechanical ventilation shall not be required to comply with the requirements of Section 1504 when approved and where utilizing Class IIIA or IIIB combustible liquids.



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SECTION FC 1509: ORGANIC PEROXIDES AND DUAL-COMPONENT COATINGS

NYC Administrative Code § 29-FC 1509

1509.1 Contamination prevention.

Organic peroxide initiators shall not be contaminated with foreign substances.

1509.2 Equipment. Spray guns and related handling equipment used with organic peroxides shall be of a type manufactured for such use.

1509.3 Pressure tanks. Separate pressure vessels and inserts specifically for the application shall be used for the resin and for the organic peroxide, and shall not be interchanged. Organic peroxide pressure tank inserts shall be constructed of stainless steel or polyethylene.

1509.4 Residue control. Materials shall not be contaminated by dusts and overspray residues resulting from the sanding or spraying of finishing materials containing organic peroxides.

1509.5 Spilled material. Spilled organic peroxides shall be promptly removed so there are no residues. Spilled material absorbed by using a noncombustible absorbent shall be promptly removed from the premises and disposed of lawfully.

1509.6 Use of organic peroxide coatings. Spraying operations involving the use of organic peroxides and other dual-component coatings shall be conducted in spray booths complying with the requirements of Section 1504.1.2 that are protected throughout by a sprinkler system.

1509.7 Storage. The storage of organic peroxides shall be in accordance with Chapter 39.

1509.8 Handling. Handling of organic peroxides shall be conducted in a manner that avoids shock and friction that produces decomposition and violent reaction hazards.

1509.9 Mixing. Organic peroxides shall not be mixed directly with accelerators or promoters.

1509.10 Sources of ignition. Only nonsparking tools shall be used in areas where organic peroxides are stored, mixed or applied. Such areas shall comply with the requirements of Section 1503.2.



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Chapter 15: FLAMMABLE FINISHES
SECTION FC 1510: FLOOR FINISHING OPERATIONS

NYC Administrative Code § 29-FC 1510

1510.1 Scope.

All floor finishing operations using Class I or Class II liquids shall comply with the requirements of Sections 1510.1.1 and 1510.1.2. Floor finishing operations exceeding 168 square feet (15.6 m²) and using Class I or Class II liquids shall additionally comply with the requirements of Sections 1510.2 through 1510.5.

1510.1.1 Prohibitions. It shall be unlawful to:

1. Use flammable floor finishing products with a flash point below 80(degrees)F (27(degrees)C) indoors.
2. Smoke, use or maintain open flames, including torches, in rooms or other indoor areas in which floor finishing products are being stored and/or in which floor finishing operations are being conducted.
3. Conduct floor finishing operations in rooms or other indoor areas occupied by anyone other than the individuals engaged in such operations.

1510.1.2 General requirements. All floor finishing operations shall comply with the following requirements:

1. Floor finishing operations shall be conducted in accordance with the manufacturer's instructions for the storage, handling and use of floor finishing products.
2. Flammable or combustible liquids or mixtures, other than floor finishing products, stored, handled or used in connection with floor finishing operations shall be stored, handled or used in accordance with Chapter 34.
3. Floor finishing product containers shall be closed when not in use.
4. Empty containers of floor finishing products and all other floor finishing product waste and residue shall be removed from the premises not less than once a day.

5. Gas burners, pilot lights, electrical devices, electronic devices and other sources of ignition in vapor areas shall be shut off prior to commencing work.

6. At least one portable fire extinguisher with a minimum rating of 20-B shall be immediately accessible during floor finishing operations. The travel distance to such extinguisher shall not exceed 30 feet (9144 mm).

7. Quantities of floor finishing products at a site shall not exceed the amount necessary for that day's operations. In no event shall such quantity exceed 20 gallons (76 L).

1510.2Business operation.Floor finishing operations shall not be conducted while an establishment is open to the public.

1510.3Ventilation.To prevent the accumulation of flammable vapors, mechanical ventilation at a minimum rate of 1 cubic foot per minute per square foot [$0.00508 \text{ m}^3/(\text{s} \times \text{m}^2)$] of area being finished shall be provided. Such ventilation shall be by approved temporary or portable means. Vapors shall be exhausted outdoors. Such ventilation equipment shall be kept in operation while the floor finishing operations are conducted and for a period of time thereafter to allow for the exhaust of the vapors.

1510.4Mechanical system operation.Heating, ventilation and air-conditioning systems shall not be operated during refinishing operations or within 4 hours of the application of flammable or combustible liquids.

1510.5Sources of ignition.No electrical equipment or device that is a potential source of ignition of floor finishing product vapors, including switches and outlets, shall be operated during floor finishing operations. Precautions shall be taken prior to commencing work to prevent inadvertent operation of such equipment or devices, such as shutting down electrical power, unplugging equipment and taping over switches and outlets.

1510.6Retail sale.Floor finishing products with a flash point below 80(degrees)F (27(degrees)C) shall be provided with a conspicuous and durable tag bearing the words, "WARNING: INDOOR USE OF THIS PRODUCT IS PROHIBITED IN NEW YORK CITY." A sign shall be conspicuously posted in the area in which the floor finishing product is displayed, warning that the product is prohibited for indoor use in New York City.



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Chapter 15: FLAMMABLE FINISHES
SECTION FC 1511: INDOOR MANUFACTURING OF REINFORCED PLASTICS

NYC Administrative Code § 29-FC 1511

1511.1 General.

Indoor manufacturing processes involving spray or hand application of reinforced plastics and using more than 5 gallons (19 L) of resin in a 24-hour period shall be conducted in accordance with this section.

1511.2 Resin application equipment. Equipment used for spray application of resin shall be designed, installed, operated and maintained in accordance with Sections 1509 and 1511.

1511.3 Fire protection. Resin application areas shall be protected throughout by a sprinkler system. The sprinkler system design shall not be less than that required for Ordinary Hazard, Group 2, with a minimum design area of 3,000 square feet (279 m²). Where the materials or storage arrangements are required by other regulations to be provided with a higher level of sprinkler system protection, the higher level of sprinkler system protection shall be provided.

1511.4 Sources of ignition in resin application areas. Sources of ignition in resin application areas shall comply with the requirements of Section 1503.2.

1511.5 Ventilation. Mechanical ventilation shall be provided throughout resin application areas in accordance with Sections 1504.2 and 1504.3. The ventilation rate shall be adequate to maintain the concentration of flammable vapors in the resin application area at or below 25 percent of the lower flammable limit (LFL).

Exception: Mechanical ventilation is not required for buildings that are unenclosed for at least 75 percent of the perimeter.

1511.5.1 Local ventilation. Local ventilation shall be provided inside of workpieces where personnel will be under or inside of the workpiece.

1511.6 Storage and use of hazardous materials. Storage and use of organic peroxides shall be in accordance with Section 1509 and Chapter 39. Storage and use of flammable and combustible liquids shall be in accordance with

Chapter 34. Storage and use of unstable (reactive) materials shall be in accordance with Chapter 43.

1511.7 Handling of excess catalyzed resin. A noncombustible, open-top container shall be provided for disposal of excess catalyzed resin. Excess catalyzed resin shall be drained into the container while still in the liquid state. Enough water shall be provided in the container to maintain a minimum 2-inch (51 mm) water layer over contained resin.

1511.8 Control of overchop. In areas where chopper guns are used, exposed wall and floor surfaces shall be covered with paper, polyethylene film, or other approved material to allow for removal of overchop. Overchop shall be allowed to cure for not less than 4 hours prior to removal.

1511.8.1 Disposal. Following removal, used wall and floor covering materials required by Section 1511.8 shall be placed in a noncombustible container and removed from the facility.



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CHAPTER 2 NEW YORK CITY FIRE CODE

Chapter 16: FRUIT AND CROP RIPENING

SECTION FC 1601: GENERAL

NYC Administrative Code § 29-FC 1601

1601.1 Scope.

This chapter shall govern the design, installation, operation and maintenance of facilities in which ethylene gas is used, other than in self-contained equipment, to promote the ripening of fruits, vegetables and other crops.

Exception: Mixtures of ethylene and one or more inert gases in concentrations which prevent the gas from reaching greater than 25 percent of the lower explosive limit (LEL) when released to the atmosphere.

1601.2Permits.Permits shall be required as set forth in Section 105.6.

1601.3Ethylene generators.Approved ethylene generators shall be operated and maintained in accordance with Section 1606.

1601.4General.Facilities using ethylene gas to promote the ripening of fruits, vegetables and other crops shall be designed, installed, operated and maintained in accordance with this chapter.



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Chapter 16: FRUIT AND CROP RIPENING

SECTION FC 1602: DEFINITIONS

NYC Administrative Code § 29-FC 1602

1602.1 Terms defined in Chapter 2.

Terms used in this chapter, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown in Chapter 2 or elsewhere in this code.



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SECTION FC 1603: ETHYLENE GAS

NYC Administrative Code § 29-FC 1603

1603.1 Location.

Ethylene gas shall be discharged only into approved rooms or enclosures designed and constructed for this purpose.

1603.2Dispensing. Valves controlling discharge of ethylene shall provide positive and failclosed control of flow and shall be set to limit the concentration of gas in air below 1,000 parts per million (ppm).



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SECTION FC 1604: SOURCES OF IGNITION

NYC Administrative Code § 29-FC 1604

1604.1 Ignition prevention.

Sources of ignition shall be controlled or protected in accordance with this section and Chapter 3.

1604.2 Electrical wiring and equipment. Electrical wiring and equipment, including lighting fixtures, shall be approved for use in Class I, Division 2, Group C hazardous (classified) locations.

1604.3 Static electricity. Devices, equipment and systems, including containers and piping, used to dispense ethylene, shall be bonded and grounded to prevent the discharge of static sparks or arcs.

1604.4 Lighting. Lighting shall be by approved electric lamps or fixtures only.

1604.5 Heating. Heating shall be by indirect means utilizing low-pressure steam, hot water, or warm air.

Exception: Electric or fuel-fired heaters approved for use in hazardous (classified) locations which are installed and operated in accordance with the Electrical Code, the Mechanical Code or the Fuel Gas Code.



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SECTION FC 1605: COMBUSTIBLE WASTE

NYC Administrative Code § 29-FC 1605

1605.1 Housekeeping.

Empty boxes, cartons, pallets and other combustible waste shall be removed from ripening rooms or enclosures and properly disposed of at the end of each work shift, but at least once a day.



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SECTION FC 1606: ETHYLENE GENERATORS

NYC Administrative Code § 29-FC 1606

1606.1 Ethylene generators.

Ethylene generators shall be listed and labeled by an approved testing laboratory and used only in approved rooms in accordance with the ethylene generator manufacturer's instructions. The listing evaluation shall include documentation that the concentration of ethylene gas does not exceed 25 percent of the lower explosive limit (LEL).

1606.2 Ethylene generator rooms. Ethylene generators shall be used in rooms having a volume of not less than the minimum room size provided for in the manufacturer's specifications and testing laboratory listing, but in no case less than 1,000 cubic feet (28 m³). Rooms shall have air circulation to ensure even distribution of ethylene gas and shall be free from sparks, open flames or other ignition sources.



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SECTION FC 1607: WARNING SIGNS

NYC Administrative Code § 29-FC 1607

1607.1 Required warning sign.

Approved warning signs identifying the hazard and indicating the danger involved and necessary precautions shall be posted on all doors and entrances to the premises in accordance with Chapter 27.



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Chapter 17: FUMIGATION AND THERMAL INSECTICIDAL FOGGING
SECTION FC 1701: GENERAL

NYC Administrative Code § 29-FC 1701

1701.1 Scope.

This chapter shall govern fumigation and thermal insecticidal fogging operations within buildings and structures.

1701.2Permits.Permits shall be required as set forth in Section 105.6.

1701.3General.Fumigation and thermal insecticidal fogging operations within buildings and structures shall be conducted in accordance with this chapter.

1701.4Supervision.Fumigation and thermal insecticidal fogging operations shall be supervised in accordance with Sections 1701.4.1 and 1701.4.2.

1701.4.1Fumigation and thermal insecticidal fogging operation company certificate.Persons engaged in the business of fumigation and thermal insecticidal fogging operations shall obtain a fumigation and thermal insecticidal fogging operation company certificate.

1701.4.2Fumigation and thermal insecticidal fogging operations.Fumigation and thermal insecticidal fogging operations requiring a permit or a company certificate shall be conducted by or under the personal supervision of a person holding a certificate of fitness.

1701.5Compliance with other provisions of law.Fumigation and thermal insecticidal fogging operations shall comply with all applicable federal, state and city laws, rules and regulations.



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SECTION FC 1702: DEFINITIONS

NYC Administrative Code § 29-FC 1702

1702.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

FUMIGANT. A substance which by itself or in combination with any other substance emits or liberates a gas, fume or vapor utilized for the destruction or control of insects, rats or other vermin or fungi, germs or similar conditions, as distinguished from insecticides and disinfectants which are essentially effective in the solid or liquid phases. Examples are methyl bromide, ethylene dibromide, hydrogen cyanide, carbon disulfide and sulfuryl fluoride.

FUMIGATION. The utilization within an enclosed space of a fumigant in concentrations that are hazardous or acutely toxic to humans.

FUMIGATION AND THERMAL INSECTICIDAL FOGGING OPERATION COMPANY CERTIFICATE. A certificate issued by the commissioner to a person engaged in the business of fumigation and thermal insecticidal fogging operations, which authorizes an owner or principal of such business to conduct such fumigation and thermal insecticidal fogging operations, for which such certificate is required by this code or the rules.

THERMAL INSECTICIDAL FOGGING. The utilization of insecticidal liquids passed through thermal fog-generating units where, by means of heat, pressure and turbulence, such liquids are transformed and discharged in the form of fog or mist blown into an area to be treated.



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Chapter 17: FUMIGATION AND THERMAL INSECTICIDAL FOGGING
SECTION FC 1703: FIRE SAFETY REQUIREMENTS

NYC Administrative Code § 29-FC 1703

1703.1 General.

Fumigation and thermal insecticidal fogging operations in buildings and structures shall be conducted in compliance with the fire protection and safety requirements of Sections 1703.2 through 1703.7.

1703.2Sources of ignition.Open flames and similar sources of ignition shall be removed from the space in which fumigation or thermal insecticidal fogging operations are being conducted. Heating, where needed, shall be of an approved type.

1703.2.1Electricity.Electricity in any part of the building or structure where operation of switches or electrical devices, equipment and systems could serve as a source of ignition during and for a reasonable time after any fumigation or thermal insecticidal fogging operation shall be shut off.

Exception: Circulating fans that have been specifically designed for utilization in hazardous atmospheres and installed in accordance with the Electrical Code.

1703.2.2Electronic devices.Electronic devices, including portable equipment and cellular phones, shall be shut off. Telephone lines shall be disconnected from telephones.

1703.3Notification.The department shall be notified in writing at least 48 hours before the building or structure is to be closed in connection with the utilization of any toxic or flammable fumigant. Notification shall give the location of the enclosed space to be fumigated or fogged, the occupancy, the fumigants or insecticides to be utilized, the person or persons responsible for the operation, and the date and time at which the operation will begin. Written notice of any fumigation or thermal insecticidal fogging operation shall be given to all affected occupants of the building, structure or portion thereof in which such operations are to be conducted, with sufficient advance notice to allow all such spaces to be vacated in an orderly manner. Such notice shall inform the occupants as to the purposes and anticipated duration of the fumigation operations.

1703.3.1Warning signs.Approved warning signs indicating the danger, type of chemical involved and necessary precautions shall be posted on all doors and entrances to the premises and upon all gangplanks and ladders from the deck, pier or land to the marine vessel. Such notices shall be printed in red ink on a white background. Letters in the headlines shall be at least 2 inches (51 mm) in height and shall state the date and time of the operation, the name and address of the person conducting the fumigation or thermal insecticidal fogging, the name of the operator in charge, and a warning stating that the occupied premises shall be vacated at least 1 hour before the operation begins and shall not be reentered until the danger signs have been removed by the proper authorities. Advance notice shall be given to all occupants of the building or structure where fumigation and thermal insecticidal fogging operations are to be conducted to warn of the hazards of such operation.

1703.3.2Reserved.

1703.3.3Watch personnel.During the period fumigation is in progress, except when fumigation is conducted in a gas-tight vault or tank, a responsible watchperson shall remain on duty at the entrance or entrances to the enclosed fumigated space until after the fumigation is completed and the premises is properly ventilated and safe for occupancy. Sufficient watchers shall be provided to prevent persons from entering the enclosed space under fumigation.

1703.4Prohibited thermal insecticidal fogging liquids.It shall be unlawful to use thermal insecticidal fogging liquids with a flash point below 100(degrees)F (38(degrees)C).

1703.5Wrapping of buildings.Paper and other similar combustible materials that are not flame resistant shall not be used to wrap or cover a building in excess of that required for the sealing of cracks, casements and similar openings.

1703.6Ventilation and cleanup.At the end of the exposure period, fumigators shall safely and properly ventilate the premises and contents; properly dispose of fumigant containers, residues, debris and other waste materials; and clear obstructions from gas-fired appliance vents.

1703.7Flammable fumigants restricted.It shall be unlawful to use carbon disulfide and hydrogen cyanide for fumigation unless conducted on a premises used solely for agriculture.



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TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 18: SEMICONDUCTOR FABRICATION FACILITIES
SECTION FC 1801: GENERAL

NYC Administrative Code § 29-FC 1801

1801.1 Scope.

This chapter shall govern the design, installation, operation and maintenance of semiconductor fabrication facilities and comparable research and development facilities classified as Group H-5 occupancies, and the storage, handling and use of hazardous materials therein.

1801.2Application. The requirements set forth in this chapter are requirements specific only to Group H-5 and shall be applied as exceptions or additions to applicable requirements set forth elsewhere in this code.

1801.3Multiple hazards. Where a material poses multiple hazards, all hazards shall be addressed in accordance with Section 2701.1.

1801.4General. Semiconductor fabrication facilities and comparable research and development facilities classified as Group H-5 occupancies shall be designed, installed, operated and maintained in accordance with this chapter. Such facilities and hazardous materials shall additionally comply with the requirements of the construction codes, including the Building Code.

1801.5Permits. Permits shall be required as set forth in Section 105.6.



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Chapter 18: SEMICONDUCTOR FABRICATION FACILITIES
SECTION FC 1802: DEFINITIONS

NYC Administrative Code § 29-FC 1802

1802.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

CONTINUOUS GAS DETECTION SYSTEM. A gas detection system where the analytical instrument is maintained in continuous operation and sampling is performed without interruption on a cyclical basis at intervals not to exceed 30 minutes.

EMERGENCY CONTROL STATION. An approved location on the premises of a semiconductor fabrication facility staffed by trained personnel that monitor the operation of equipment and systems including alert and alarm signals.

FABRICATION AREA. An area within a semiconductor fabrication facility in which processes using hazardous production materials are conducted.

HAZARDOUS PRODUCTION MATERIAL (HPM). A solid, liquid or gas associated with semiconductor manufacturing that has a degree-of-hazard rating in health, flammability or reactivity of Class 3 or 4 as defined in NFPA 704 and which is used directly in research, laboratory or production processes which have as their end product materials that are not hazardous.

HPM FLAMMABLE LIQUID. An HPM liquid that is defined as either a Class I flammable liquid or a Class II or Class IIIA combustible liquid.

HPM ROOM. A room used in conjunction with or serving a Group H-5 occupancy, where HPM is stored or used and which is classified as a Group H-2, H-3 or H-4 occupancy.

PASS-THROUGH. An enclosure installed in a wall with a door on each side that allows chemicals, HPM,

equipment, and parts to be transferred from one side of the wall to the other.

SEMICONDUCTOR FABRICATION FACILITY. A building or structure, or portion thereof, in which electrical circuits or devices, commonly known as semiconductors, are manufactured on solid crystalline substances having electrical conductivity greater than insulators but less than conductors.

SERVICE CORRIDOR. A fully enclosed passage, other than one designated as a required means of egress, through which HPM can be moved during handling.

TOOL. A device, storage container, workstation, or process machine used in a fabrication area.

WORKSTATION. A defined space within a fabrication area in which a specific function, laboratory procedure or research activity relating to semiconductor manufacture is conducted. A workstation may include equipment using HPM, hazardous materials storage cabinets, flammable liquid storage cabinets or gas cabinets, ventilation equipment, fire protection devices, detection devices and electrical devices.



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Chapter 18: SEMICONDUCTOR FABRICATION FACILITIES
SECTION FC 1803: GENERAL SAFETY PROVISIONS

NYC Administrative Code § 29-FC 1803

1803.1 Emergency control station.

An emergency control station shall be maintained on the premises at an approved location outside of the fabrication area, and shall be continuously staffed by trained personnel. The emergency control station shall monitor signals from emergency equipment and alarm and detection systems, including the following systems, whether required by this code or the construction codes or voluntarily installed.

1. Sprinkler system alarm and monitoring systems.
2. Manual fire alarm systems.
3. Emergency alarm systems.
4. Continuous-gas detection systems.
5. Smoke detection systems.
6. Emergency power systems.

1803.2 Devices, equipment and systems. Devices, equipment and systems including, containers, piping, tubing, valves and fittings shall comply with the requirements of this section, Section 2703.2, and other applicable provisions of this code, and the construction codes, including the Building Code and the Mechanical Code.

1803.2.1 Additional regulations for HPM supply piping and tubing. The requirements set forth in Section 2703.2.2.2 shall apply to supply piping and tubing for HPM gases and liquids. Supply piping and tubing for HPM gases and liquids having a health-hazard ranking of 3 or 4 shall be welded throughout, except for connections located within a ventilated enclosure if the material is a gas, or an approved method of drainage or containment is provided for connections if the material is a liquid.

1803.3Design and installation requirements.Semiconductor fabrication facilities shall be designed and installed in accordance with Sections 1803.3.1 through 1803.3.8.

1803.3.1Fabrication areas.Design, installation and location of fabrication areas shall comply with the requirements of the construction codes, including the Building Code.

1803.3.2Pass-throughs in exit access corridors.Pass-throughs in exit access corridors shall be constructed in accordance with the construction codes, including the Building Code.

1803.3.3Liquid storage rooms.Liquid storage rooms shall comply with the requirements of Chapter 34 and the construction codes, including the Building Code.

1803.3.4HPM rooms.HPM rooms shall comply with the requirements of the construction codes, including the Building Code.

1803.3.5Gas cabinets.Gas cabinets shall comply with the requirements of Section 2703.8.6.

1803.3.6Exhausted enclosures.Exhausted enclosures shall comply with the requirements of Section 2703.8.5.

1803.3.7Gas rooms.Gas rooms shall comply with the requirements of Section 2703.8.4.

1803.3.8Service corridors.Service corridors shall comply with the requirements of Section 1805.3 and the Building Code.

1803.4Emergency plan.A fire safety and evacuation plan shall be prepared in accordance with Chapter 4.

1803.5Maintenance of devices, equipment, systems and processes.Maintenance of devices, equipment, systems and processes shall comply with the requirements of Section 2703.2.6.

1803.6Reserved.

1803.7Electrical wiring and equipment.Electrical wiring and equipment in HPM facilities shall comply with the requirements of Sections 1803.7.1 through 1803.7.3.

1803.7.1Fabrication areas.Electrical wiring and equipment in fabrication areas shall comply with the requirements of the Electrical Code.

1803.7.2Workstations.Electrical equipment and devices within 5 feet (1524 mm) of workstations in which flammable or pyrophoric gases or flammable liquids are used shall comply with the requirements of the Electrical Code for Class I, Division 2 hazardous locations. Workstations shall not be energized without adequate exhaust ventilation in accordancewith Section 1803.14.

Exception: Class I, Division 2 hazardous electrical equipment is not required when the air removal from the workstation or dilution will prevent the accumulation of flammable vapors and fumes on a continuous basis.

1803.7.3Hazardous production material (HPM) rooms, gas rooms and liquid storage rooms.Electrical wiring and equipment in HPM rooms, gas rooms and liquid storage rooms shall comply with the requirements of the Electrical Code.

1803.8Exit access corridors and exit enclosures.Hazardous materials shall not be used or stored in exit access corridors or exit access enclosures.

1803.9Service corridors.Hazardous materials shall not be used in service corridors.

1803.10 Sprinkler system. A sprinkler system shall be provided in accordance with Sections 1803.10.1 through 1803.10.5, Chapter 9 and the Building Code.

1803.10.1 Workstations and tools. The design of the sprinkler system in the area shall take into consideration the spray pattern and the effect on the equipment.

1803.10.1.1 Combustible workstations. A sprinkler head shall be installed within each branch exhaust connection or individual plenums of workstations of combustible construction. The sprinkler head in the exhaust connection or plenum shall be located not more than 2 feet (610 mm) from the point of the duct connection or the connection to the plenum. When necessary to prevent corrosion, the sprinkler head and connecting piping in the duct shall be coated with approved or listed corrosion-resistant materials. The sprinkler head shall be accessible for periodic inspection in accordance with Chapter 9.

Exceptions:

1. Alternative fire extinguishing systems shall be allowed where approved. Activation of such systems shall deactivate the related processing equipment.

2. Process equipment that operates at temperatures exceeding 932(degrees)F (500(degrees)C) and has automatic shutdown capabilities that will interrupt HPM flow for hazardous materials.

3. Exhaust ducts 10 inches (254 mm) or less in diameter from flammable gas storage cabinets that are part of a workstation.

4. Ducts listed or approved for use without internal sprinkler protection.

1803.10.1.2 Combustible tools. Where the horizontal surface of a combustible tool is obstructed from ceiling sprinkler discharge, sprinkler protection that covers the horizontal surface of the tool shall be provided.

Exceptions:

1. A gaseous fire extinguishing local surface application system shall be allowed as an alternative to sprinklers when approved. Gaseous fire extinguishing systems shall be actuated by infrared (IR) or ultraviolet/infrared (UVIR) optical detectors.

2. Tools constructed of materials that are listed or approved for use without internal fire extinguishing system protection.

1803.10.2 Gas cabinets and exhausted enclosures. A sprinkler system shall be provided in gas cabinets and exhausted enclosures containing HPM compressed gases.

Exception: Gas cabinets located in a HPM room other than those cabinets containing pyrophoric gases.

1803.10.3 Pass-throughs in exit access corridors. Pass-throughs in exit access corridors shall be protected throughout by a sprinkler system.

1803.10.4 Exhaust ducts for HPM. A sprinkler system shall be provided in exhaust ducts conveying vapors, fumes, mists or dusts generated from HPM in accordance with this section and the Mechanical Code and the Building Code.

1803.10.4.1 Metallic and noncombustible nonmetallic exhaust ducts. A sprinkler system shall be provided in metallic and noncombustible nonmetallic exhaust ducts when the following conditions apply:

1. The largest cross-sectional diameter is equal to or greater than 10 inches (254 mm).

2. The ducts are within the building.

3. The ducts are conveying flammable vapors or fumes.

1803.10.4.2 Combustible nonmetallic exhaust ducts. A sprinkler system shall be provided in combustible nonmetallic exhaust ducts when the largest cross-sectional diameter of the duct is equal to or greater than 10 inches (254 mm).

Exceptions:

1. Ducts listed or approved for applications without sprinkler system protection.

2. Ducts not more than 12 feet (3658 mm) in length installed below ceiling level.

1803.10.4.3 Exhaust connections and plenums of combustible workstations. Fire extinguishing system protection for exhaust connections and plenums of combustible workstations shall comply with the requirements of Section 1803.10.1.

1803.10.4.4 Exhaust duct sprinkler system requirements. Sprinkler systems installed in exhaust duct systems shall be hydraulically designed to provide 0.5 gallons per minute (gpm) (1.9 L/min) over an area derived by multiplying the distance between the sprinklers in a horizontal duct by the width of the duct. Minimum discharge shall be 20 gpm (76 L/min) per sprinkler from the five hydraulically most remote sprinklers.

1803.10.4.4.1 Sprinkler head locations. Sprinkler heads shall be installed at 12-foot (3658 mm) intervals in horizontal ducts and at changes in direction. In vertical runs, sprinkler heads shall be installed at the top and at alternate floor levels.

1803.10.4.4.2 Control valve. A separate indicating control valve shall be provided for sprinkler heads installed in exhaust ducts.

1803.10.4.4.3 Drainage. Drainage shall be provided to remove sprinkler water discharged in exhaust ducts.

1803.10.4.4.4 Corrosive atmospheres. Where corrosive atmospheres exist, exhaust duct sprinkler heads and pipe fittings shall be manufactured of corrosion-resistant materials or coated with approved materials.

1803.10.4.4.5 Maintenance and inspection. Sprinkler heads in exhaust ducts shall be accessible for inspection and maintenance and shall be inspected and maintained on not less than an annual basis.

1803.10.5 Sprinkler alarms and supervision. Sprinkler systems shall be electrically supervised and provided with alarms in accordance with the construction codes, including the Building Code. Sprinkler system alarm and supervisory signals shall be transmitted to the emergency control station.

1803.11 Manual fire alarm system. A manual fire alarm system shall be installed throughout buildings containing a Group H-5 occupancy. Activation of the alarm system shall initiate a local alarm and transmit a signal to the emergency control station. Manual fire alarm systems shall be designed and installed in accordance with the construction codes, including the Building Code.

1803.12 Emergency alarm system. Emergency alarm systems shall be provided in accordance with this section, Section 2704.9 and Section 2705.4.4. The maximum allowable quantity per control area provisions of Section 2704.1 shall not apply to emergency alarm systems required for HPM.

1803.12.1 Where required. Emergency alarm systems shall be provided in the areas indicated in Sections 1803.12.1.1 through 1803.12.1.3.

1803.12.1.1Service corridors.An approved emergency alarm system shall be provided in service corridors, with at least one alarm device in the service corridor.

1803.12.1.2Exit access corridors and exit enclosures.Emergency alarms for exit access corridors and exit enclosures shall comply with the requirements of Section 2705.4.4.

1803.12.1.3Liquid storage rooms, HPM rooms and gas rooms.Emergency alarms for liquid storage rooms, HPM rooms and gas rooms shall comply with the requirements of Section 2704.9.

1803.12.2Alarm-initiating devices.An approved emergency telephone system, local alarm manual pull stations, or other approved alarm-initiating devices are allowed to be used as emergency alarm-initiating devices.

1803.12.3Alarm signals.Activation of the emergency alarm system shall sound a local alarm and transmit a signal to the emergency control station.

1803.13Continuous gas detection systems.A continuous gas detection system shall be provided for HPM gases when the physiological warning properties of the gas are at a higher level than the accepted permissible exposure limit (PEL) for the gas and for flammable gases in accordance with the construction codes, including the Building Code.

1803.14Exhaust ventilation systems for HPM.Exhaust ventilation systems and materials for exhaust ducts utilized for the exhaust of HPM shall comply with the requirements of this section, other applicable provisions of this code, the construction codes, including the Building Code and the Mechanical Code.

1803.14.1Where required.Exhaust ventilation systems shall be provided in the following locations in accordance with this section and the construction codes, including the Building Code:

1. Fabrication areas: Exhaust ventilation for fabrication areas shall comply with the requirements of the construction codes, including the Building Code. Additional manual control switches shall be provided as may be required by the commissioner.
2. Workstations: A ventilation system shall be provided to capture and exhaust fumes and vapors at workstations.
3. Liquid storage rooms: Exhaust ventilation for liquid storage rooms shall comply with the requirements of Section 2704.3 and the construction codes, including the Building Code and Mechanical Code.
4. HPM rooms: Exhaust ventilation for HPM rooms shall comply with the requirements of Section 2704.3 and the construction codes, including the Building Code and the Mechanical Code.
5. Gas cabinets: Exhaust ventilation for gas cabinets shall comply with the requirements of Section 2703.8.6.2. The gas cabinet ventilation system is allowed to connect to a workstation ventilation system. Exhaust ventilation for gas cabinets containing highly toxic or toxic gases shall additionally comply with the requirements of Chapter 37.
6. Exhausted enclosures: Exhaust ventilation for exhausted enclosures shall comply with the requirements of Section 2703.8.5.2. Exhaust ventilation for exhausted enclosures containing highly toxic or toxic gases shall additionally comply with the requirements of Chapter 37.
7. Gas rooms: Exhaust ventilation for gas rooms shall comply with the requirements of Section 2703.8.4.2. Exhaust ventilation for gas cabinets containing highly toxic or toxic gases shall additionally comply with the requirements of Chapter 37.

1803.14.2Penetrations.Exhaust ducts penetrating fire barrier assemblies shall be contained in a shaft of equivalent fire-resistance-rated construction. Exhaust ducts shall not penetrate fire walls. Fire dampers shall not be installed in exhaust ducts.

1803.14.3Treatment systems.Treatment systems for highly toxic and toxic gases shall comply with the requirements of Chapter 37.

1803.15Emergency power system.An emergency power system shall be provided in Group H5 occupancies where required by the construction codes, including the Building Code. The emergency power system shall be designed to supply power automatically to required electrical systems when the normal supply system is interrupted.

1803.15.1Required electrical systems.Emergency power shall be provided for electrically operated equipment and connected control circuits as required by Section 415.9.10.1 of the Building Code or this code.



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SECTION FC 1804: STORAGE

NYC Administrative Code § 29-FC 1804

1804.1 General.

Hazardous materials shall be stored in accordance with this section, Section 1803 and other applicable provisions of this code.

1804.2Fabrication areas.Storage of HPM in fabrication areas shall be within approved or listed storage cabinets, gas cabinets or within a workstation. Flammable and combustible liquid storage cabinets shall comply with the requirements of Chapter 34. Hazardous materials storage cabinets shall comply with the requirements of Section 2703.8.7. Gas cabinets shall comply with the requirements of Section 2703.8.6. Gas cabinets for highly toxic or toxic gases shall additionally comply with the requirements of Chapter 37. Workstations shall comply with the requirements of Section 1805.2.2.

1804.2.1Maximum aggregate quantities.The aggregate quantities of hazardous materials stored, handled and used in a single fabrication area shall not exceed the quantities set forth in Table 1804.2.1.

Exception: Fabrication areas containing quantities of hazardous materials not exceeding the maximum allowable quantities per control area established by Chapters 27 and 34.

1804.2.2Maximum quantities of HPM.The maximum quantities of HPM stored in a single fabrication area shall not exceed the maximum allowable quantities per control area established by Chapters 27 and 34.

1804.3Storage rooms.The storage of HPM in quantities greater than those listed in Chapters 27 and 34 shall be in a room complying with the requirements of the construction codes, including the Building Code, and this code for a liquid storage room, HPM room or gas room as appropriate for the materials stored. The storage of other hazardous materials shall comply with the requirements of Chapter 27 and other applicable provisions of this code.

1804.3.1Separation of incompatible hazardous materials.Incompatible hazardous materials in storage shall be

separated from each other in accordance with Section 2703.9.8.



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SECTION FC 1805: HANDLING AND USE

NYC Administrative Code § 29-FC 1805

1805.1 General.

Hazardous materials shall be handled and used in accordance with this section, Section 1803 and other applicable provisions of this code.

1805.2Fabrication areas.Hazardous production materials located in fabrication areas shall be within approved or listed storage cabinets, gas cabinets or within a workstation, in accordance with Chapter 27.

1805.2.1Maximum aggregate quantities.The aggregate quantities of hazardous materials in a single fabrication area shall comply with the requirements of Sections 1804.2.1 and 1804.2.2, and Table 1804.2.1. The quantity of HPM in use at a workstation shall not exceed the quantities listed in Table 1805.2.1.

1805.2.2Workstations.Workstations in fabrication areas shall be constructed of materials compatible with the materials stored and used at the workstation. The portion of the workstation that serves as a cabinet for HPM gases and flammable liquids shall be noncombustible and, if of metal, shall not be less than 0.0478-inch (1.2mm) (18 gauge) steel.

1805.2.2.1Protection of vessels.Vessels containing HPM located in or connected to a workstation shall be protected from physical damage and shall not project from the workstation. Hazardous gases and liquid vessels located within a workstation shall be protected from seismic forces in an approved manner in accordance with the construction codes, including the Building Code. Protection for HPM compressed gases shall additionally comply with the requirements of Chapter 30.

1805.2.2.2Drainage and containment for HPM liquids.Each workstation utilizing HPM liquids shall be provided with all of the following:

1. Drainage piping systems connected to a compatible system for disposition of such liquids.
2. The work surface provided with a slope or other means for directing spilled materials to the containment or

drainage system.

3. An approved means of containing or directing spilled or leaked liquids to the drainage system.

1805.2.2.3Clearances. Workstations where HPM is used shall be provided with horizontal servicing clearances of not less than 3 feet (914 mm) for electrical equipment, gas container connections and similar hazardous conditions. These clearances shall apply only to normal operational procedures and not to repair or maintenance-related work.

1805.3Handling. The handling of hazardous materials shall comply with the requirements of this section and other applicable provisions of this code.

1805.3.1Exit corridors access and exit enclosures. Exit access corridors and exit enclosures shall not contain HPM except as permitted for exit access corridors by the construction codes, including the Building Code.

1805.3.2Reserved.

1805.3.3Service corridors. A service corridor shall be provided where it is necessary to move HPM during handling from a liquid storage room, HPM room, gas room or from the outdoors to the perimeter wall of a fabrication area. Service corridors shall be designed and constructed in accordance with the construction codes, including the Building Code.

1805.3.4Carts and trucks. Carts and trucks used to move HPM during handling in exit access corridors and exit enclosures shall comply with the requirements of Section 2703.10.3.

1805.3.4.1Identification. Carts and trucks shall be marked to indicate the contents.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 19: LUMBER YARDS AND WOOD WASTE MATERIALS
SECTION FC 1901: GENERAL

NYC Administrative Code § 29-FC 1901

1901.1 Scope.

This chapter shall govern the manufacture, storage and handling of lumber, wood products and wood waste material.

1901.2Permit.Permits shall be required as set forth in Section 105.6.

1901.3General.Lumber and wood waste materials shall be stored and handled in accordance with this chapter. Facilities used for such purposes shall be designed, installed, operated and maintained in accordance with this chapter.

1901.4Manufacturing prohibited.The manufacture of lumber, including plywood and other manufactured wood sheets, from trees and other natural wood materials, is prohibited, except as approved by the commissioner.



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Chapter 19: LUMBER YARDS AND WOOD WASTE MATERIALS

SECTION FC 1902: DEFINITIONS

NYC Administrative Code § 29-FC 1902

1902.1 Terms defined in Chapter 2.

Terms used in this chapter, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown in Chapter 2 or elsewhere in this code.



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Chapter 19: LUMBER YARDS AND WOOD WASTE MATERIALS
SECTION FC 1903: GENERAL REQUIREMENTS

NYC Administrative Code § 29-FC 1903

1903.1 Open yards.

Open yards required by the construction codes, including the Building Code, shall be maintained around structures.

1903.2Reserved.

1903.3Reserved.

1903.4Reserved.

1903.5Control of ignition sources.Sources of ignition shall be controlled or protected in accordance with Chapter 3 and Sections 1903.5.1 and 1903.5.3.

1903.5.1Hot work.Hot work shall comply with the requirements of Chapter 26.

1903.5.2Reserved.

1903.5.3Smoking.It shall be unlawful to smoke in a lumber yard or wood waste material facility.



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Chapter 19: LUMBER YARDS AND WOOD WASTE MATERIALS
SECTION FC 1908: OUTDOOR STORAGE OF WOOD CHIPS AND OTHER WOOD WASTE MATERIALS

NYC Administrative Code § 29-FC 1908

1908.1 General.

Wood chips and other wood waste materials shall be stored and handled in accordance with this section.

1908.2Storage areas.Storage areas shall be level and on solid ground or other all-weather surface. Storage areas shall be thoroughly cleaned before transferring wood products to the area.

1908.3Size of piles.Piles shall not exceed 25 feet (7620 mm) in height, 150 feet (45 720 mm) in width and 250 feet (76 200 mm) in length.

Exception: The commissioner may authorize increased pile sizes provided that adequate fire safety is ensured by installing additional fire protection in accordance with Chapter 9 and the construction codes, including the Building Code. The increase shall be based upon the capabilities of the system installed.

1908.4Pile separation.Piles shall be separated from adjacent piles by approved fire apparatus access roads.

1908.5Combustible waste.The storage of wood chips or other wood waste materials, the accumulation and handling of combustible materials, the control of vegetation and the disposal of combustible waste shall comply with the requirements of Chapter 3.

1908.6Pile protection.Piles of wood chips or other wood waste materials shall be monitored by an approved means to measure internal temperatures within the piles. Internal pile temperatures shall be measured and recorded weekly. Records shall be kept on file at the facility and made available for inspection by any representative of the department.

1908.7Reserved.

1908.8Fire protection.The commissioner may require that a yard hydrant system and/or monitor nozzles connected to a fixed water supply be installed upon the premises where the facility arrangement, pile arrangement, pile heights,

number of piles or total volume of piles would hamper the effectiveness of hose streams to control or extinguish a fire. Portable fire extinguishers in compliance with the requirements of Section 906 and with a minimum rating of 4-A:60-B:C shall be readily available throughout the premises.

1908.9Material-handling equipment.Approved material-handling equipment shall be available for moving wood chips and other wood waste materials during firefighting operations.



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SECTION FC 1909: OUTDOOR STORAGE OF FINISHED LUMBER PRODUCTS

NYC Administrative Code § 29-FC 1909

1909.1 General.

Finished lumber products shall be stored in accordance with this section.

1909.2Size of piles.Outdoor lumber storage shall be arranged to form stable piles with a maximum height of 20 feet (6096 mm). Piles shall not exceed 150,000 cubic feet (4248 m3) in volume.

1909.3Fire apparatus access roads.Fire apparatus access roads in accordance with Section 503 and the construction codes, including the Building Code, shall be located so that a maximum grid system unit of 50 feet by 150 feet (15 240 mm by 45 720 mm) is established.

1909.4Security.Permanent outdoor lumber storage areas shall be surrounded with an approved fence. Fences shall be a minimum of 6 feet (1829 mm) in height.

1909.5Fire protection.The commissioner may require that the yard hydrant system specified in Section 508.2.3 to include monitor nozzles connected to the fixed water supply where the facility arrangement, pile arrangement, pile heights, number of piles or total volume of piles would hamper the effectiveness of hose streams to control or extinguish a fire. Portable fire extinguishers shall be provided in accordance with Section 906 for extra-high hazards and located so that the travel distance to the nearest portable fire extinguisher does not exceed 75 feet (22 860 mm).



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 20: MANUFACTURE OF ORGANIC COATINGS
SECTION FC 2001: GENERAL

NYC Administrative Code § 29-FC 2001

2001.1 Scope.

This chapter shall govern facilities and processes where flammable and combustible liquids are used for the manufacture of organic coatings, other than facilities and processes using nonflammable coatings and operations applying coating materials.

2001.2Permits.Permits shall be required as set forth in Section 105.6.

2001.3Maintenance.Service equipment within a building, structure or premises shall be maintained in accordance with this code and NFPA 35.

2001.4General.Organic coating manufacturing facilities and processes shall be designed, installed, operated and maintained in accordance with this chapter.

2001.5Prohibited organic coatings.It shall be unlawful to use nitrocellulose in the manufacture of an organic coating.



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Chapter 20: MANUFACTURE OF ORGANIC COATINGS

SECTION FC 2002: DEFINITIONS

NYC Administrative Code § 29-FC 2002

2002.1 Definition.

The following term shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

ORGANIC COATING. A liquid mixture of binders such as alkyd, acrylic or oil, and flammable and combustible liquids, such as hydrocarbon, ester, ketone or alcohol, which, when spread in a thin film, convert to a durable protective and decorative finish.



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SECTION FC 2003: GENERAL PRECAUTIONS

NYC Administrative Code § 29-FC 2003

2003.1 Building design.

Manufacturing of organic coatings shall be conducted only in buildings or structures that do not have pits, basements or other areas below grade.

2003.2Location.Organic coating manufacturing operations and operations incidental to or connected with organic coating manufacturing shall not be located in buildings having other occupancies.

2003.2.1Location restrictions.It shall be unlawful to manufacture organic coatings in any building that is located within 50 feet (15 240 mm) of a building occupied as a multiple dwelling, school, hospital, theater, or other place of assembly.

2003.3Firefighting access.Organic coating manufacturing operations shall be accessible from at least one side for the purpose of fire control. Approved aisles shall be maintained for the unobstructed movement of personnel and fire suppression equipment.

2003.4Fire protection systems.It shall be unlawful to manufacture an organic coating in any building unless the building is protected throughout by a fire extinguishing system. Fire protection systems shall be designed, installed, operated and maintained, including performing all required tests and inspections, in accordance with Chapter 9 and the Building Code.

2003.5Portable fire extinguishers.A minimum of one portable fire extinguisher complying with the requirements of Section 906 for extra hazard shall be provided in organic coating areas.

2003.6Open flames.Open flames and open-flame devices are prohibited in areas where flammable vapor-air mixtures exist.

2003.7Smoking.It shall be unlawful to smoke in any organic coating manufacturing facility.

2003.8Power equipment.Power-operated equipment and industrial trucks shall be of a type approved for the location.

2003.9Tank maintenance.The cleaning of tanks that have contained flammable or combustible liquids shall be performed under the supervision of a person trained in and knowledgeable about the fire and explosion potential.

2003.9.1Repairs.Where necessary to make repairs involving hot work, the work shall be conducted in accordance with Chapter 26.

2003.9.2Reserved.

2003.10Drainage.Drainage shall be provided to direct flammable and combustible liquid leakage and fire protection water to an approved location away from the building, any other structure, storage area or adjoining premises.

2003.11Alarm system.An approved fire alarm system shall be provided in accordance with the construction codes, including the Building Code.



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SECTION FC 2004: ELECTRICAL EQUIPMENT AND PROTECTION

NYC Administrative Code § 29-FC 2004

2004.1 Wiring and equipment.

Electrical wiring and equipment shall be designed, installed, operated and maintained in accordance with this chapter and the Electrical Code.

2004.2 Hazardous locations. Where Class I liquids are exposed to the air, the facility, including all equipment and the ventilation system, shall be designed in a manner that limits Class I, Division 1, locations to the following:

1. Piping trenches.
2. Within the equipment.
3. The immediate vicinity of pumps or equipment locations, such as dispensing stations, open centrifuges, plate and frame filters, opened vacuum filters, change cans and the surfaces of open equipment. The immediate vicinity shall include a zone extending from the vapor liberation point 5 feet (1524 mm) horizontally in all directions and vertically from the floor to a level 3 feet (914 mm) above the highest point of vapor liberation.

2004.2.1 Other locations. Locations within the confines of the manufacturing room where Class I liquids are handled shall be Class I, Division 2, except locations indicated in Section 2004.2.

2004.2.2 Ordinary equipment. Ordinary electrical equipment, including switchgear, is prohibited except where installed in a room maintained under positive pressure with respect to the hazardous area. The air or other media utilized for pressurization shall be obtained from a source that will not cause any amount or type of flammable vapor to be introduced into the room.

2004.3 Bonding. In any area of the facility in which an ignitable mixture may be present in the atmosphere, equipment, including, but not limited to, tanks, machinery and piping, shall be bonded and connected to a ground.

2004.3.1Piping.Electrically isolated sections of metallic piping or equipment shall be grounded or bonded to the other grounded portions of the system.

2004.3.2Vehicles.Cargo tanks loaded or unloaded through open connections shall be grounded and bonded to the receiving system.

2004.3.3Containers.Where a flammable mixture is transferred from one portable container to another, a bond shall be provided between the two containers, and one shall be grounded.

2004.4Ground.Metal framing of buildings shall be grounded with resistance of not more than 5 ohms.



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SECTION FC 2005: PROCESS STRUCTURES

NYC Administrative Code § 29-FC 2005

2005.1 Design.

Process structures shall be designed and constructed in accordance with the construction codes, including the Building Code.

2005.2Fire apparatus access.Fire apparatus access complying with the requirements of Section 503 shall be provided for the purpose of fire control to at least one side of organic coating manufacturing operations.

2005.3Drainage.Drainage facilities shall be provided in accordance with Section 2003.10 where topographical conditions are such that flammable and combustible liquids are capable of flowing from the organic coating manufacturing operation so as to constitute a fire hazard to other premises.

2005.4Explosion control.Explosion control shall be provided in areas subject to potential deflagration hazards as set forth in NFPA 35. Explosion control shall be provided in accordance with Section 911.

2005.5Ventilation.Buildings in which Class I liquids are processed or handled shall be ventilated at a rate of not less than [1 cubic foot per minute per square foot (0.00508 m³/s;tbm²)] of solid floor area. Ventilation shall be accomplished by exhaust fans that take suction at floor levels and discharge to a safe location outdoors. Noncontaminated intake air shall be introduced in such a manner that all portions of solid floor areas are provided with continuous uniformly distributed air movement.

2005.6Heating.Heating provided in hazardous areas shall be by indirect means. Ignition sources such as open flames or electrical heating elements, except as provided for in Section 2004, are prohibited within the building.



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SECTION FC 2006: PROCESS MILLS AND KETTLES

NYC Administrative Code § 29-FC 2006

2006.1 Mills.

Mills, operating with close clearances, which process flammable and heat-sensitive materials shall be located in a detached building or in a noncombustible structure without other occupancies. The amount of flammable material brought into the area shall not be more than the amount required for a batch.

2006.2 Mixers. Mixers shall be of the enclosed type or, where of the open type, shall be provided with properly fitted covers. Where flow is by gravity, a shutoff valve shall be installed as close as practical to the mixer, and a control valve shall be provided near the end of the fill pipe.

2006.3 Open kettles. Open kettles shall be located in outdoor areas provided with a protective roof; in a separate structure of noncombustible construction; or separated from other areas by a noncombustible wall having a fire-resistance rating of at least 2 hours.

2006.4 Closed kettles. Contact-heated kettles containing solvents shall be equipped with safety devices that, in case of a fire, will turn off the process heat, turn on the cooling medium and inject inert gas into the kettle.

2006.4.1 Vaporizer location. The vaporizer section of heat-transfer systems that heat closed kettles containing solvents shall be remotely located.

2006.5 Kettle controls. The kettle and thin-down tank shall be instrumented, controlled and interlocked so that any failure of the controls will not result in an unsafe condition. The kettle shall be provided with a pressure-rupture disc in addition to the primary vent. The vent piping from the rupture disc shall be of minimum length and shall discharge to an approved location. The thin-down tank shall be adequately vented. Thinning operations shall be provided with a vapor removal system capable of ensuring a safe atmosphere.



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SECTION FC 2007: PROCESS PIPING

NYC Administrative Code § 29-FC 2007

2007.1 Design.

All piping, valves and fittings shall be designed for the working pressures and structural stresses to which the piping, valves and fittings will be subjected, and shall be of steel or other material approved for the service intended.

2007.2Valves and fittings.Valves shall be of an indicating type. Terminal valves on remote pumping systems shall be of the dead-man type, shutting off both the pump and the flow of solvent. Valves and fittings shall not be constructed of cast iron.

2007.3Support.Piping systems shall be supported and protected against physical damage. Piping shall be pitched to avoid unintentional trapping of liquids, or approved drains shall be provided.

2007.4Connectors.Approved flexible connectors shall be installed where vibration exists or frequent movement is necessary. Hoses at dispensing stations shall be of an approved type.

2007.5Tests.Before being placed in service, all piping shall be free of leaks when tested for a minimum of 30 minutes at not less than 1.5 times the working pressure or a minimum of 5 pounds per square inch gauge (psig) (35 kPa) at the highest point in the system.



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SECTION FC 2008: RAW MATERIALS IN PROCESS AREAS

NYC Administrative Code § 29-FC 2008

2008.1 Reserved.

2008.2Organic peroxides.Organic peroxides brought into the process area shall be in the original shipping container. When in the process area, the organic peroxide shall not be placed in locations exposed to ignition sources, heat, mechanical shocks or flammable liquids, except that organic peroxide may be exposed to flammable liquid during raw material processing.



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SECTION FC 2009: RAW MATERIALS AND FINISHED PRODUCTS

NYC Administrative Code § 29-FC 2009

2009.1 General.

The storage, handling and use of flammable and combustible liquids in process areas shall be in accordance with Chapter 34. The storage, handling and use of organic peroxides shall be in accordance with Chapter 39 and the storage, handling and use of oxidizers shall be in accordance with Chapter 40.

2009.2 Tank storage. Tanks for the storage of flammable and combustible liquids shall be installed in accordance with Chapter 34. Process equipment storing or using flammable or combustible liquids and storage in quantities necessary for maintaining the operation is allowed in the process area.

2009.3 Loading and unloading. Tank car and cargo tank loading and unloading stations for Class I liquids shall be separated from the process area, other facility structures, the nearest lot line, public street or private road by a minimum distance in accordance with Chapter 34.

2009.3.1 Loading. Loading and unloading structures and platforms for flammable and combustible liquids shall be designed and installed in accordance with Chapter 34.

2009.3.2 Safety. Tank cars and cargo tanks for flammable and combustible liquids shall be loaded and unloaded in accordance with Chapter 34.

2009.4 Reserved.

2009.5 Organic peroxide storage. The storage of organic peroxides shall be in accordance with Chapter 39.

2009.5.1 Size. The size of the package containing organic peroxide shall be selected so that, as nearly as practical, full packages are utilized at one time. Spilled peroxide shall be promptly removed and disposed of lawfully.

2009.6 Finished products. Finished products that are flammable or combustible liquids shall be stored outdoors, in a

separate building, or in a room separate from the process area, in accordance with the construction codes, including the Building Code. The storage of finished products shall be in tanks or closed containers in accordance with Chapter 34.



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Chapter 2: DEFINITIONS
SECTION FC 201: GENERAL

NYC Administrative Code § 29-FC 201

201.1 Scope.

Unless otherwise expressly stated, the following terms shall, for the purposes of this code, have the meanings set forth in this chapter.

201.2Interchangeability.Words stated in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural the singular.

201.3Terms defined in other codes.Where terms are not defined in this code and are defined in the construction codes or Electrical Code, such terms shall have the meanings ascribed to them as in those codes. Any reference to any of the construction codes shall be deemed to include any related or other applicable provisions of any of the construction codes.

201.4Terms not defined.Where terms are not defined through the methods authorized by this section, such terms shall have the ordinarily accepted meanings as the context implies.202DEFINITIONS

AEROSOL. See Section 2802.1.

Level 1. See Section 2802.1.

Level 2. See Section 2802.1.

Level 3. See Section 2802.1.

AEROSOL CONTAINER. See Section 2802.1.

AEROSOL WAREHOUSE. See Section 2802.1.

AIRBLAST. See Section 3302.1.

AIRCRAFT LANDING SITE. See Section 1102.1.

AIRCRAFT OPERATION AREA. See Section 1102.1.

AIR-INFLATED STRUCTURE. See Section 2402.1.

AIRPORT. See Section 1102.1.

AIR-SUPPORTED STRUCTURE. See Section 2402.1.

ALARM NOTIFICATION APPLIANCE. See Section 902.1.

ALARM SIGNAL. See Section 902.1.

ALCOHOL-BASED HAND RUB. See Section 3402.1.

ALTERATION. Any addition to, or modification of, an existing installation, other than any repair made in the ordinary course of maintenance.

AMMONIUM NITRATE. See Section 3302.1.

ANNUNCIATOR. See Section 902.1.

APPLICATION. An application submitted to the commissioner for a permit, certificate or other approval or determination issued or made by the commissioner pursuant to this code or other law, rule or regulation, including documents and oral representations submitted in connection with such application.

APPROVED. Acceptable to the commissioner.

AREAWAY. See Section 502.1.

ARRAY. See Section 2302.1.

ARRAY, CLOSED. See Section 2302.1.

ASSISTANT BLASTER. See Section 3302.1.

AUTOMATIC. See Section 902.1.

AUTOMOTIVE LIQUID MOTOR FUEL-DISPENSING FACILITY. See Section 2202.1.

AUTOMOTIVE SALVAGE AND WRECKING FACILITY. See Section 302.1.

AVIATION FACILITY. See Section 1102.1.

BARRICADE. See Section 3302.1.

Artificial barricade. See Section 3302.1.

Natural barricade. See Section 3302.1.

BARRICADED. See Section 3302.1.

BATTERY, LEAD ACID. See Section 602.1.

BATTERY, VALVE-REGULATED LEAD-ACID (VRLA). See Section 602.1.

BATTERY, VENTED (FLOODED) LEAD-ACID. See Section 602.1.

BATTERY SYSTEM, STATIONARY LEAD ACID. See Section 602.1.

BIN BOX. See Section 2302.1.

BLAST AREA. See Section 3302.1.

BLAST SITE. See Section 3302.1.

BLASTER. See Section 3302.1.

BLASTING AGENT. See Section 3302.1.

BLASTING CONTRACTOR CERTIFICATE. See Section 3302.1.

BLASTING CREW. See Section 3302.1.

BLASTING OPERATION. See Section 3302.1.

BOILING POINT. See Section 2702.1.

BRITISH THERMAL UNIT (BTU). The heat necessary to raise the temperature of 1 pound (0.454 kg) of water by 1(degrees)F (0.5565(degrees)C).

BUILDING. An enclosed structure designed or occupied to house any use or occupancy.

BUILDING CODE. The New York City Building Code in effect on and after July 1, 2008.

BULK NITROUS OXIDE SYSTEM. See Section 4002.1.

BULK OXYGEN SYSTEM. See Section 4002.1.

BULK PLANT OR TERMINAL. See Section 3402.1.

BULK TRANSFER. See Section 3402.1.

BULLET RESISTANT. See Section 3302.1.

CARGO TANK. See Section 2702.1.

CARTON. A cardboard or fiberboard box enclosing a product.

CEILING LIMIT. See Section 2702.1.

CENTRAL STATION. See Section 902.1.

CERTIFICATE OF APPROVAL. A written statement issued by the commissioner, certifying that an article, device or equipment, or type, class or kind thereof, has been examined, tested and approved for a specific purpose or use in conformity with the requirements of this code or the rules.

CERTIFICATE OF FITNESS. A written statement issued by the commissioner certifying that the person to whom it is issued has passed an examination as to his or her qualifications or is otherwise deemed qualified to use or supervise the storage, handling and use of a material, conduct or supervise an operation, or supervise a facility for which such certificate is required by this code or the rules.

CERTIFICATE OF LICENSE. A written statement issued by the commissioner authorizing the operation of a business to install, alter, test or repair liquid motor fuel storage and dispensing equipment and systems or flammable or combustible liquid storage systems, for which such certificate is required by this code or the rules.

CERTIFICATE OF OPERATION. See Section 902.1.

CERTIFICATE OF QUALIFICATION. See Section 602.1.

CERTIFIED ATTENDANT. See Section 2202.1.

CHEMICAL. See Section 2702.1.

CHEMICAL NAME. See Section 2702.1.

CITYWIDE STANDARD KEY. See Section 502.1.

CLEAN AGENT. See Section 902.1.

CLOSED CONTAINER. See Section 2702.1.

CLOSED SYSTEM. The use of any compressed gas, and the use of a solid or liquid hazardous material in equipment or a vessel or system that remains closed during normal operation, such that vapors emitted during the operation of such equipment, vessel, or system are not liberated outside of the equipment, vessel or system and the gas or hazardous material is not exposed to the atmosphere during such operation. Examples of closed systems include hazardous materials conveyed through a piping system into closed equipment or a closed vessel or system.

CNG. See Section 2202.1.

CNG MOTOR FUEL. See Section 2202.1.

CNG MOTOR FUEL SYSTEM. See Section 2202.1.

CNG MOTOR FUEL-DISPENSING FACILITY. See Section 2202.1.

COMBUSTIBLE DUST. See Section 1302.1.

COMBUSTIBLE FIBERS. See Section 2902.1.

COMBUSTIBLE LIQUID. See Section 3402.1.

COMBUSTIBLE WASTE. Any substance, item or other organic or inorganic matter that presents a fire hazard and is a byproduct or residue of the construction, use or occupancy of any premises, or any activity conducted thereon, that has no economic value in connection with such use or occupancy. A combustible waste that has economic value in connection with the use and occupancy of such premises shall be deemed to be a combustible material.

COMMERCIAL COOKING APPLIANCES. See Section 602.1.

COMMERCIAL COOKING EXHAUST SYSTEM SERVICING COMPANY CERTIFICATE. See Section 902.1.

COMMERCIAL COOKING SYSTEM. See Section 902.1.

COMMISSIONER. Fire Commissioner of the City of New York or his or her duly authorized representative.

COMMODITY. See Section 2302.1.

COMPRESSED GAS. See Section 3002.1.

Compressed gases in solution. See Section 3002.1.

Compressed gas mixtures. See Section 3002.1.

Liquefied compressed gases. See Section 3002.1.

Nonliquefied compressed gases. See Section 3002.1.

COMPRESSED GAS CONTAINER. See Section 3002.1.

COMPRESSED GAS SYSTEM. See Section 3002.1.

CONDITION. The location or manner at or in which a material may be manufactured, stored, handled, used, or an operation conducted, upon a premises.

CONIFER. See Section 802.1.

CONSTRUCTION CODES. The New York City construction codes, consisting of the New York City Building, Fuel Gas, Mechanical and Plumbing Codes in effect on and after July 1, 2008.

CONSTRUCTION SITE. See Section 1402.1.

CONTAINER. See Section 2702.1.

CONTAINMENT SYSTEM. See Section 3702.1.

CONTAINMENT VESSEL. See Section 3702.1.

CONTINUOUS GAS DETECTION SYSTEM. See Section 1802.1.

CONTROL AREA. See Section 2702.1.

CORROSIVE MATERIAL. See Section 3102.1.

CRYOGENIC CONTAINER. See Section 3202.1.

CRYOGENIC FLUID. See Section 3202.1.

DANGER ZONE. See Section 3302.1.

DECORATION. See Section 802.1.

DECORATIVE MATERIAL. See Section 802.1.

DEFINED FIRE ALARM SYSTEM. See Section 902.1.

DEFLAGRATION. See Section 2702.1.

DEPARTMENT. The Fire Department of the City of New York.

DESIGN AND INSTALLATION DOCUMENTS. Plans and specifications, or other written, graphic and pictorial documents or submissions, setting forth the location, design, arrangement and physical characteristics of the device, equipment, system, operation or facility for which approval by the commissioner is sought.

DESIGN PRESSURE. See Section 2702.1.

DETACHED BUILDING. See Section 2702.1.

DETEARING. See Section 1502.1.

DETONATING CORD. See Section 3302.1.

DETONATION. See Section 3302.1.

DETONATOR. See Section 3302.1.

DEVELOPMENT. See Section 502.1.

DIP TANK. See Section 1502.1.

DISCHARGE AREA. See Section 1102.1.

DISCHARGE SITE. See Section 3302.1.

DISPENSING. See Section 2702.1.

DISPENSING DEVICE, OVERHEAD TYPE. See Section 2202.1.

DISPLAY SITE. See Section 3302.1.

DOTn. United States Department of Transportation.

DOTy. United States Department of Treasury.

DRAFT CURTAIN. See Section 2302.1.

DRY CLEANING. See Section 1202.1.

DRY CLEANING FACILITY. See Section 1202.1.

DRY CLEANING ROOM. See Section 1202.1.

DRY CLEANING SYSTEM. See Section 1202.1.

EAP DIRECTOR. See Section 401.7.2.

EAP DRILL. See Section 402.1.

EAP STAFF. See Section 402.1.

EARLY SUPPRESSION FAST-RESPONSE (ESFR) SPRINKLER. See Section 2302.1.

ELECTROSTATIC FLUIDIZED BED. See Section 1502.1.

EMERGENCY ACTION PLAN. See Section 402.1.

EMERGENCY ALARM SYSTEM. See Section 902.1.

EMERGENCY CONTROL STATION. See Section 1802.1.

EMERGENCY ESCAPE AND RESCUE OPENING. See Section 1002.1.

EXCESS FLOW CONTROL. See Section 2702.1.

EXCESS FLOW VALVE. See Section 3702.1.

EXHAUSTED ENCLOSURE. See Section 2702.1.

EXIT. See Section 1002.1.

EXIT ACCESS. See Section 1002.1.

EXIT DISCHARGE. See Section 1002.1.

EXPANDED PLASTIC. See Section 2302.1.

EXPLOSION. See Section 2702.1.

EXPLOSIVE. See Section 3302.1.

High Explosive. See Section 3302.1.

Low Explosive. See Section 3302.1.

Mass-detonating Explosives. See Section 3302.1.

UN/DOTn Class 1 Explosives. See Section 3302.1.

EXTERNAL LOAD. See Section 1102.1.

EXTRA-HIGH-RACK COMBUSTIBLE STORAGE. See Section 2302.1.

FABRICATION AREA. See Section 1802.1.

FACILITY. Any premises at, in or upon which a material regulated by this code is manufactured, stored, handled, used or transported, or an operation regulated by this code is conducted.

FALLOUT AREA. See Section 3302.1.

FINISHED PYROXYLIN PLASTIC PRODUCTS. See Section 4202.1.

FIRE. A rapid, persistent chemical reaction that releases heat and light, especially the burning of a combustible substance in the presence of oxygen. For purposes of this code, a flame used in any lawful, properly operating device, equipment or system or other controlled setting shall not be considered a fire.

FIRE ALARM BOX, MANUAL. See Section 902.1.

FIRE ALARM CONTROL UNIT. See Section 902.1.

FIRE ALARM SIGNAL. See Section 902.1.

FIRE ALARM SUB-SYSTEM. See Section 902.1.

FIRE ALARM SYSTEM. See Section 902.1.

FIRE APPARATUS ACCESS ROAD. See Section 502.1.

FIRE AREA. See Section 902.1.

FIRE COMMAND CENTER. See Section 502.1.

FIRE DEPARTMENT STANDARD KEY. See Section 502.1.

FIRE DETECTOR, AUTOMATIC. See Section 902.1.

FIRE DOOR ASSEMBLY. Any combination of a fire door, frame, hardware, and other components.

FIRE DRILL. See Section 402.1.

FIRE EXTINGUISHING SYSTEM. See Section 902.1.

FIRE GUARD. See Section 2602.1.

FIRE LANE. See Section 502.1.

FIRE PARTITION. A vertical assembly of materials designed to restrict the spread of fire.

FIRE POINT. See Section 3402.1.

FIRE PROTECTION SYSTEM. See Section 902.1.

FIRE-RETARDANT COATING. See Section 802.1.

FIRE SAFETY AND EVACUATION PLAN. See Section 402.1.

FIRE WATCH. A temporary measure intended to ensure continuous and systematic surveillance of a building or portion thereof by one or more qualified individuals for the purposes of identifying and controlling fire hazards, detecting early signs of fire, raising an alarm of fire and notifying the department.

FIREWORKS. See Section 3302.1.

Fireworks, 1.4G. See Section 3302.1.

Fireworks, 1.3G. See Section 3302.1.

FIREWORKS CONTRACTOR CERTIFICATE. See Section 3302.1.

FIREWORKS DISPLAY. See Section 3302.1.

FLAME-RESISTANT MATERIAL. See Section 802.1.

FLAME-RETARDANT TREATMENT. See Section 802.1.

FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE SYSTEM. See Section 3402.1.

FLAMMABLE CRYOGENIC FLUID. See Section 3202.1.

FLAMMABLE FINISHES. See Section 1502.1.

FLAMMABLE GAS. See Section 3502.1.

FLAMMABLE LIQUEFIED GAS. See Section 3502.1.

FLAMMABLE LIQUID. See Section 3402.1.

FLAMMABLE LIQUID MOTOR FUEL. See Section 2202.1.

FLAMMABLE LIQUID MOTOR FUEL-DISPENSING FACILITY. See Section 2202.1.

FLAMMABLE MATERIAL. A material capable of being readily ignited from common sources of heat or at a temperature of 600(degrees)F (316(degrees)C) or less.

FLAMMABLE SOLID. See Section 3602.1.

FLAMMABLE VAPORS OR FUMES. See Section 2702.1.

FLASH POINT. See Section 3402.1.

FLEET AUTOMOTIVE LIQUID MOTOR FUEL-DISPENSING FACILITY. See Section 2202.1.

FLEET CNG MOTOR FUEL-DISPENSING FACILITY. See Section 2202.1.

FLEET MARINE LIQUID MOTOR FUEL-DISPENSING FACILITY. See Section 2202.1.

FLOOR FINISHING OPERATION. See Section 1502.1.

FLUIDIZED BED. See Section 1502.1.

FRONTAGE SPACE. See Section 502.1.

FSP STAFF. See Section 402.1.

FUEL GAS CODE. New York City Fuel Gas Code.

FULL SERVICE AUTOMOTIVE LIQUID MOTOR FUEL-DISPENSING FACILITY. See Section 2202.1.

FULL SERVICE CNG MOTOR FUEL-DISPENSING FACILITY. See Section 2202.1.

FULL SERVICE MARINE LIQUID MOTOR FUEL-DISPENSING FACILITY. See Section 2202.1.

FUME CLASS 1. See Section 3302.1.

FUMIGANT. See Section 1702.1.

FUMIGATION. See Section 1702.1.

FUMIGATION AND THERMAL INSECTICIDAL FOGGING OPERATION COMPANY CERTIFICATE. See Section 1702.1.

FURNACE. See Section 2102.1.

CLASS A. See Section 2102.1.

CLASS B. See Section 2102.1.

CLASS C. See Section 2102.1.

CLASS D. See Section 2102.1.

FURNISHING. See Section 802.1.

GAS CABINET. See Section 2702.1.

GAS ROOM. See Section 2702.1.

GENERAL SUPERVISION. Except as otherwise provided in this code, supervision by the holder of any department certificate who is responsible for performing the duties set forth in Section 113.2 but need not be personally present on the premises at all times.

HANDLING. See Section 2702.1.

HAZARDOUS MATERIALS. See Section 2702.1.

HAZARDOUS PRODUCTION MATERIAL (HPM). See Section 1802.1.

HEALTH HAZARD. See Section 2702.1.

HELICOPTER LIFT OPERATION. See Section 1102.1.

HELIPORT. See Section 1102.1.

HELISTOP. See Section 1102.1.

HI-BOY. See Section 302.1.

HIGH-PILED COMBUSTIBLE STORAGE. See Section 2302.1.

HIGH-PILED STORAGE AREA. See Section 2302.1.

HIGHLY TOXIC MATERIAL. See Section 3702.1.

HIGHWAY. See Section 3302.1.

HOOD. See Section 602.1.

Type I. See Section 602.1.

HOT AIR BALLOON OPERATION. See Section 1102.1.

HOT WORK. See Section 2602.1.

HOT WORK AREA. See Section 2602.1.

HOT WORK EQUIPMENT. See Section 2602.1.

HOT WORK PROGRAM AUTHORIZATIONS. See Section 2602.1.

HOT WORK PROGRAM. See Section 2602.1.

HPM FLAMMABLE LIQUID. See Section 1802.1.

HPM ROOM. See Section 1802.1.

HYDRANT-FUELING VEHICLE. See Section 1102.1.

IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH). See Section 2702.1.

IMPAIRMENT COORDINATOR. See Section 902.1.

INCOMPATIBLE MATERIALS. See Section 2702.1.

INHABITED BUILDING. See Section 3302.1.

INITIATING DEVICE. See Section 902.1.

INTERIOR FINISH. See Section 802.1.

IRRITANT. A material which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A material shall be classified a skin irritant if, when tested in accordance with the regulations of the United States Consumer Product Safety Commission, as set forth in 16 CFR Section 1500.41, it results in an empirical score of 5 or more. A material shall be classified as an eye irritant in accordance with the regulations of the United States Consumer Product Safety Commission, as set forth in 16 CFR Section 1500.42.

JOB SITE. See Section 3302.1.

KEY BOX. See Section 502.1.

LABELED. A listed material, device, equipment or system to which has been attached a label, symbol or other identifying mark of a nationally recognized testing laboratory or other approved organization, and whose labeling indicates compliance with nationally recognized standards and designates suitable usage.

LABORATORY CHEMICAL. See Section 2702.1.

LABORATORY UNIT. See Section 2702.1.

LIMITED SPRAYING SPACE. See Section 1502.1.

LIQUEFIED NATURAL GAS (LNG). See Section 2202.1.

LIQUEFIED PETROLEUM GAS (LPG). See Section 3802.1.

LIQUID. See Section 2702.1.

LIQUID MOTOR FUEL. See Section 2202.1.

LIQUID MOTOR FUEL STORAGE AND DISPENSING SYSTEM. See Section 2202.1.

LIQUID STORAGE ROOM. See Section 3402.1.

LIQUID TIGHT CONSTRUCTION. Construction designed to prevent a liquid manufactured, stored, handled or used in a room or other area from escaping from such room or other area by means of penetration through a surface.

LISTED. A material, device, equipment or system included on a list published by a nationally recognized testing laboratory or other approved organization performing product evaluations that maintains periodic inspection of production of such listed material, device, equipment or system, and whose listing indicates compliance with nationally recognized standards and designates suitable usage.

LOADER. See Section 3302.1.

LONGITUDINAL FLUE SPACE. See Section 2302.1.

LOW-PRESSURE CONTAINER. See Section 3202.1.

LOWER EXPLOSIVE LIMIT (LEL). See Section 2702.1.

LOWER FLAMMABLE LIMIT (LFL). See Section 2702.1.

MAGAZINE. See Section 3302.1.

MAGAZINE KEEPER. See Section 3302.1.

MANUAL STOCKING METHODS. See Section 2302.1.

MARINE LIQUID MOTOR FUEL-DISPENSING FACILITY. See Section 2202.1.

MATERIAL SAFETY DATA SHEET (MSDS). See Section 2702.1.

MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA. See Section 2702.1.

MAXIMUM ALLOWABLE WORKING PRESSURE (MAWP). See Section 3202.1.

MEANS OF EGRESS. See Section 1002.1.

MECHANICAL CODE. New York City Mechanical Code.

MECHANICAL STOCKING METHODS. See Section 2302.1.

MEMBRANE STRUCTURE. See Section 2402.1.

MINIMUM SECURED RADIUS. See Section 3302.1.

MORTAR. See Section 3302.1.

MOTOR VEHICLE. See Section 2202.1.

MUCKING. See Section 3302.1.

MULTIPLE-STATION ALARM DEVICE. See Section 902.1.

NESTING. See Section 3002.1.

NATURAL DECORATIVE GREEN. See Section 802.1.

NATURAL TREE. See Section 802.1.

NET EXPLOSIVE WEIGHT (net weight). See Section 3302.1.

NON-PRODUCTION LABORATORY. See Section 2702.1.

NORMAL TEMPERATURE AND PRESSURE (NTP). See Section 2702.1.

OCCUPANCY. The purpose or activity for which a building or space is used or designed to be used. References to occupancy classification shall be deemed to include the equivalent occupancy classifications under the 1968 Building Code and all prior Building Codes or other applicable laws, rules and regulations. The occupancy classifications used in this code are defined as follows:

Group A. An assembly occupancy, including Groups A-1, A-2, A-3, A-4 and A-5, as defined in Section 303 of the Building Code.

Group B. A business occupancy, as defined in Section 304 of the Building Code.

Group E. An educational occupancy, as defined in Section 305 of the Building Code.

Group F. A factory and industrial occupancy, including Groups F-1 and F-2, as defined in Section 306 of the Building Code.

Group H. A high-hazard occupancy, including H-1, H-2, H-3, H-4 and H-5, as defined in Section 307 of the Building Code.

Group I. An institutional occupancy, including Groups I-1, I-2, I-3 and I-4, as defined in Section 308 of the Building Code.

Group M. A mercantile occupancy, as defined in Section 309 of the Building Code.

Group R. A residential occupancy, including Groups R-1, R-2 and R-3, as defined in Section 310 of the Building Code.

Group S. A storage occupancy, including Groups S-1 and S-2, as defined in Section 311 of the Building Code.

Group U. A utility and miscellaneous occupancy, as defined in Section 312 of the Building Code.

OFFICE BUILDING. See Section 402.1.

OPEN FIRES. See Section 302.1.

OPEN FLAME. See Section 302.1.

OPEN-FLAME DEVICE. See Section 302.1.

OPEN SYSTEM. The use of a solid or liquid hazardous material in equipment or a vessel, or system that remains open during normal operation, such that vapors are emitted during the operation of such equipment, vessel or system and the material is exposed to the atmosphere during such operation. Examples of open systems for solids and liquids include dispensing from or into open beakers or containers, dip tank and plating tank operations.

OPERATING PRESSURE. The pressure at which a device, equipment or system operates.

ORGANIC COATING. See Section 2002.1.

ORGANIC PEROXIDE. See Section 3902.1.

Class I. See Section 3902.1.

Class II. See Section 3902.1.

Class III. See Section 3902.1.

Class IV. See Section 3902.1.

Class V. See Section 3902.1.

Unclassified detonable. See Section 3902.1.

OUTDOOR CONTROL AREA. See Section 2702.1.

OUT OF SERVICE SYSTEM. See Section 902.1.

OVERCROWDING. A condition that exists when: (1) the number of occupants present in any premises or part thereof exceeds the maximum number of occupants specified for such premises or part thereof by the certificate of occupancy or other authorization issued by the New York City Department of Buildings, or, in the absence of such certificate or authorization, the maximum number of occupants established by using the applicable occupant-area allowances set forth in Section 1004.1 of the Building Code; or (2) the commissioner determines that a threat exists to the safety of the occupants of any premises or part thereof by reason of the number of persons on the premises and/or the presence of persons sitting and/or standing in locations that may obstruct or impede access to means of egress, including obstructing or impeding access to aisles, passages, corridors, stairways or exits.

OWNER. The owner of the freehold of any real property (as defined in section two of the Real Property Law), or of a lesser estate therein, a mortgagee or vendee in possession, assignee of rents, receiver, executor, trustee, lessee, agent, or any other person, firm or corporation, directly or indirectly in control of real property. Any reference in this code to the owner of any structure shall be deemed to designate collectively any and all of the foregoing, including, but not limited to, the owner of the freehold or lesser estate therein and a managing agent designated by such owner pursuant to Section 27-2098 of the New York City Administrative Code.

OXIDIZER. See Section 4002.1.

Class 1. See Section 4002.1.

Class 2. See Section 4002.1.

Class 3. See Section 4002.1.

Class 4. See Section 4002.1.

OXIDIZING GAS. See Section 4002.1.

OZONE GAS GENERATOR. See Section 3702.1.

PASS-THROUGH. See Section 1802.1.

PERMISSIBLE EXPOSURE LIMIT (PEL). See Section 2702.1.

PERMIT. A written statement issued by the commissioner authorizing the manufacture, storage, handling, use or transportation of a hazardous material, or other material, or to conduct an operation or to maintain a facility, for which a permit is required by this code.

PERSONAL SUPERVISION. Except as otherwise provided in this code, supervision by the holder of any department certificate who is required to be personally present on the premises, or other proximate location acceptable

to the department, while performing the duties for which the certificate is required.

PESTICIDE. See Section 2702.1.

PLUMBING CODE. New York City Plumbing Code.

PORTABLE COOKING EQUIPMENT. See Section 902.1.

PORTABLE FIRE EXTINGUISHER SALES COMPANY CERTIFICATE. See Section 902.1.

PORTABLE FIRE EXTINGUISHER SERVICING COMPANY CERTIFICATE. See Section 902.1.

PORTABLE FUELED EQUIPMENT. See 302.1

PORTABLE SPACE HEATER. See Section 302.1.

POWERED INDUSTRIAL TRUCK. See Section 302.1.

PREMISES. Any real property, including buildings and structures thereon, or any part thereof.

PRESIGNAL SYSTEM. See Section 902.1.

PRESSURE VESSEL. See Section 2702.1.

PRIMARY CONTAINMENT. The first level of containment, consisting of the inside portion of that container which comes into immediate contact on its inner surface with the material being contained.

PRIMER. See Section 3302.1.

PRIVATE ROAD. See Section 502.1.

PRIVATE STREET. See Section 502.1.

PROCESS TRANSFER. See Section 3402.1.

PROCESSING VESSEL. See Section 3402.1.

PROPELLANT. See Section 2802.1.

PROTECTED EXPOSURE. See Section 3302.1.

PROTECTED PREMISES. See Section 902.1.

PROXIMATE AUDIENCE. See Section 3302.1.

PUBLIC STREET. See Section 502.1.

PYROPHORIC MATERIAL. See Section 4102.1.

PYROTECHNIC ARTICLE OR DEVICE. See Section 3302.1.

PYROTECHNIC MATERIAL. See Section 3302.1.

PYROTECHNIC SUPPLIER CERTIFICATE. See Section 3302.1.

PYROXYLIN PLASTIC. See Section 4202.1.

RACK STORAGE. See Section 2302.1.

RAILWAY. See Section 3302.1.

RAW PYROXYLIN PLASTIC. See Section 4202.1.

READY BOX. See Section 3302.1.

REDUCED FLOW VALVE. See Section 3702.1.

REFINERY. See Section 3402.1.

REFRIGERANT. See Section 602.1.

REFRIGERATING SYSTEM. See Section 602.1.

REGISTERED DESIGN PROFESSIONAL. An architect registered to practice the profession of architecture, or an engineer licensed to practice the profession of engineering, as set forth in the laws, rules and regulations of the State of New York.

REGULAR BUSINESS HOURS. See Section 402.1.

REMOTE SOLVENT RESERVOIR. See Section 3402.1.

REPAIR GARAGE. See Section 2202.1.

RESIN APPLICATION AREA. See Section 1502.1.

RESPONSIBLE PERSON. See Section 2602.1.

RETAIL DISPLAY AREA. See Section 2802.1.

ROLL COATING. See Section 1502.1.

RUBBISH. Combustible and noncombustible waste materials, including dust, dirt, ashes, rags, paper, cartons, cans, plastic and glass containers, and discarded appliances.

RULES. Rules of the commissioner, promulgated pursuant to the authority granted by the New York City Charter, this code, or other law, rule or regulation.

SAFETY CAN. See Section 2702.1.

SCENERY. See Section 802.1.

SEAPLANE BASE. See Section 1102.1.

SECONDARY CONTAINMENT. See Section 2702.1.

SELF-SERVICE AUTOMOTIVE LIQUID MOTOR FUEL-DISPENSING FACILITY. See Section 2202.1.

SELF-SERVICE CNG MOTOR FUEL-DISPENSING FACILITY. See Section 2202.1.

SEMICONDUCTOR FABRICATION FACILITY. See Section 1802.1.

SEPARATION DISTANCE. See Section 3302.1.

SERVICE CORRIDOR. See Section 1802.1.

SHELF STORAGE. See Section 2302.1.

SINGLE-STATION SMOKE ALARM. See Section 902.1.

SMALL ARMS AMMUNITION. See Section 3302.1.

SMALL ARMS AMMUNITION PRIMERS. See Section 3302.1.

SMOKE ALARM. See Section 902.1.

SMOKE DETECTOR. See Section 902.1.

SMOKE DETECTOR MAINTENANCE COMPANY CERTIFICATE. See Section 902.1.

SMOKELESS PROPELLANTS. See Section 3302.1.

SOLID. See Section 2702.1.

SOLID SHELVING. See Section 2302.1.

SOLVENT DISTILLATION UNIT. See Section 3402.1.

SPECIAL AMUSEMENT BUILDING. A building that is temporary, permanent or mobile that contains a device or system that conveys passengers or provides a walkway along, around or over a course in any direction as a form of amusement arranged so that the egress path is not readily apparent due to visual or audio distractions or an intentionally confounded egress path, or is not readily available because of the mode of conveyance through the building or structure.

SPECIAL EFFECT. See Section 3302.1.

SPECIAL INDUSTRIAL EXPLOSIVE DEVICE. See Section 3302.1.

SPONSOR. See Section 3302.1.

SPRAY AREA. See Section 1502.1.

SPRAY BOOTH. See Section 1502.1.

SPRAY ROOM. See Section 1502.1.

SPRAY SPACE. See Section 1502.1.

SPRINKLER SYSTEM. See Section 902.1

STAGING AREA. See Section 1102.1.

STANDARD CUBIC FEET (SCF). See Section 2702.1.

STANDPIPE, MULTI-ZONE. See Section 902.1.

STANDPIPE SYSTEM. See Section 902.1.

STEEL. Hot- or cold-rolled as defined by the Building Code.

STRUCTURE. Any construction on, above or below real property, including buildings, enclosures, sheds and tents.

SUPERVISORY SIGNAL. See Section 902.1.

SUPERVISORY SIGNAL-INITIATING DEVICE. See Section 902.1.

SYSTEM. See Section 2702.1.

TANK. A vessel containing more than 60 gallons (227 L).

TANK, ATMOSPHERIC. See Section 2702.1.

TANK, PORTABLE. See Section 2702.1.

TANK, PRIMARY. See Section 3402.1.

TANK, PROTECTED ABOVEGROUND. See Section 2202.1 and Section 3402.1.

TANK, STATIONARY. See Section 2702.1.

TENT. See Section 2402.1.

THEFT RESISTANT. See Section 3302.1.

THERMAL INSECTICIDAL FOGGING. See Section 1702.1.

TNT EQUIVALENT. See Section 3302.1.

TOOL. See Section 1802.1.

TORCH-APPLIED ROOF SYSTEM. See Section 2602.1.

TOXIC MATERIAL. See Section 3702.1.

TRANSVERSE FLUE SPACE. See Section 2302.1.

TROUBLE SIGNAL. See Section 902.1.

UNDERGROUND BUILDING. See Section 402.1.

UNNECESSARY ALARM. See Section 902.1.

UNSTABLE (REACTIVE) MATERIAL. See Section 4302.1.

Class 1. See Section 4302.1

Class 2. See Section 4302.1.

Class 3. See Section 4302.1.

Class 4. See Section 4302.1.

UNWARRANTED ALARM. See Section 902.1.

VAPOR AREA. See Section 1502.1.

VAPOR PRESSURE. See Section 2702.1.

VENDOR. See Section 3302.1.

VIEWING AREA. See Section 3302.1.

WATER-REACTIVE MATERIAL. See Section 4402.1.

Class 1. See Section 4402.1.

Class 2. See Section 4402.1.

Class 3. See Section 4402.1.

WORKSTATION. See Section 1802.1.

ZONING RESOLUTION. New York City Zoning Resolution.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 21: INDUSTRIAL FURNACES
SECTION FC 2101: GENERAL

NYC Administrative Code § 29-FC 2101

2101.1 Scope.

This chapter shall govern the design, installation, operation and maintenance of industrial furnaces used for commercial and industrial processing of materials.

2101.2Permits.Permits shall be required as set forth in Section 105.6.

2101.3General.Industrial furnaces shall be designed, installed, operated and maintained in accordance with this chapter, NFPA 86, and the construction codes, including the Fuel Gas Code and the Mechanical Code.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 21: INDUSTRIAL FURNACES
SECTION FC 2102: DEFINITIONS

NYC Administrative Code § 29-FC 2102

2102.1 Definitions.

The following words shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

FURNACE. A compartment, receptacle, enclosed chamber or structure that is capable of being heated to a high temperature in order to heat the contents thereof. Furnaces may be heated by internal or external sources, including gas burners, oil burners, electrical elements, infrared lamps, induction heaters and steam radiation systems, regardless of whether denominated as an oven or furnace.

Industrial furnaces shall be classified as follows:

CLASS A. A furnace that has heat utilization equipment operating at or near atmospheric pressure and that presents a potential explosion or fire hazard if flammable volatiles or combustible materials are processed or heated in the furnace. Such flammable volatiles or combustible materials include those originating from paints, powders, inks, and adhesives from finishing processes, such as dipped, coated, sprayed and impregnated materials; the substrate material; wood, paper and plastic pallets, spacers or packaging materials; or polymerization or other molecular rearrangements.

CLASS B. A furnace that has heat utilization equipment operating at approximately atmospheric pressure wherein there are no flammable volatiles or combustible materials being heated.

CLASS C. A furnace with any type of heating system and a special atmosphere supply system that is potentially hazardous due to a flammable or other special atmosphere being used for treatment of material in process, including integral quench furnaces and molten salt bath furnaces.

CLASS D. A furnace with any type of heating system that operates at temperatures from above ambient to over 5,000(degrees)F (2760(degrees)C) and at pressures normally below atmospheric, including special processing

atmosphere furnaces.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 21: INDUSTRIAL FURNACES
SECTION FC 2103: LOCATION

NYC Administrative Code § 29-FC 2103

2103.1 Ventilation.

Enclosed rooms, basements or other areas below grade containing industrial furnaces shall be provided with combustion air in accordance with the construction codes, including the Mechanical Code and the Fuel Gas Code, and with ventilation in accordance with the Mechanical Code.

2103.2Location.Industrial furnaces and heaters shall be located such that in the event of fire or explosion resulting from overheating or from the escape of fuel gas or fuel oil, damage to the building and injury to persons is minimized.

2103.3Ignition source.Industrial furnaces shall be located so as not to pose an ignition hazard to flammable vapors or mists or combustible dusts that may be present as a result of a manufacturing operation or other lawful use and occupancy of the building.

2103.4Temperatures.Roofs and floors of furnaces shall be insulated and ventilated to prevent temperatures at combustible ceilings and floors from exceeding 160(degrees)F (71(degrees)C).



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 21: INDUSTRIAL FURNACES
SECTION FC 2104: FUEL PIPING

NYC Administrative Code § 29-FC 2104

2104.1 Fuel-gas piping.

Fuel-gas piping serving industrial furnaces shall be designed and installed in accordance with the Fuel Gas Code. Piping for other fuel sources shall comply with the requirements of this section.

2104.2 Shutoff valves. Each industrial furnace shall be provided with an approved manual fuel shutoff valve in accordance with the construction codes, including the Mechanical Code and the Fuel Gas Code.

2104.2.1 Fuel supply lines. Valves for fuel supply lines shall be located within 6 feet (1829 mm) of the appliance served.

Exception: When approved and the valve is located in the same general area as the appliance served.

2104.3 Valve position. The design of manual fuel shutoff valves shall incorporate a permanent feature that visually indicates the open or closed position of the valve. Manual fuel shutoff valves shall not be equipped with removable handles or wrenches unless the handle or wrench can only be installed parallel with the fuel line when the valve is in the open position.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK

TITLE 29: NEW YORK CITY FIRE CODE

CHAPTER 2 NEW YORK CITY FIRE CODE

Chapter 21: INDUSTRIAL FURNACES

SECTION FC 2105: INTERLOCKS

NYC Administrative Code § 29-FC 2105

2105.1 Shut down.

Interlocks shall be provided for Class A furnaces so that conveyors or sources of flammable or combustible materials shall shut down if either the exhaust or recirculation air supply fails.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 21: INDUSTRIAL FURNACES
SECTION FC 2106: FIRE PROTECTION

NYC Administrative Code § 29-FC 2106

2106.1 Required protection.

Class A and B furnaces that contain, or are utilized for the processing of, combustible materials shall be protected throughout by a fire extinguishing system complying with the requirements of Chapter 9.

2106.2 Fixed fire extinguishing systems. A fixed fire extinguishing system shall be provided for Class C or D furnaces to protect against such hazards as overheating, spillage of molten salts or metals, quench tanks, ignition of hydraulic oil and escape of fuel.

2106.3 Portable fire extinguishers. Portable fire extinguishers complying with the requirements of Section 906 shall be provided not closer than 15 feet (4572 mm) or a maximum of 50 feet (15 240 mm) from each furnace or in accordance with NFPA 10.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 21: INDUSTRIAL FURNACES
SECTION FC 2107: OPERATION AND MAINTENANCE

NYC Administrative Code § 29-FC 2107

2107.1 Furnace operation and maintenance instructions.

The furnace manufacturer's complete installation, inspection, testing, operation and maintenance instructions shall be available on the premises to those individuals responsible for the operation, maintenance and supervision of the furnace.

2107.2Furnace nameplate.The following data for Class A furnaces shall be furnished on the manufacturer's nameplate:

1. The solvent used.
2. The number of gallons (liters) used per batch or per hour of solvent entering the furnace.
3. The required purge time.
4. The oven operating temperature.
5. The exhaust blower rating for the number of gallons (liters) of solvent per hour or batch at the maximum operating temperature, or with regard to low-oxygen furnaces, the maximum allowable oxygen concentration.

2107.3Training.The operation and maintenance of furnaces shall be performed by a person knowledgeable and trained in the operation and maintenance of such furnaces.

2107.4Equipment maintenance.Equipment shall be maintained in accordance with the manufacturer's instructions.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 22: MOTOR FUEL-DISPENSING FACILITIES AND REPAIR GARAGES
SECTION FC 2201: GENERAL

NYC Administrative Code § 29-FC 2201

2201.1 Scope.

This chapter shall govern the design, installation, operation and maintenance of automotive liquid motor fuel-dispensing facilities, marine liquid motor fuel-dispensing facilities, CNG motor fuel-dispensing facilities and repair garages.

2201.2Permits.Permits shall be required as set forth in Section 105.6.

2201.3Design and installation documents.Design and installation documents shall be submitted to the department for review and approval prior to the installation, alteration, repair or construction of automotive liquid motor fuel-dispensing facilities, marine liquid motor fueldispensing facilities and CNG motor fuel-dispensing facilities in accordance with Section 105.4.

2201.3.1Compliance with other codes.The installation or alteration of a liquid motor fuel storage and dispensing system shall not be approved by the department unless the design and installation documents demonstrate that the proposed work complies with the regulations of the United States Environmental Protection Agency, as set forth in 40 CFR Part 280, and the regulations of the New York State Department of Environmental Conservation, as set forth in 6 NYCRR Parts 612, 613 and 614.

2201.4General.All motor fuel-dispensing facilities, CNG motor fuel-dispensing facilities and repair garages shall be designed, installed, operated and maintained in accordance with this chapter, Chapter 34, and the construction codes, including the Building Code, the Fuel Gas Code and the Mechanical Code, and, as applicable, NFPA 30A.

2201.5Electrical.Electrical wiring and equipment shall be suitable for the locations in which they are installed and shall comply with the requirements of Section 605, NFPA 30A and the Electrical Code, as applicable. Upon request, proof of compliance with the Electrical Code shall be filed with the department.

2201.6Heat-producing appliances.Heat-producing appliances shall be suitable for the locations in which they are

installed and shall comply with the requirements of the construction codes, including the Building Code, the Mechanical Code and the Fuel Gas Code, and NFPA 30A, as applicable.

2201.7Supervision.The dispensing of liquid motor fuel and CNG motor fuel at motor fuel dispensing facilities shall be conducted by or under the supervision of a certified attendant, who shall be responsible to ensure that dispensing operations are conducted and the facility is maintained in accordance with this chapter, as follows:

1. Dispensing operations shall be conducted by or under the personal supervision of a certified attendant at self service automotive liquid motor fuel-dispensing facilities.

2. Dispensing operations shall be conducted by or under the personal supervision of a certified attendant at fleet automotive liquid motor fuel-dispensing facilities.

3. Dispensing operations shall be conducted by or under the personal supervision of a certified attendant at full service automotive liquid motor fuel-dispensing facilities.

4. Dispensing operations shall be conducted by or under the personal supervision of a certified attendant at self service CNG motor fuel-dispensing facilities.

5. Dispensing operations shall be conducted by or under the personal supervision of a certified attendant at fleet CNG motor fuel-dispensing facilities.

6. Dispensing operations shall be conducted by or under the personal supervision of a certified attendant at full service CNG motor fuel-dispensing facilities.

7. Dispensing operations shall be conducted by or under the personal supervision of a certified attendant at fleet marine liquid motor fuel-dispensing facilities.

8. Dispensing operations shall be conducted by or under the personal supervision of a certified attendant at full service marine liquid motor fuel-dispensing facilities.

2201.8Certificate of license.Persons who install, alter, test or repair any automotive or marine liquid motor fuel storage and dispensing systems shall hold a certificate of license or shall be employed by and perform such duties under the general supervision of a person holding such certificate.

2201.9Records of inspections and testing.Records of all inspections and testing required by this chapter shall be kept in a bound log book or other approved recordkeeping, maintained on the premises for a minimum of 4 years, and made available for inspection by any representative of the department.



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SECTION FC 2202: DEFINITIONS

NYC Administrative Code § 29-FC 2202

2202.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

AUTOMOTIVE LIQUID MOTOR FUEL-DISPENSING FACILITY. Any building, structure or premises upon which or wherein, liquid motor fuel is stored and dispensed from a liquid motor fuel storage and dispensing system into the fuel tanks of motor vehicles or motorcycles.

CERTIFIED ATTENDANT. A person holding a certificate of fitness for the supervision of an automotive liquid motor fuel-dispensing facility, marine liquid motor fuel-dispensing facility or automotive CNG motor fuel-dispensing facility.

CNG. Compressed natural gas.

CNG MOTOR FUEL. CNG used as fuel in the operation of motor vehicles.

CNG MOTOR FUEL SYSTEM. A system comprised of compressors, storage containers, dispensers, piping, valves and ancillary equipment, that compresses natural gas into CNG, and stores and/or dispenses CNG motor fuel.

CNG MOTOR FUEL-DISPENSING FACILITY. Any building, structure or premises upon which, or wherein, CNG motor fuel is stored and/or dispensed from a CNG motor fuel system into the fuel tank of motor vehicles or watercraft.

DISPENSING DEVICE, OVERHEAD TYPE. A dispensing device mounted above a dispensing area, typically within a canopy structure, and characterized by the use of an overhead hose reel.

FLAMMABLE LIQUID MOTOR FUEL. Gasoline or other flammable liquids used as fuel in the operation of

motor vehicles, motorcycles, watercraft and aircraft.

FLEET MARINE LIQUID MOTOR FUEL-DISPENSING FACILITY. A marine liquid motor fuel-dispensing facility wherein liquid motor fuel is stored and/or dispensed into the fuel tank of watercraft owned or operated by or on behalf of the owner of the facility, and where such dispensing operations are conducted by persons employed by or otherwise working for the owner of the facility.

FLEET CNG MOTOR FUEL-DISPENSING FACILITY. Any CNG motor fuel-dispensing facility wherein CNG motor fuel is stored and/or dispensed into the fuel tank of motor vehicles or watercraft owned or operated by or on behalf of the owner of the facility itself, and where dispensing operations are conducted by persons employed by or otherwise working for the owner of the facility.

FLEET AUTOMOTIVE LIQUID MOTOR FUEL-DISPENSING FACILITY. An automotive liquid motor fuel-dispensing facility wherein liquid motor fuel is stored and/or dispensed into the fuel tank of motor vehicles or motorcycles owned or operated by or on behalf of the owner of the facility, and where dispensing operations are conducted by persons employed by or otherwise working for the owner of the facility.

FULL SERVICE AUTOMOTIVE LIQUID MOTOR FUEL-DISPENSING FACILITY. An automotive liquid motor fuel-dispensing facility wherein liquid motor fuel is dispensed into the fuel tank of motor vehicles or motorcycles by a certified attendant or, when under the personal supervision of a certified attendant, by persons employed by or otherwise working for the owner of the facility.

FULL SERVICE CNG MOTOR FUEL-DISPENSING FACILITY. A CNG motor fuel-dispensing facility wherein CNG is dispensed into the fuel tank of motor vehicles or watercraft by a certified attendant or, when under the personal supervision of a certified attendant, by persons employed by or otherwise working for the owner of the facility.

FULL SERVICE MARINE LIQUID MOTOR FUEL-DISPENSING FACILITY. A marine liquid motor fuel-dispensing facility wherein liquid motor fuel is dispensed into the fuel tank of watercraft by a certified attendant or, when under the personal supervision of a certified attendant, by persons employed by or otherwise working for the owner of the facility.

LIQUEFIED NATURAL GAS (LNG). A fluid in the liquid state composed predominantly of methane and which may contain minor quantities of ethane, propane, nitrogen or other components normally found in natural gas.

LIQUID MOTOR FUEL. Gasoline, diesel fuel or other flammable or combustible liquids used as fuel in the operation of motor vehicles, motorcycles, watercraft and aircraft.

LIQUID MOTOR FUEL STORAGE AND DISPENSING SYSTEM. A liquid motor fuel storage tank and all motor fuel storage and dispensing equipment associated with such tank, including the tank, piping, valves, fill connection catchment basins, vent lines, pumps, dispensing devices and any other ancillary equipment.

MARINE LIQUID MOTOR FUEL-DISPENSING FACILITY. Any building, structure or premises, whether on shore, piers, docks or wharves, upon which or wherein, liquid motor fuel is stored and/or dispensed from a liquid motor fuel storage and dispensing system into the fuel tanks of watercraft.

MOTOR VEHICLE. A vehicle or other conveyance having more than 2 running wheels and using liquid motor fuel or flammable gas as fuel for generating motive power, except such vehicles as have a storage tank with a maximum capacity for less than 2 gallons (7.6 L) of liquid motor fuel or flammable gas that generates energy that is equivalent to the energy generated by 2 gallons (7.6 L) of gasoline.

REPAIR GARAGE. A building, structure or portion thereof used for servicing or repairing motor vehicles or motorcycles.

SELF-SERVICE AUTOMOTIVE LIQUID MOTOR FUEL-DISPENSING FACILITY. An automotive liquid motor fuel-dispensing facility where liquid motor fuel is dispensed from a liquid motor fuel storage and dispensing system into the fuel tank of motor vehicles or motorcycles by customers of the facility.

SELF-SERVICE CNG MOTOR FUEL-DISPENSING FACILITY. A CNG motor fuel-dispensing facility wherein CNG motor fuel is stored and/or dispensed from a CNG motor fuel system into the fuel tank of motor vehicles by customers of the facility.

TANK, PROTECTED ABOVEGROUND. An atmospheric aboveground tank listed in accordance with UL 2085 or equivalent standard that is provided with integral secondary containment, protection from physical damage, and an insulation system intended to reduce the heat transferred to the primary tank when the tank is exposed to a high intensity liquid pool fire.



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SECTION FC 2203: AUTOMOTIVE LIQUID MOTOR FUEL-DISPENSING FACILITY LOCATION OF
DISPENSING DEVICES

NYC Administrative Code § 29-FC 2203

2203.1 Location of dispensing devices.

Dispensing devices at automotive liquid motor fuel-dispensing facilities shall be located as set forth in Sections 2203.1.1 and 2203.1.2.

2203.1.1 Outdoor dispensing devices. When installed outdoors, dispensing devices shall be located as follows:

1. Ten feet (3048 mm) or more from lot lines and building or structure openings.
2. Ten feet (3048 mm) or more from buildings or structures having combustible exterior wall surfaces or buildings or structures having noncombustible exterior wall surfaces that are not part of a 1-hour fire-resistance-rated assembly or buildings or structures having combustible overhangs.

Exception: Canopies constructed in accordance with the construction codes, including the Building Code, providing weather protection for the motor fuel dispensers.

3. Such that all portions of the vehicle being fueled will be on the premises of the automotive liquid motor fuel-dispensing facility.

4. Such that the nozzle, when the hose is fully extended, will not reach within 5 feet (1524 mm) of building or structure openings.

5. Twenty feet (6096 mm) or more from fixed sources of ignition.

6. Twenty five feet (7620 mm) or more from the nearest subway grating, entrance or exit.

2203.1.2 Indoor dispensing devices. When installed inside a building or structure, the dispensing area shall be

located at street level, with no dispenser located more than 50 feet (15 240 mm) from an exit or entrance to the building or structure used by motor vehicles.

2203.2Emergency disconnect switches. An approved, clearly identified and readily accessible emergency disconnect switch shall be provided at an approved location, to immediately shut down the transfer of fuel to the fuel dispensers in the event of a fuel spill or other emergency. An emergency disconnect switch for exterior fuel dispensers shall be located within 100 feet (30 480 mm) of, but not less than 20 feet (6096 mm) from, the fuel dispensers. For interior fuel-dispensing operations, the emergency disconnect switch shall be installed at an approved location. An approved sign shall be posted on or immediately adjacent to such devices and shall read: EMERGENCY FUEL SHUTOFF. Such emergency disconnect switches shall be of a type that is reset manually.



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SECTION FC 2204: AUTOMOTIVE LIQUID MOTOR FUEL-DISPENSING FACILITY DISPENSING
OPERATIONS

NYC Administrative Code § 29-FC 2204

2204.1 Supervision of dispensing.

The dispensing of liquid motor fuel at automotive liquid motor fuel-dispensing facilities shall be conducted under the supervision of a certified attendant as set forth in Section 2201.7.

2204.2 Self-service automotive liquid motor fuel-dispensing facilities. Self-service automotive liquid motor fuel-dispensing facilities shall comply with the requirements of Sections 2204.2.1 through 2204.2.7. The certified attendant's primary function shall be to supervise, observe and monitor the dispensing of fuel. The certified attendant shall prevent the dispensing of fuel into containers that do not comply with the requirements of Section 2204.4.1, control sources of ignition, take immediate action upon an accidental spill or release, be ready to use a portable fire extinguisher, and activate the fixed fire extinguishing system. Nothing in this section shall be construed to prohibit a certified attendant from engaging in other activities so long as such activities do not interfere with the certified attendant's ability to supervise, observe and monitor the dispensing of fuel and other requirements of this chapter.

2204.2.1 Self-service dispensers. Approved self-service devices, equipment and systems such as, but not limited to, card-operated and remote-preset types, are allowed at automotive liquid motor fuel-dispensing facilities. The certified attendant shall set the dispensing devices in the "off" position when not in use if such dispensing device can be activated without the certified attendant's knowledge.

2204.2.2 Emergency controls. Approved emergency controls shall be provided in accordance with Section 2203.2.

2204.2.3 Operating instructions. Dispenser operating instructions shall be conspicuously posted in approved locations on every dispenser and shall indicate the location of the emergency controls required by Section 2204.2.2.

2204.2.4 Monitoring of dispensing. A control area shall be located on the premises of every self-service automotive liquid motor fuel-dispensing facility. The control area shall be an interior or exterior enclosure to which the public has

no access. The certified attendant shall be present within the control area while dispensing operations are conducted. The control area shall be designed and located so that the certified attendant stationed therein shall have a full, unobstructed clear view of dispensing operations, except that mirrors and/or an approved closed-circuit television installation may be provided to afford the certified attendant a clear view of dispensing operations when the view from the control area is partially or temporarily obstructed. For purposes of this section, the "clear" view provided by a closed-circuit television installation shall mean that the image on the monitor shall be of such brightness and resolution as to allow ready identification of individuals and easy observation of activities at all times of day. Properly labeled manual switches that activate the fire extinguishing system and electrically disconnect the liquid motor fuel dispensing pumps shall be located adjacent to each other within the control area. A console that controls the self-service liquid motor fuel dispensers shall be provided within the control area and within 5 feet (1524 mm) of the manual switches.

2204.2.5Communications.A two-way voice communication system shall be installed to provide contact between the control area and each dispensing island. A telephone not requiring a coin to operate, or other approved clearly identified means to notify the department, shall be provided at the facility in an approved location.

2204.2.6Control area sign.A durable metal sign that reads as follows shall be posted in plain view within the control area:Emergency Procedures: Shut off product pumps. Direct vehicle occupants to exit vehicles and leave area immediately. Keep all persons away from the area. Manually activate fire extinguishing system. Notify the Fire Department (Call 911).

Such sign shall also indicate the department telephone number, the nearest fire alarm box location, and the motor fuel-dispensing facility's address, with cross-street reference.

2204.2.7Lighting.Dispensing areas shall be well lighted whenever the facility is open for business.

2204.3Fleet automotive liquid motor fuel-dispensing facilities.Fleet automotive liquid motor fuel-dispensing facilities shall comply with the requirements of Sections 2204.3.1 through 2204.3.7.

2204.3.1General.The owner of fleet automotive liquid motor fuel-dispensing facilities shall provide, and be accountable for, daily site visits, regular equipment inspection, and maintenance.

2204.3.1.1Supervision.The supervision of dispensing shall be in accordance with Section 2201.7.

2204.3.2Reserved.

2204.3.3Emergency controls.Approved emergency controls shall be provided in accordance with Section 2203.2.

2204.3.4Operating instructions.Dispenser operating instructions shall be conspicuously posted in approved locations on every dispenser and shall indicate the location of the emergency controls required by Section 2204.3.3.

2204.3.5Emergency procedures.An approved emergency procedures sign, in addition to the sign required by Section 2206.12, shall be posted in a conspicuous location and shall read:IN CASE OF FIRE, SPILL OR RELEASE 1. USE EMERGENCY PUMP SHUTOFF 2. ACTIVATE THE FIRE EXTINGUISHING SYSTEM PROTECTING THE FLAMMABLE LIQUID MOTOR FUEL DISPENSING AREA. (where applicable) FIRE SUPPRESSION EMERGENCY CONTROL LOCATED (indicate location) 3. NOTIFY THE FIRE DEPARTMENT (CALL 911) FACILITY ADDRESS (indicate address, with cross street reference).

2204.3.6Communications.A telephone not requiring a coin to operate or other approved, clearly identified means to notify the department shall be provided at the facility in an approved location.

2204.3.7Quantity limits.Dispensing equipment used at fleet automotive liquid motor fuel-dispensing facilities shall comply with one of the following:

1. Dispensing devices shall be programmed or set to limit uninterrupted liquid motor fuel delivery to not more than 25 gallons (95 L) and require a manual action to resume delivery.

2. For other than flammable liquid motor fuel, the amount of liquid motor fuel being dispensed shall be limited in quantity by a preprogrammed card as approved.

2204.4Dispensing into portable containers.The dispensing of liquid motor fuel into portable containers shall comply with the requirements of Sections 2204.4.1 through 2204.4.4.

2204.4.1Approved containers required.Liquid motor fuel shall not be dispensed into a portable container unless such container is of approved material and construction, and has a tight closure with screwed or spring-loaded cover so designed that the contents can be dispensed without spilling. Liquids shall not be dispensed into portable tanks or cargo tanks.

2204.4.1.1Container capacity.Liquid motor fuel shall be dispensed into approved containers with an individual capacity not greater than 21/2 gallons (9.5 L).

2204.4.2Nozzle operation.A hose nozzle valve used for dispensing liquid motor fuel into a portable container shall be in compliance with the requirements of Section 2206.7.6 and be manually held open during the dispensing operation.

2204.4.3Location of containers being filled.Portable containers shall not be filled while located inside the trunk, passenger compartment or truck bed of a vehicle or upon a watercraft.

2204.4.4Certified attendant.Only a certified attendant shall dispense liquid motor fuel into portable containers.

2204.5Dispensing from portable containers.No motor vehicle, motorcycle or watercraft shall be fueled from a portable container while inside a building or structure.

2204.6Full service automotive liquid motor fuel-dispensing facilities.Full service automotive liquid motor fuel-dispensing facilities shall comply with the requirements of Sections 2204.6.1 through 2204.6.5.

2204.6.1Supervision of dispensing.Dispensing of liquid motor fuel shall be in accordance with Section 2201.7.

2204.6.2Emergency controls.Approved emergency controls shall be provided in accordance with Section 2204.3.3.

2204.6.3Operating instructions.Dispenser operating instructions shall be conspicuously posted in approved locations on every dispenser and shall indicate the location of the emergency controls required by Section 2204.6.2.

2204.6.4Emergency procedures.An approved emergency procedures sign, in addition to the sign required by Section 2206.12, shall be provided and posted in accordance with Section 2204.3.5.

2204.6.5Communications.A telephone not requiring a coin to operate or other approved, clearly identified means to notify the department shall be provided at the facility in an approved location.

2204.7Sources of ignition.It shall be unlawful to smoke or use or maintain an open flame in areas where fuel is dispensed. The engines of vehicles being fueled shall be shut off during fueling. Electrical equipment shall be installed, operated and maintained in accordance with the Electrical Code.

2204.8Liquid motor fuel dispensing on piers, docks or wharves.Flammable liquid motor fuel shall not be dispensed into the fuel tanks of motor vehicles imported by ship to this country while on any pier, dock or wharf.



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SECTION FC 2205: AUTOMOTIVE LIQUID MOTOR FUEL-DISPENSING FACILITY OPERATIONAL AND
MAINTENANCE REQUIREMENTS

NYC Administrative Code § 29-FC 2205

2205.1 Tank filling operations for liquid motor fuel.

Delivery operations to tanks for liquid motor fuel shall comply with the requirements of Sections 2205.1.1 through 2205.1.3 and the applicable requirements of Chapter 34.

2205.1.1 Delivery vehicle location. Where liquid delivery to aboveground storage tanks is accomplished by positive-pressure operation, cargo tanks shall be positioned a minimum of 15 feet (4572 mm) from tanks receiving liquid motor fuel. During delivery, a cargo tank shall not obstruct a public street, block motorists' view of roadways or impede the movement of vehicles or pedestrians.

2205.1.2 Tank capacity calculation. The driver, operator or attendant of a cargo tank shall, before making delivery to a tank, determine the unfilled, available capacity of such tank by an approved tank level gauging device or method. A measuring stick shall not be used to measure the contents of the tank through the fill connection line, except where there is a direct fill connection.

2205.1.3 Tank connections. Delivery of liquid motor fuel shall be made by means of approved liquid- and vapor-tight connections between the delivery hose and tank fill pipe. Where tanks are equipped with any type of vapor recovery system, all connections required for the safe and proper functioning of the particular vapor recovery process shall be made. Such connections shall be made liquid and vapor tight and remain connected throughout the unloading process. Vapors shall not be discharged at grade level during delivery.

2205.2 Equipment maintenance. Automotive liquid motor fuel-dispensing facility equipment shall be maintained in good working order at all times in accordance with Sections 2205.2.1 through 2205.2.3.

2205.2.1 Dispensing devices. Where maintenance to dispensing devices becomes necessary and such maintenance could allow the accidental release or ignition of liquid, the following precautions shall be taken:

NYC Administrative Code § 29-FC 2205

1. Only persons with a certificate of license and knowledgeable in performing the required maintenance shall perform the work.

2. Electrical power to the dispensing device and pump serving the dispenser shall be shut off at the main electrical disconnect panel before maintenance begins.

3. The emergency shutoff valve at the dispenser, where installed, shall be closed before maintenance begins.

4. Vehicle traffic and unauthorized persons shall be prevented from coming within 12 feet (3658 mm) of the dispensing device before and during maintenance.

2205.2.2Emergency shutoff valves. Automatic-closing emergency shutoff valves required by Section 2206.7.4 shall be checked not less than once per year by manually tripping the hold-open linkage.

2205.2.3Leak detection system. The leak detection system required by Section 2206.7.7 shall be inspected monthly for proper operation and tested at least annually in accordance with the manufacturer's specifications to ensure proper installation and operation.

2205.3Reserved.

2205.4Reserved.

2205.5Fire extinguishers. Approved portable fire extinguishers complying with the requirements of Section 906 with a minimum rating of 40-B:C shall be provided and located such that an extinguisher is not less than 20 feet (6096 mm) but not more than 75 feet (22 860 mm) from pumps, dispensers or storage tank fill-pipe openings.

2205.6Reserved.

2205.7Control of brush and debris. Brush, grass, vines or other vegetation and combustible waste shall be kept not less than 10 feet (3048 mm) from the tank and dispensing location.



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SECTION FC 2206: AUTOMOTIVE LIQUID MOTOR FUEL-DISPENSING FACILITIES DESIGN AND
INSTALLATION REQUIREMENTS

NYC Administrative Code § 29-FC 2206

2206.1 General.

Storage of liquid motor fuel shall be in accordance with Chapter 34 except as otherwise specified in this chapter.

2206.2 Method of storage. Approved methods of storage for liquid motor fuel at automotive liquid motor fuel-dispensing facilities shall be in accordance with Sections 2206.2.1 through 2206.2.4.

2206.2.1 Underground tanks. The installation of underground tanks for the storage of liquid motor fuel shall comply with the requirements of Chapter 34 except as otherwise specified in this chapter.

2206.2.1.1 Inventory control for underground tanks. Accurate daily inventory records shall be maintained and reconciled for underground liquid motor fuel storage tanks for indication of possible leakage from tanks and piping. Inventory reconciliation shall be in accordance with the regulations of the New York State Department of Environmental Conservation as set forth in 6 NYCRR Part 613. The records shall be kept at the premises and be made available for inspection by any representative of the department. Records shall include daily reconciliation between sales, use, receipts and inventory on hand. Where there is more than one system consisting of tanks serving separate pumps or dispensers for a product, the reconciliation shall be maintained separately for each tank system. A consistent or accidental loss of product shall be immediately reported to the commissioner.

2206.2.1.2 Listing and approval. Underground liquid motor fuel storage tanks shall be listed and approved.

2206.2.1.3 Tank design and construction. Underground liquid motor fuel storage tanks shall be designed and constructed in accordance with the following:

1. Tanks shall be completely double-walled and constructed of steel, fiberglass-reinforced plastic or a combination of both materials. The secondary tank shall be capable of containing any leakage from the primary tank.

2. Tanks shall be designed and constructed to withstand 1.5 times the maximum operating loads and stresses, regardless of the amount of liquid motor fuel contained in the tank. Such capabilities shall be established by buoyancy calculations and load and stress analyses.

3. Tanks shall be designed and constructed to withstand a pressure of 15 pounds per square inch gauge (psig)(103.4 kPa) or 11/2 times the maximum anticipated static head pressure, whichever is greater, for the primary tank and 5 pounds per square inch gauge (psig)(34.5 kPa) for the secondary tank.

4. The capacity of each individual tank shall not exceed 12,000 gallons (45 420 L) of liquid motor fuel.

2206.2.2 Prohibited aboveground storage. The storage of motor fuel in aboveground tanks shall be prohibited as set forth in Sections 2206.2.2.1, 2206.2.2.2 and 2206.2.2.3.

2206.2.2.1 Storage of flammable liquid motor fuel. It shall be unlawful to store flammable liquid motor fuel in aboveground tanks.

2206.2.2.2 Storage of combustible liquid motor fuel. It shall be unlawful to store combustible liquid motor fuel in aboveground tanks, except at a fleet liquid motor fuel-dispensing facility complying with the requirements of this chapter.

2206.2.2.3 Storage inside buildings. It shall be unlawful to store liquid motor fuel in aboveground tanks within any building or structure.

2206.2.3 Aboveground tanks located outdoors, at grade. Outdoor storage of combustible liquid motor fuel in aboveground tanks at a fleet liquid motor fuel-dispensing facility shall comply with the requirements set forth in Sections 2206.2.3.1 through 2206.2.3.5.

2206.2.3.1 Tank design and construction. Only protected aboveground tanks shall be used.

2206.2.3.2 Tank capacity. The capacity of each tank shall not exceed 4,000 gallons (15 140 L). Not more than a total of 4,000 gallons (15 140 L) of liquid motor fuel shall be stored aboveground at any facility. The total storage capacity at a facility in both aboveground and underground tanks shall not exceed 40,000 gallons (15 140 L) of liquid motor fuel. Each tank shall have a separate fill line and a separate vent line that are separate from the fill and vent lines of other tanks.

Exception: When approved, individual tanks may exceed 4,000 gallons (15 140 L) but shall not exceed 12,000 gallons (45 420 L).

2206.2.3.3 Tank base support. Tanks shall be placed on an approved base slab. The surface of such base slab shall be a minimum of 6 inches (152 mm) above the level of the surrounding area to permit visual inspection. Tanks shall be adequately supported and anchored to the base slab to withstand uplifting by surface water and flooding.

2206.2.3.4 Tank connections. Tank connections shall be designed and located so as to:

1. Minimize the maneuvering necessary to position a cargo tank to make the delivery.
2. Minimize obstructing a public right of way or motorists' view of roadways, or impeding the movement of motor vehicles or pedestrians, during deliveries.
3. Provide connections by means of approved liquid and vapor-tight connections.

2206.2.3.5 Liquid level-indicating devices. Tanks shall be provided with an approved liquid level-indicating device. The liquid level-indicating device shall be accessible to the delivery operator. Liquid level indicating devices shall be

designed and constructed to be vapor-and-liquid tight.

2206.2.4 Location requirements for aboveground tanks at fleet automotive liquid motor fuel-dispensing facilities. Tanks shall be located in accordance with Table 2206.2.3 and as follows:

1. A minimum of 25 feet (7620 mm) from a subway grating, entrance or exit.
2. At a location that will not obstruct or interfere with any means of egress or department access.

3. Tanks shall not be installed under electrical transmission lines, bridges, or public highways. Table 2206.2.3 Minimum Separation Requirements for Aboveground Tanks at Fleet Motor Fuel-Dispensing Facilities Class of Liquid and Tank Type Individual Tank Capacity (gallons) Minimum Distance from Nearest Building (feet) Minimum Distance from Lot Line (feet) Minimum Distance from Public Street or Private Road (feet) Minimum Distance Between Tanks (feet) Liquid motor fuel tanks 4000 15 15 5 3 Greater than 4000 25 25 15 3 For SI: 1 foot = 304.8 mm, 1 gallon = 3.785 L.

2206.3 Security. Aboveground tanks for the storage of liquid motor fuel shall be safeguarded in an approved manner from public access or unauthorized entry.

2206.4 Physical protection. Posts complying with the requirements of Section 312 or other approved means shall be provided to protect aboveground tanks against impact by a motor vehicle unless the tank is listed as a protected aboveground tank with vehicle impact protection.

2206.5 Secondary containment. Aboveground tanks shall be provided with diking in accordance with Chapter 34. Diking is not required for listed secondary containment tanks. The secondary containment systems shall be monitored either visually or automatically. Enclosed secondary containment systems shall be provided with emergency venting in accordance with Section 2206.6.2.5.

2206.6 Piping, valves, fittings and ancillary equipment for use with liquid motor fuel. The design, fabrication, assembly, testing and inspection of piping, valves, fittings and ancillary equipment for use with liquid motor fuel shall be in accordance with Chapter 34 except as otherwise specified in Sections 2206.6.1 through 2206.6.3, 2206.9 and 2206.10.

2206.6.1 Protection from damage. Piping shall be located such that it is protected from physical damage and designed to accommodate settlement, vibration, expansion or contraction.

2206.6.2 Piping, valves, fittings and ancillary equipment for aboveground tanks. Piping, valves, fittings and ancillary equipment for aboveground tanks shall comply with the requirements of Sections 2206.6.2.1 through 2206.6.2.11.

2206.6.2.1 Tank openings. Tank openings for aboveground tanks shall be through the top only. There shall be no openings except those necessary to inspect, fill, empty and vent the tank.

2206.6.2.2 Fill-pipe connections. The fill-pipe for aboveground tanks shall be provided with a means for making a direct connection to the cargo tank's fuel-delivery hose so that liquid motor fuel is not exposed to the open air during the filling operation. Operator safety equipment for the filling operation shall be provided in accordance with OSHA regulations. Where any portion of the fill-pipe exterior to the tank extends below the level of the top of the tank, a check valve, a dry break coupling and a quick closing valve shall be installed at the fill connection. Tank fill connections from a remote location are prohibited.

2206.6.2.3 Overfill protection. Overfill protection shall be provided for aboveground storage tanks. Overfill prevention devices shall be designed to withstand the pressure generated by the cargo tank discharge pump and shall automatically shut off the flow into the tank when the tank is not more than 95 percent full.

2206.6.2.4 Siphon prevention. An approved antisiphon method shall be provided in the piping system to prevent flow of liquid motor fuel by siphon action.

2206.6.2.5 Emergency relief venting. Aboveground storage tanks, tank compartments and enclosed secondary containment spaces shall be provided with emergency relief venting in accordance with Chapter 34.

2206.6.2.6 Spill containers. Aboveground tank spill containers having a capacity of not less than 5 gallons (19 L) shall be provided for each fill connection. Spill containers shall be noncombustible and shall be fixed to the tank and equipped with a manual drain valve that drains into the primary tank.

2206.6.2.7 Piping material construction. Piping shall be of a minimum Schedule 40 galvanized steel construction.

2206.6.2.8 Compatibility. Piping, fittings, components and joint compounds shall be mutually compatible, and compatible with diesel fuel and other commonly-used combustible liquid motor fuels, including the additives commonly used in such combustible motor fuels. Joint compounds shall be listed and approved.

2206.6.2.9 Pressure relief devices. Where liquid motor fuel may become trapped between shutoff valves and/or check valves, affected piping sections shall be provided with pressure-relief devices that will discharge the pressure generated by thermal expansion back into the tank.

2206.6.2.10 Vent piping. Each tank shall be provided with a separate unobstructed vent line, without any trap or device that causes excessive back pressure, and shall be maintained unobstructed at all times.

2206.6.2.11 Vent termination. Vent outlets shall discharge outdoors and upward. The discharge point shall be no less than 15 feet (4572 mm) above the adjacent ground level and no less than 15 feet (4572 mm) from the nearest building opening.

2206.6.3 Piping, valves, fittings and ancillary equipment for underground tanks. Piping, valves, fittings and ancillary equipment for underground tanks shall comply with the requirements of Chapter 34 and NFPA 30A, except as otherwise provided in Sections 2206.6.3.1, 2206.6.3.2 and 2206.10.

2206.6.3.1 Piping design and construction. Piping, including vent piping, shall be of a minimum Schedule 40 steel construction. Approved nonmetallic piping, such as fiberglass-reinforced plastic or other equivalent corrosion-resistant material, may be installed underground.

2206.6.3.2 Underground tank piping. Piping shall be installed underground, except for the vertical riser of the vent.

2206.6.3.3 Compatibility. Piping, fittings, components and joint compounds shall be mutually compatible, and compatible with gasoline, diesel fuel, methanol and other commonly-used liquid motor fuels, including the additives commonly used in such liquid motor fuels. Joint compounds shall be listed and approved.

2206.7 Fuel-dispensing systems for liquid motor fuel. The design, and installation of liquid motor fuel-dispensing systems shall be in accordance with this section.

2206.7.1 Listed equipment. Electrical equipment, dispensers, hose, nozzles and submersible or subsurface pumps used in fuel-dispensing systems shall be listed and approved.

2206.7.2 Fixed pumps required. Liquid motor fuel shall be transferred only from the top of the tank by means of fixed pumps designed and equipped to allow control of the flow and prevent leakage or accidental discharge.

2206.7.2.1 Aboveground tank dispenser. Only one vehicle may be fueled at a time. Fuel dispensing from a location remote from the tank may be permitted when approved by the commissioner.

2206.7.2.2 Pump sumps. Pump sumps shall be compatible with the liquid motor fuel, liquid-tight, and accessible for inspection. Prefabricated pump sumps shall be approved.

2206.7.3 Mounting of dispensers. Dispensing devices, except those installed on top of a protected aboveground tank that qualifies as vehicle-impact resistant, shall be protected against physical damage by mounting on a concrete island 6 inches (152 mm) or more in height, or shall otherwise be suitably protected in accordance with Section 312. Dispensing devices shall be installed and securely fastened to their mounting surface in accordance with the dispenser manufacturer's instructions. Dispensing devices installed indoors shall be located in an approved position not in a direct line with vehicular traffic.

2206.7.3.1 Protection of floor openings in indoor facilities. Openings in floors beneath automotive liquid motor fuel-dispensing facilities located inside buildings or structures shall be sealed.

2206.7.3.2 Dispenser pans. If a dispenser pan is installed beneath a dispenser, it shall be approved, compatible with the liquid motor fuel, liquid-tight, accessible for inspection, no larger than necessary, and installed solely for the purpose of collecting any liquid motor fuel leaking from the dispenser. The dispenser pan shall not be used to collect liquid motor fuel discharged from defective piping. The dispenser pan shall be backfilled up to not less than 6 inches (152 mm) above any nonmetallic piping and shall not interfere with the operation of any safety device.

2206.7.4 Dispenser emergency valve. An approved emergency shutoff valve designed to close automatically in the event of a fire or impact shall be properly installed in the liquid supply line at the base of each dispenser supplied by a remote pump. The valve shall be installed so that the shear groove is flush with or within 0.5 inch (12.7 mm) of the top of the concrete dispenser island and there is clearance provided for maintenance purposes around the valve body and operating parts. The valve shall be installed at the liquid supply line inlet of each overhead-type dispenser. Where installed, a vapor return line located inside the dispenser housing shall have a shear section or approved flexible connector for the liquid supply line emergency shutoff valve to function. Emergency shutoff valves shall be installed and maintained in accordance with the manufacturer's instructions, tested at the time of initial installation and tested at least yearly thereafter in accordance with Section 2205.2.2.

2206.7.5 Dispenser hose. Dispenser hoses shall be a maximum of 18 feet (5486 mm) in length unless otherwise approved. Dispenser hoses shall be listed and approved. When not in use, hoses shall be reeled, racked or otherwise protected from damage. The length of the dispensing hose shall be such that at least 1 inch (25.4 mm) clearance between the hose and the ground is maintained when the nozzle is rested on its bracket. Dispensing hoses installed at aviation facilities, marine liquid motor fuel-dispensing facilities, and fleet vehicle liquid motor fuel-dispensing facilities shall be of an approved length.

2206.7.5.1 Breakaway devices. Dispenser hoses shall be equipped with a listed emergency breakaway device designed to retain liquid on both sides of a breakaway point. Such devices shall be installed and maintained in accordance with the manufacturer's instructions. Where hoses are attached to hose-retrieving mechanisms, the emergency breakaway device shall be located between the hose nozzle and the point of attachment of the hose-retrieval mechanism to the hose.

2206.7.6 Fuel delivery nozzles. A listed automatic-closing-type hose nozzle valve without a latch-open device shall be provided for dispensers used for dispensing liquid motor fuel, except that a nozzle valve with a latch-open device may be installed and used at the following automotive liquid motor fuel-dispensing facilities:

1. Full service automotive liquid motor fuel-dispensing facilities.
2. Fleet automotive liquid motor fuel-dispensing facilities.
3. Dispensing of diesel fuel at self-service automotive liquid motor fuel-dispensing facilities.

2206.7.6.1 Special requirements for nozzles. Where dispensing of liquid motor fuel is performed, a listed automatic-closing-type hose nozzle valve shall be used that incorporates all of the following features:

1. The hose nozzle valve shall be equipped with an integral latch-open device, when the use of such a device is authorized by this section.

2. When the flow of product is normally controlled by devices or equipment other than the hose nozzle valve, the hose nozzle valve shall not be capable of being opened unless the delivery hose is pressurized. If pressure to the hose is lost, the nozzle shall close automatically.

Exception: Vapor recovery nozzles incorporating insertion interlock devices designed to achieve shutoff on disconnect from the vehicle fill pipe.

3. The hose nozzle shall be designed such that the nozzle is retained in the fill pipe during the filling operation.

4. The system shall include listed equipment with a feature that causes or requires the closing of the hose nozzle valve before the product flow can be resumed or before the hose nozzle valve can be replaced in its normal position in the dispenser.

2206.7.6.2 Control device. A control device shall be provided that will allow a liquid motor fuel pump to operate only when the dispensing nozzle is removed from its bracket on the dispenser and the switch on the dispenser is manually activated. The flow of liquid motor fuel shall automatically stop when the switch is deactivated or the nozzle returned to its bracket.

2206.7.7 Leak detection. Underground liquid motor fuel storage and dispensing systems shall be provided with a leak detection system in accordance with the following:

1. The leak detection system shall provide continuous monitoring of the tank's interstitial space.

2. The leak detection system shall provide continuous monitoring of liquid motor fuel pump sumps. Activation of the leak detection system shall cause shutdown of the liquid motor fuel pumps.

3. The leak detection system shall provide continuous monitoring of dispenser pans whenever such pans are provided. Activation of the leak detection system shall cause shutdown of the affected dispenser or liquid motor fuel pump supplying such dispenser.

4. Primary discharge piping shall be provided with an automatic line leak detector. Activation of such leak detector shall cause shutdown of the liquid motor fuel pump or significantly restrict the product flow.

5. The leak detection system shall have an alarm panel in a supervised location on the premises; trigger both an audible and visible local alarm; be capable of producing hardcopy printouts of all tests and/or leak notification reports; operate on low voltage; and be intrinsically safe for a liquid motor fuel environment.

6. Leak detection systems shall be listed and approved.

2206.7.8 Gravity and pressure dispensing. Liquid motor fuel shall not be dispensed by gravity from tanks, drums, barrels or similar containers. Liquid motor fuel shall not be dispensed by a device operating through pressure within a storage tank, drum or container.

2206.7.9 Vapor-recovery and vapor-processing systems. Vapor-recovery and vapor-processing systems shall be in accordance with Section 2206.7.9, the requirements of New York State Department of Environmental Conservation and be approved.

2206.7.9.1 Vapor-balance systems. Vapor-balance systems shall comply with the requirements of Sections 2206.7.9.1.1 through 2206.7.9.1.5.

2206.7.9.1.1 Dispensing devices. Dispensing devices incorporating provisions for vapor recovery shall be listed and labeled. When existing listed or labeled dispensing devices are modified for vapor recovery, such modifications shall be listed by report by a nationally recognized testing laboratory. The listing by report shall contain a description of the component parts used in the modification and the recommended method of installation on specific dispensers. Such report shall be made available for inspection by any department representative. Means shall be provided to shut down fuel dispensing in the event the vapor return line becomes blocked.

2206.7.9.1.2 Vapor-return line closeoff. An approved method shall be provided to close off the vapor return line from dispensers when the product is not being dispensed.

2206.7.9.1.3 Piping. Piping in vapor-balance systems shall be in accordance with Sections 3403.6 and 3404.2. Nonmetallic piping shall be installed in accordance with the manufacturer's installation instructions. Vapor return piping shall be installed in a manner that drains back to the tank, without sags or traps in which liquid can become trapped. If necessary, because of grade, condensate tanks are allowed in vapor return piping. Condensate tanks shall be designed and installed so that they can be drained without opening.

2206.7.9.1.4 Flexible joints and shear joints. Flexible joints shall be installed in accordance with Section 3403.6.9. An approved shear joint shall be rigidly mounted and connected by a union in the vapor return piping at the base of each dispensing device. The shear joint shall be mounted flush with the top of the surface on which the dispenser is mounted.

2206.7.9.1.5 Testing. Vapor return lines and vent piping shall be tested in accordance with Section 2206.9.

2206.7.9.2 Vapor-processing systems. Vapor-processing systems shall comply with the requirements of Sections 2206.7.9.2.1 through 2206.7.9.2.4.

2206.7.9.2.1 Equipment. Equipment in vapor-processing systems, including hose nozzle valves, vapor pumps, flame arresters, fire checks or systems for prevention of flame propagation, controls and vapor-processing equipment, shall be individually listed for the intended use in a specified manner. Vapor-processing systems that introduce air into the underground piping or storage tanks shall be provided with equipment for prevention of flame propagation that has been tested and listed as suitable for the intended use.

2206.7.9.2.2 Location. Vapor-processing equipment shall be located at or above grade. Sources of ignition shall be located not less than 50 feet (15 240 mm) from fuel-transfer areas and not less than 18 inches (457 mm) above tank fill openings and tops of dispenser islands. Vapor-processing units shall be located not less than 10 feet (3048 mm) from the nearest building or structure or lot line.

Exception: Where the required distances to buildings or structures, lot lines or fuel-transfer areas cannot be obtained, means shall be provided to protect equipment against fire exposure. Acceptable means shall include:

1. Approved protective enclosures, which extend at least 18 inches (457 mm) above the equipment, constructed of fire-resistant or noncombustible materials; and
2. Fire protection using an approved water-spray system.

2206.7.9.2.2.1 Location and safeguards. Vapor-processing equipment shall be located a minimum of 20 feet (6096 mm) from dispensing devices. Processing equipment shall be protected against physical damage by guardrails, curbs, protective enclosures or fencing. Where approved protective enclosures are used, approved means shall be provided to ventilate the volume within the enclosure to prevent pocketing of flammable vapors. Where a downslope exists toward the location of the vapor-processing unit from a fuel-transfer area, the commissioner may require additional separation

by distance and height.

2206.7.9.2.3 Installation. Vapor-processing units shall be securely mounted on concrete, masonry or structural steel supports on concrete or other noncombustible foundations. Vapor-recovery and vapor-processing equipment is allowed to be installed on roofs when approved.

2206.7.9.2.4 Piping. Piping in a mechanical-assist system shall be in accordance with Section 3403.6.

2206.8 Fire extinguishing system for dispensing area. Where flammable liquid motor fuel is dispensed at an automotive liquid motor fuel-dispensing facility, the dispensing area shall be provided with a dry chemical fire extinguishing system designed and installed in accordance with Section 904.6, and the following requirements:

1. The fire extinguishing system shall be designed to provide overhead protection of the dispenser area encompassed by a circle formed by the fully extended hose and nozzle on each fuel dispenser and both ends of the dispenser island.

2. The extinguishing agent containers shall be equipped with indicators to show whether the system is fully charged. Indicators shall be positioned to be easily read from grade.

3. The installation, alteration, testing and repair of the fire extinguishing system, including any maintenance or modification of the system, shall be performed by a person possessing a master fire suppression piping contractor license issued by the New York City Department of Buildings and trained and knowledgeable in the installation, operation and maintenance of the specific fire extinguishing system.

4. Dispensers shall not be operated when the fire extinguishing system has discharged or is inoperative, except as authorized in writing by the department. The motor fuel-dispensing facility certified attendant shall immediately notify the department of system discharge or inoperability.

5. Fire extinguishing systems shall be inspected and tested in accordance with Section 9.

6. Fire extinguishing systems at fleet vehicle automotive liquid motor fuel-dispensing facilities shall be monitored by an approved central station company.

2206.9 Inspection and testing. Inspection and testing required by Sections 2206.9.1 through 2206.9.7 shall be conducted at the owner's risk by his or her representative before a representative of the department.

2206.9.1 Initial tank test. Underground and aboveground tanks shall be tested hydrostatically at 15 pounds per square inch (psig)(103.4 kPa), or 11/2 times the maximum anticipated static head pressure, whichever is greater, for the inner tank, and pneumatically or hydrostatically at 5 pounds per square inch (psig)(34.5 kPa) for the annular space (secondary containment tank). When a pneumatic test is allowed, an inert gas shall be used; however, air may be used if the tank or piping system does not contain any liquid motor fuel or combustible vapor. Test pressure shall be maintained for a sufficient time to complete visual inspection, but not less than 1 hour. A tank shall be deemed to have passed the test if it shows no evidence of leakage or permanent deformation.

2206.9.2 Initial piping test. Prior to backfill, primary piping shall be tested hydrostatically to 11/2 times the maximum anticipated operating pressure, but not less than 15 pounds per square inch (psig)(103.4 kPa). After backfill and installation of the top slab, discharge piping shall be tested hydrostatically at 11/2 times the maximum anticipated pressure, but not less than 50 pounds per square inch (psig)(345 kPa). Secondary containment piping (annular space) shall be tested pneumatically or hydrostatically at 5 pounds per square inch (psig)(34.5 kPa). When a pneumatic test is allowed, an inert gas shall be used; however, air may be used if the tank system or piping system does not contain any liquid motor fuel or combustible vapor. Hydrostatic test pressure shall be maintained for sufficient time to complete visual inspection but not less than 1 hour. The test shall show that there is no evidence of leakage. Test pressure for

aboveground tank piping shall be at 11/2 times the maximum anticipated operating pressure but not less than 100 pounds per square inch (psig)(690 kPa).

2206.9.3Leak detection functionality test.Leak detection systems shall be inspected and tested at the time of installation in accordance with the rules. Leak detection systems monitoring underground liquid motor fuel storage systems shall be tested at least once every 2 years by a person holding a certificate of license. Such test shall confirm that all leak detection equipment and associated alarms are in good working order.

2206.9.4Fire extinguishing system test.A performance test of the fire extinguishing system shall be performed at the time of installation in accordance with the approved design and installation documents, and such procedures as may be prescribed by the commissioner. Fire extinguishing systems shall be tested at least once every 5 years from the date of approval of the initial installation. The test shall be in accordance with procedures prescribed by the commissioner.

2206.9.5Emergency tank and piping system test.The commissioner may require that a tank and piping system be precision tested or pressure tested in accordance with this section to determine the condition of the tank or piping. Storage systems that may contain liquid motor fuel or combustible vapor shall not be tested pneumatically.

2206.9.6Periodic tank and piping test.Any existing underground single-walled liquid motor fuel storage tanks previously approved by the department or any existing underground tanks that is not provided with a leak detection system meeting the requirements of Section 2206.7.7 shall be precision tested at least once every 5 years.

2206.9.7Pouring concrete and backfilling.The pouring of concrete for the base and top slab, the backfilling of tank and piping, and the construction of the top slab support shall be witnessed by a representative of the department at time of installation.

2206.10Installation of underground tank and piping systems.The installation of tank and piping systems shall be in accordance with Chapter 34, except as otherwise specified in this section.

1. Tanks shall be located so that the forces from building foundations and support loads are not transmitted to the tanks. The distance from any part of a tank to the nearest wall of any basement, pit, cellar or any property line shall not be less than 3 feet (914 mm). Tanks shall not be placed less than 20 feet (6096 mm) from a subway wall.

2. Tanks shall be installed so that the highest point of the tank is not less than 2 feet (609.6 mm) below the level of the lowest cellar floor of any building within a radius of 10 feet (3048 mm) from the tank. No tank shall be located under a sidewalk or beyond the property line of the automotive liquid motor fuel-dispensing facility.

3. Tanks shall be placed on a 12-inch (304.8-mm) thick base slab approved by the Department of Buildings, or installed in such other manner as may be approved by the Commissioner of Buildings, and secured against flotation. The system used for anchoring the tank shall not damage the tank or its coating.

4. Tanks shall be placed on a bed of approved backfill material in accordance with manufacturer's specifications. The backfill material shall evenly and completely support the bottom quadrant of the tank. The backfill material shall be carefully placed along the bottom, under the sides and under the end caps or heads of the tank, by shoveling and tamping. Backfilling shall then be completed in 12-inch (304.8-mm) lifts placed uniformly around the tank. Provision shall be made, consistent with site conditions, to prevent the migration of backfill.

5. Tanks shall be covered with a reinforced concrete slab not less than 8 inches (203.2 mm) thick, which shall extend not less than 12 inches (304.8 mm) beyond the horizontal outlines of the tank. The slab and its support shall be of a design approved by the New York City Department of Buildings.

6. Fill, suction and discharge piping shall be encased in 4 inches (101.6mm) of concrete or covered by a minimum of 18 inches (457 mm) of manufacturer-approved backfill, or covered by 4 inches (101.6 mm) of

manufacturer-approved backfill and an 8-inch (203.2mm) reinforced concrete slab.

7. Not more than 40,000 gallons (151 400 L) of liquid motor fuel shall be stored at any facility, including liquid motor fuel stored in aboveground tanks.

8. Tanks containing identical products may discharge liquid motor fuel into a common line, provided that the total aggregate capacity of any group of such tanks discharging into a common line does not exceed 12,000 gallons (45 420 L).

9. Tank connections shall be designed and located so as to:

9.1. Minimize the maneuvering necessary to position a cargo tank to make the delivery.

9.2. Minimize obstructing a public right of way or motorists' view of roadways, or impeding the movement of motor vehicles or pedestrians, during deliveries.

9.3. Provide connections by means of approved liquid and vapor-tight connections.

10. Tanks installed underground inside a building or structure shall be provided with an approved liquid level-indicating device. Liquid-level indicating devices shall be designed and constructed to prevent the escape of liquid or vapor and shall be approved.

11. Test wells shall be prohibited in tanks located underground inside a building or structure. Unused tank openings shall be permanently sealed at the tank to prevent removal of plugs or covers.

12. Secondary containment piping shall be required on all nonmetallic product-carrying pipes except direct fill lines, suction lines or siphon lines containing only one check valve located at the highest point of the line.

13. Underground piping shall have a slope of not less than 1/8 inch per foot pitched toward the tank and shall be installed so as to facilitate initial and periodic testing.

14. Flexible joints shall be installed in accordance with Section 3403.6.9.

15. Each underground motor fuel storage tank shall be provided with a separate unobstructed vent line without any trap or device that causes excessive back pressure.

16. Vent piping shall be installed not less than 12 inches (304.8 mm) below the finished surface measured from the point where the piping rises vertically and shall slope toward the tank.

17. Vent outlets shall discharge outdoors and upward. The discharge point shall be no less than 15 feet (4572 mm) above the adjacent ground level and no less than 10 feet (3048 mm) from the nearest building opening.

18. An approved overfill prevention device shall be provided to prevent overfilling. When installed in diesel fuel tanks, such overfill prevention device shall be designed to withstand the pressure generated by the cargo tank discharge pump and shall automatically shut off the flow into the tank when the tank is not more than 95 percent full.

19. Each tank fill connection shall be provided with a catchment basin with a capacity of at least 15 gallons (56.8 L). The contents of the catchment basin shall be automatically drained into the tank without overfilling the tank after the transfer from the cargo tank is completed provided, however, that if the Stage II vapor recovery system approved for the tank does not allow for the installation of an automatic drain, a manual drain may be installed.

20. Where the discharging piping leak detector required by Section 2206.7.7(4) does not cause shutdown of the liquid motor fuel pump, secondary containment piping shall be provided.

2206.11 Spill control. Provision shall be made to prevent liquids spilled during dispensing operations from flowing into buildings, by grading driveways, raising doorsills, or other approved means.

2206.12 Warning signs. Durable warning signs shall be conspicuously posted on or immediately adjacent to each dispenser in the fuel-dispensing area and shall state the following:

1. It is illegal and dangerous to fill unapproved containers with fuel.
2. Smoking is prohibited.
3. The engine shall be shut off during the refueling process.
4. Portable containers shall not be filled while located inside the trunk, passenger compartment, or truck bed of a vehicle.
5. It is unlawful for customers to fill portable containers. See attendant for assistance.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 22: MOTOR FUEL-DISPENSING FACILITIES AND REPAIR GARAGES
SECTION FC 2208: COMPRESSED NATURAL GAS MOTOR FUEL-DISPENSING FACILITIES

NYC Administrative Code § 29-FC 2208

2208.1 General.

CNG motor fuel-dispensing facilities shall be in accordance with NFPA 52 except as otherwise specified in this section and Section 2201.

2208.1.1 Prohibitions. It shall be unlawful to:

1. Operate a self-service marine CNG motor fuel-dispensing facility.
2. Fill a portable container, other than permanently mounted fuel containers on CNG-powered vehicles, except outdoors at a utility-operated facility.

2208.1.2 Supervision of dispensing operations. The dispensing of CNG at CNG motor fuel-dispensing facilities shall be supervised by a certified attendant as set forth in Section 2201.7.

2208.1.3 Maintenance. Maintenance of CNG motor fuel-dispensing systems shall be conducted under the personal supervision of a person holding a CNG fueling facility maintenance certificate of fitness.

2208.1.4 Operating instructions. Dispenser operating instructions shall be conspicuously posted in approved locations on every dispenser and shall indicate the location of the emergency shutdown device controls required by Section 2208.7.

2208.1.5 Communications. A telephone not requiring a coin to operate or otherwise approved, clearly identified means to notify the department shall be provided on the site in an approved location.

2208.1.6 Electrical equipment. Electrical wiring and equipment shall be suitable for the location in which they are installed and shall be in accordance with Section 605, NFPA 52 and the Electrical Code.

2208.1.7 Audible and visible alarms. All audible and visible alarms required by this section shall actuate at a supervised location on the premises that assures immediate response.

2208.1.8 Warning signs. Durable warning signs shall be conspicuously posted on or immediately adjacent to each dispenser in the fuel-dispensing area and shall state the following:

1. Smoking is prohibited.
2. The engine shall be shut off during the refueling process.

2208.1.9 Self-service CNG motor fuel-dispensing facilities. Self-service CNG motor fuel-dispensing facilities shall comply with the requirements of Sections 2208.1.9.1 through 2208.1.9.5. The certified attendant's primary function shall be to supervise, observe and monitor the dispensing of CNG. The certified attendant shall prevent the dispensing of fuel into portable containers, control sources of ignition, take immediate action upon a fire, leak or other emergency and be ready to use a fire extinguisher. Nothing in this section shall be construed to prohibit a certified attendant from engaging in activities directly related to the sale of CNG motor fuel, such as the collection of money or processing of credit cards.

2208.1.9.1 Self-service dispensers. Approved self-service devices, equipment and systems such as, but not limited to, card-operated and remote-preset types, are allowed at CNG motor fuel-dispensing facilities. The certified attendant shall set the dispensing devices in the "off" position when not in use if such dispensing device can be activated without the certified attendant's knowledge.

2208.1.9.2 Monitoring of dispensing. A control area shall be located on the premises of every self-service CNG motor fuel-dispensing facility. The control area shall be an interior or exterior enclosure to which the public has no access. The certified attendant shall be present within the control area while dispensing operations are conducted. The control area shall be designed and located so that the certified attendant stationed therein shall have a full, unobstructed clear view of dispensing operations, except that mirrors and/or an approved closed-circuit television installation may be provided to afford the certified attendant a clear view of dispensing operations when the view from the control area is partially or temporarily obstructed. For purposes of this section, the "clear" view provided by a closed-circuit television installation shall mean that the image on the monitor shall be of such brightness and resolution as to allow ready identification of individuals and easy observation of activities at all times of day. Audible and visible alarms required by this section shall actuate within the control area. A properly labeled manual switch that activates the emergency shut down device shall be located within the control area. A console that controls the self-service CNG motor fuel dispensers shall be provided within the control area and within 5 feet (1524 mm) of the emergency shut down device manual switch.

2208.1.9.3 Two-way voice communication. A two-way voice communication system shall be installed to provide contact between the control area and each dispensing island.

2208.1.9.4 Control area sign. A durable metal sign that reads as follows shall be posted in plain view within the control area. Emergency Procedures: Activate emergency CNG shut down Direct vehicle occupants to exit vehicles and leave area immediately. Keep all persons away from the area. Notify the Fire Department (Call 911).

Such sign shall also indicate the department telephone number, the nearest fire alarm box location, and the CNG motor fuel-dispensing facility's address, with cross street reference.

2208.1.9.5 Lighting. Dispensing areas shall be well lighted whenever the facility is open for business.

2208.1.10 Fleet CNG motor fuel-dispensing facilities. Fleet CNG motor fuel-dispensing facilities shall comply with the requirements of Sections 2208.1.10.1 through 2208.1.10.3.

2208.1.10.1General.The owner of fleet CNG motor fuel-dispensing facilities shall provide, and be accountable for, daily site visits, regular equipment inspection, and maintenance.

2208.1.10.2Emergency procedures.An approved emergency procedures sign, in addition to the sign required by Section 2208.1.9, shall be posted in a conspicuous location and shall read:IN CASE OF FIRE, LEAK OR OTHER EMERGENCY 1. ACTIVATE EMERGENCY CNG SHUTDOWN LOCATED (indicate location) 2. NOTIFY THE FIRE DEPARTMENT (CALL 911) FACILITY ADDRESS (indicate address, with cross street reference)

2208.1.10.3Quantity limits.Dispensing equipment used at fleet CNG motor fuel-dispensing facilities shall be programmed or set to limit uninterrupted CNG delivery to an approved amount and require a manual action to resume delivery.

2208.1.11Full service CNG motor fuel-dispensing facilities.Full service CNG motor fuel-dispensing facilities shall comply with the requirements of Section 2208.1.11.1.

2208.1.11.1Emergency procedures.An approved emergency procedures sign, in addition to the sign required by Section 2208.1.9, shall be provided and posted as set forth in Section 2208.1.11.2.

2208.2Design, installation and testing requirements.Devices, equipment and systems used for the compression, storage and dispensing of CNG shall be designed, approved, listed and/or tested in accordance with Sections 2208.2.1 through 2208.2.7.

2208.2.1Approved equipment.Containers, vessels, compressors, pressure regulators, pressure relief valves and other pressure relief devices and piping used for CNG shall be approved.

2208.2.2Listed equipment.Hoses, hose connections, dispensers, gas detection systems and electrical equipment used for CNG shall be listed. Vehicle-fueling connections shall be listed and labeled.

2208.2.3Vehicle fueling hose.Vehicle fueling hose shall be compatible with CNG and shall withstand a pressure of at least 4 times the service pressure. Hoses shall be of retractable design and shall be protected against physical damage. Hoses shall be tested for leaks with a non-corrosive solution or equivalent leak detection method at least annually by a certified attendant and shall be replaced if damaged. Records of required inspections and testing shall be kept in a bound log book or other approved recordkeeping, maintained on the premises for a minimum of 4 years and made available for inspection by any representative of the department.

2208.2.4Container.Prior to placing containers and pressure vessels in CNG service, evidence of container and pressure vessel pressure tests shall be submitted to the department demonstrating compliance with the requirements of NFPA 52.

2208.2.5Gas piping.All CNG system gas piping shall be tested by a qualified person in accordance with NFPA 52 at the owner's risk and before a representative of the department prior to placing the system in service. Required tests shall begin at the downstream side of the remote manual shutdown valve.

2208.2.6Filters and dryers.Filters and dryers used at CNG motor fuel-dispensing facilities shall be rated for the service and pressure intended and shall be tested in accordance with the gas piping test requirements set forth in Section 2208.2.5.

2208.2.7Safety devices.Upon installation, all automatic safety devices intended to cause equipment shutdown shall be tested at the owner's risk by his or her representative before a representative of the department.

2208.3Location of dispensing operations and equipment.CNG motor fuel-dispensing facilities shall be located at a site operated by a natural gas utility, or other approved location.

2208.3.1Location on property.In addition to the requirements of Section 2203.1 and NFPA 52, compression, storage and dispensing devices, equipment and systems shall be installed as follows:

1. Aboveground, and not beneath power lines.
2. At least 10 feet (3048 mm) from the nearest building, lot line, public street, private road, sidewalk, or source of ignition.

Exception: Dispensing equipment need not be separated from canopies that are constructed in accordance with the construction codes, including the Building Code, and which provide weather protection for the dispensing equipment.

3. At least 25 feet (7620 mm) from the nearest rail of any railroad track and 50 feet (15 240 mm) or more from the nearest rail of any railroad main track or any railroad or transit line where power for train propulsion is provided by an outside electrical source such as third rail or overhead catenary.

4. At least 50 feet (15 240 mm) from the vertical plane below the nearest overhead wire of a trolley bus line.

2208.3.2Rooftop operations.Rooftop dispensing shall be in accordance with Sections 2208.3.2.1 through 2208.3.2.3.

2208.3.2.1Roof construction.The roof of the building or structure shall be of noncombustible construction.

2208.3.2.2Compressor and discharge piping.The compressor shall be located on the roof and the discharge piping shall not enter the building or structure.

2208.3.2.3Height.The building or structure shall be 75 feet (22 860 mm) or less in height.

2208.4Reserved.

2208.5Pressure regulators.Pressure regulators shall be designed and installed or protected so that their operation will not be affected by the elements (freezing rain, sleet, snow or ice), mud or debris. The protection is allowed to be an integral part of the regulator.

2208.6Manual valves.Gas supply piping to equipment shall be provided with a remote, readily accessible manual shutoff valve of the fast-closing, quarter-turn type. Manual valves shall be located so as to minimize the risk of physical damage and minimize being rendered inoperable as a result of freezing.

2208.6.1Location.Manual valves shall be located within the boundary of the facility and as follows:

1. Not less than 25 feet (7620 mm) from the compressor for compressors rated for 300 standard cubic feet per minute or less.
2. Not less than 75 feet (22 860 mm) from the compressor for compressors rated for greater than 300 standard cubic feet per minute.

2208.7Emergency shutdown switches.An approved, clearly identified and readily accessible emergency shutdown switch shall be provided at an approved location. The switch, upon activation, shall automatically and immediately shut off the power supply to the compressor and close valves between the gas supply and the compressor and between the storage tanks and the dispensers. Such emergency shutdown switches for outdoor CNG dispensers shall be located within 75 feet (22 860 mm) of, but not less than 25 feet (7620 mm) from, the fuel dispensers. For interior fuel-dispensing operations, such emergency shutdown switches shall be installed at an approved location. An additional automatic emergency shutdown switch shall be provided in the compressor area for both indoor and outdoor compressors. An approved sign shall be posted on or immediately adjacent to such switches and shall read:

EMERGENCY CNG SHUTOFF. Such emergency shutdown switch shall be of a type that is manually resettable.

2208.7.1 Compressor shutdown devices. Each compressor shall be equipped with an automatic shutdown device that will shut down the compressor in the event of low suction pressure, high suction pressure, high motor temperature, high discharge pressure or high discharge temperature.

2208.7.2 Gas detection system. Indoor compressing, storage and dispensing areas shall be provided with a combustible gas detection alarm system meeting the standards of the construction codes, including the Building Code. Such system shall activate a local audible and visible alarm at 20 percent of the LEL and automatically shut off gas supply at 50 percent of the LEL, with simultaneous transmission of an alarm to the department by an approved central station company. The automatic shut-off valve shall be located upstream from the confined high pressure piping and shall be installed underground or otherwise protected from exposure to fire in an approved manner.

2208.7.3 Heat detection system. Indoor compressing, storage and dispensing areas shall be provided with a closed circuit heat detection system utilizing approved heat detection devices and equipment designed to automatically activate a local audible and visible alarm with simultaneous transmission to an approved central station, activate a fire extinguishing system over the area or enclosure, and shutoff the gas supply to the compressor and dispenser. The automatic shut-off valve shall be installed underground or be otherwise protected from exposure to fire in an approved manner.

2208.7.3.1 Outdoor heat detection system. Outdoor compressing, storage and dispensing shall be provided with a closed circuit heat detection system designed utilizing approved heat detection devices and equipment designed to automatically activate a local audible and visible alarm and shut off the gas supply to the compressor and dispenser. The automatic shut-off valve shall be installed underground or otherwise protected from exposure to fire in an approved manner.

2208.7.3.2 Outdoor storage exceeding 35,000 SCF (991.2 m³). For outdoor CNG storage exceeding 35,000 SCF (991.2 m³) located within 25 feet (7620 mm) of a building or structure, activation of the heat detection system shall simultaneously transmit an alarm to an approved central station.

2208.7.4 Fire extinguishing systems and appliances. Indoor compressing, storage and dispensing areas shall be protected throughout by a fire extinguishing system.

2208.7.4.1 Portable fire extinguishers. Portable fire extinguishers shall be provided adjacent to the CNG motor fuel-dispensing facility in the number and size specified by NFPA 52 and Section 906.

2208.7.5 Smoking and open flames. It shall be unlawful to smoke or use or maintain an open flame in any area where CNG motor fuel is compressed, stored or dispensed.

Exception: Welding, cutting or similar hot work may be conducted at times and places for emergency repair, alteration or installation work, providing that all necessary safety precautions are taken, and all required department permits and authorization from the holder of a certificate of fitness for CNG station maintenance has been obtained.

2208.7.6 Records of incidents. Records shall be kept of all incidents including fire, leak, device, equipment or system failure, out of service fire protection, alarm, or safety system, and of all equipment maintenance. Such records shall be kept in a bound log book or other recordkeeping approved by the department, maintained on the premises for a minimum of 4 years and made available for inspection by any representative of the department.

2208.8 Discharge of CNG from motor vehicle fuel storage containers. The discharge of CNG from motor vehicle fuel containers for the purposes of maintenance, container certification, calibration of dispensers or other activities shall be in accordance with Sections 2208.8.1 through 2208.8.1.2.

2208.8.1Methods of discharge.The discharge of CNG from motor vehicle fuel containers shall be accomplished through a closed transfer system in accordance with Section 2208.8.1.1 or an approved method of atmospheric venting in accordance with Section 2208.8.1.2.

2208.8.1.1Closed transfer system.Documentation of the procedure for discharging the container shall be provided to the commissioner for approval. The procedure shall include the actions the operator will take in the event of a low-pressure or high-pressure natural gas release during the discharging activity. A schematic design document illustrating the arrangement of piping, regulators and equipment settings, and their relation to the location of the compressor, storage vessels and emergency shutdown devices, shall be provided to the commissioner for approval.

2208.8.1.2Atmospheric venting.Atmospheric venting of CNG shall comply with the requirements of Sections 2208.8.1.2.1 through 2208.8.1.2.6.

2208.8.1.2.1Plans and specifications.A schematic design document illustrating the location of the vessel support, piping, the method of grounding and bonding, and other requirements specified herein or requested by the department shall be provided to the commissioner for approval.

2208.8.1.2.2Container stability.A method of rigidly supporting the container during the venting of CNG shall be provided. The selected method shall provide not less than two points of support and shall prevent the horizontal and lateral movement of the container. The system shall be designed to prevent the movement of the container based on the highest gas-release velocity through valve orifices at the container's rated pressure and volume. The structure or appurtenance shall be constructed of noncombustible materials.

2208.8.1.2.3Separation.The structure or appurtenance used for stabilizing the container shall be separated from other equipment or features as set forth in Table 2208.8.1.2.3. Table 2208.8.1.2.3 Separation Distance for Atmospheric Venting of CNG Equipment or Feature Minimum Separation (feet)

	Buildings	25 Building openings	25 Lot lines	15 Public street or private roads	15 Vehicles	25 CNG compressor and storage containers	25 CNG dispensers
25 For SI: 1 foot =	304.8 mm.						

2208.8.1.2.4Grounding and bonding.The structure or appurtenance used for supporting the container shall be grounded in accordance with the Electrical Code. The container valve shall be bonded prior to the commencement of venting operations.

2208.8.1.2.5Vent tube.A vent tube that will divert the gas flow to the atmosphere shall be installed on the container prior to commencement of the venting and purging operation. The vent tube shall be constructed of pipe or tubing materials approved for use with CNG in accordance with Chapter 30. The vent tube shall be capable of dispersing the gas a minimum of 10 feet (3048 mm) above grade level. The vent tube shall not be provided with a rain cap or other feature that would limit or obstruct the gas flow. At the connection fitting of the vent tube and the CNG container, a listed bidirectional detonation flame arrester shall be provided.

2208.8.1.2.6Signage.Approved "No Smoking" signs complying with the requirements of Section 310 shall be posted within 10 feet (3048 mm) of the container support structure or appurtenance. Approved CONTAINER SHALL BE BONDED signs shall be posted on the container support structure or appurtenance.

2208.9Residential and other vehicle fueling appliance facilities.The compressing and dispensing of CNG by a vehicle fueling appliance shall be in accordance with Sections 2208.9.1 through 2208.9.4.

2208.9.1Residential fueling appliance facilities.The compressing and dispensing of CNG at a residential fueling appliance facility shall be in accordance with Chapter 7 of NFPA52 and this chapter, except that such facilities shall be exempt from the requirements of Section 2208.3.1(2) with regard to the distance to the nearest building, and Sections 2208.7 through 2208.7.4.

2208.9.2 Non-residential fueling appliance facilities. The compressing and dispensing of CNG at a non-residential fueling appliance facility shall be in accordance with Section 6.17 of NFPA 52 and this chapter, except that such facilities shall be exempt from Section 2208.3.1(2) with regard to the distance to the nearest building, and Sections 2208.7 through 2208.7.4.

2208.9.3 Prohibitions. It shall be unlawful to:

1. Fill or store any containers, other than permanently mounted fuel containers on CNG-powered vehicles.
2. Compress and dispense CNG indoors.

2208.9.4 Supervision. The operation of a vehicle fueling appliance facility shall be under the personal supervision of a certified attendant.

2208.10 Mobile CNG fuel motor compression, storage and dispensing. A mobile CNG motor fuel compression, storage and/or dispensing system may be used to fuel vehicle mounted containers as approved by the commissioner and subject to such conditions as the commissioner may prescribe consistent with public safety.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 22: MOTOR FUEL-DISPENSING FACILITIES AND REPAIR GARAGES
SECTION FC 2210: MARINE LIQUID MOTOR FUEL-DISPENSING FACILITIES

NYC Administrative Code § 29-FC 2210

2210.1 General.

The construction of marine liquid motor fuel-dispensing facilities shall be in accordance with the construction codes, including the Building Code, and NFPA 30A. The installation, inspection, testing, maintenance and operation of liquid motor fuel storage and dispensing system at marine liquid motor fuel-dispensing facilities shall be in accordance with this chapter governing automotive liquid motor fuel-dispensing facilities, except that full service marine liquid motor fuel-dispensing facilities do not require a fire extinguishing system for the dispensing area.

2210.1.1 Prohibited facility. It shall be unlawful to operate a self-service marine liquid motor fuel-dispensing facility.

2210.2 Storage and handling. The storage and handling of liquid motor fuel at marine liquid motor fuel-dispensing facilities shall be in accordance with Sections 2210.2.1 through 2210.2.3.

2210.2.1 Class I, II or IIIA liquid storage. Class I, II or IIIA liquids stored inside of buildings or structures used for marine liquid motor fuel-dispensing facilities shall be stored in approved containers. Storage of Class I liquids shall not exceed 10 gallons (38 L).

2210.2.2 Dispensing from portable containers. No watercraft shall be fueled from a portable container while inside a building or structure.

2210.2.3 Heating equipment. Heating equipment installed in liquid motor fuel storage or dispensing areas shall comply with the requirements of Section 2201.6.

2210.3 Dispensing. The dispensing of liquid motor fuel at marine liquid motor fuel-dispensing facilities shall comply with the requirements of Sections 2210.3.1 through 2210.3.4.

2210.3.1 General. Unless another use has been approved, piers, docks or wharves at marine liquid motor

fuel-dispensing facilities shall be used exclusively for the dispensing or transfer of liquid motor fuel to or from watercraft, except that transfer of essential ship stores is allowed.

2210.3.1.1Flexible metallic piping.Where there is a need to provide flexibility in piping to allow for motion of a pier or dock, flexible metallic piping of an approved length and design may be installed and used in compliance with NFPA 30A. All flexible metallic piping or other flexible hose connections authorized by this section shall be inspected for proper operation at least once a year by a certificate of license holder. A record of such inspection shall be kept in a bound log book or other approved form of recordkeeping, and maintained on the premises for a minimum of 4 years, and made available for inspection by any representative of the department.

2210.3.2Supervision.The dispensing of liquid motor fuel at marine liquid motor fueldispensing facilities shall be supervised by a certified attendant as set forth in Section 2201.7.

2210.3.3Hoses and nozzles.Dispensing of liquid motor fuel into the fuel tanks of watercraft shall be by means of an approved-type hose equipped with a listed automatic-closing nozzle without a latch-open device. Hoses used for dispensing or transferring liquid motor fuel, when not in use, shall be reeled, racked or otherwise protected from mechanical damage.

2210.3.4Portable containers.Liquid motor fuel dispensing shall be performed in accordance with Section 2204.4, except that portable containers that are approved and used as the fuel tank for watercraft may be of a capacity not greater than 51/2 gallons (20.8 L).

2210.3.5Reserved.

2210.4Fueling of marine vehicles at other than approved marine liquid motor fuel-dispensing facilities.It shall be unlawful to fuel floating watercraft with liquid motor fuel at other than a marine liquid motor fuel-dispensing facility, except fueling of marine vessels and watercraft performed by off-shore fueling vessels approved by the United States Coast Guard.

2210.5Fire prevention.Marine liquid motor fuel-dispensing facilities shall comply with the requirements of Sections 2210.5.1 through 2210.5.7.

2210.5.1Housekeeping.Marine motor fuel-dispensing facilities shall be maintained in a neat and orderly manner. Accumulations of rubbish or waste oils in excessive amounts are prohibited. Rubbish and other combustible waste shall be regularly removed from the premises and disposed of lawfully.

2210.5.2Spills.Spills of liquid motor fuel near or in the water shall be reported immediately to the department and other governmental agencies requiring such reporting.

2210.5.3Rubbish containers.Metal containers with tight-fitting or self-closing metal lids shall be provided for the temporary storage of rubbish or other combustible waste.

2210.5.4Watercraft mooring.When watercraft is being fueled at a fuel dock, no other watercraft shall be made fast to the watercraft being fueled or to the fuel dock. The dispensing hose shall not cross one watercraft to reach another.

2210.5.5Sources of ignition.Any activity or operation involving the use of open flames, arc- or spark-producing devices shall not be performed at marine motor fuel-dispensing facilities or within 50 feet (15 240 mm) of the dispensing facilities, including piers, docks or wharves, except where approved by the commissioner. Dispensing shall not be conducted at such pier, dock or wharf during the course of such emergency repairs.

2210.5.5.1Smoking.It shall be unlawful to smoke, use or maintain an open flame within 50 feet (15 240 mm) of fueling operations. "No Smoking" signs complying with the requirements of Section 310 shall be conspicuously posted

throughout the premises. Such signs shall have letters of not less than 4 inches (102 mm) in height with a background of contrasting color.

2210.5.6Preparation of tanks for fueling.Watercraft owners and operators shall not offer their watercraft for fueling unless the tanks being filled are properly vented to dissipate fumes to the outside atmosphere.

2210.5.7Warning signs.Warning signs shall be prominently displayed at the face of each pier, dock or wharf at such elevation as to be clearly visible from the decks of watercraft being fueled. Such signs shall have letters not less than 3 inches (76 mm) in height on a background of contrasting color bearing the following or approved equivalent wording:WARNING NO SMOKING-STOP ENGINE WHILE FUELING, SHUT OFF ELECTRICITY. DO NOT START ENGINE UNTIL AFTER BELOW DECK SPACES ARE VENTILATED.

2210.6Fire protection.Marine liquid motor fuel-dispensing facilities shall comply with the requirements of Sections 2210.6.1 through 2210.6.4, and the construction codes, including the Building Code.

2210.6.1Standpipe hose stations.Fire hose, when required, shall be provided and enclosed within a cabinet, and hose stations shall be labeled: FIRE HOSE-EMERGENCY USE ONLY.

2210.6.2Obstruction of fire protection equipment.Materials shall not be placed or stored on a pier, dock or wharf in such a manner as to obstruct access to firefighting equipment or piping system control valves.

2210.6.3Access.Where the pier, dock or wharf is accessible to vehicular traffic, an unobstructed roadway to the shore end of the pier, dock or wharf shall be maintained for access by fire apparatus.

2210.6.4Portable fire extinguishers.One portable fire extinguisher in accordance with Section 906 having a minimum rating of 40-B:C shall be provided on the pier, dock or wharf within 25 feet (7620 mm) of the head of the gangway to the pier, dock or wharf. If the certified attendant's office is within 25 feet (7620 mm) of the gangway or is on the pier, dock or wharf, the fire extinguisher may be provided therein.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK

TITLE 29: NEW YORK CITY FIRE CODE

CHAPTER 2 NEW YORK CITY FIRE CODE

Chapter 22: MOTOR FUEL-DISPENSING FACILITIES AND REPAIR GARAGES

SECTION FC 2211: REPAIR GARAGES

NYC Administrative Code § 29-FC 2211

2211.1 General.

Repair garages shall comply with the requirements of this section and the construction codes, including the Building Code. Repair garages for vehicles that use more than one type of fuel shall comply with the applicable requirements of this section for each type of fuel used. Where a repair garage also includes a motor fuel-dispensing facility, the fuel-dispensing operation shall comply with the requirements of this chapter for motor fuel-dispensing facilities.

2211.2Storage and use of flammable and combustible liquids.The storage and use of flammable and combustible liquids in repair garages shall comply with the requirements of Chapter 34 and Sections 2211.2.1 through 2211.2.4.

2211.2.1Cleaning of parts.Cleaning of parts shall be conducted in listed and approved parts-cleaning machines in accordance with Chapter 34.

2211.2.2Waste oil, motor oil and other Class IIIB liquids.Waste oil, motor oil and other Class IIIB liquids, including crankcase drainings shall be stored in approved tanks or containers, which are allowed to be stored and dispensed from inside repair garages.

2211.2.2.1Tanks storing waste oil.For tanks of a capacity of 500 gallons (1893 L) or less, the fill connection may be located inside a building or structure provided that discharge of vapor from the fill port is prevented from entering the building or structure during and after filling. An automatic spring-loaded vertical check valve in the fill line or other device designed to prevent vapors from escaping shall be provided. The fill line shall be capped immediately after filling.

2211.2.3Drainage and disposal of liquids and oil-soaked waste.Garage floor drains, where provided, shall drain to approved oil separators or traps discharging to a sewer in accordance with the construction codes, including the Plumbing Code. Contents of oil separators, traps and floor drainage systems shall be collected at sufficiently frequent intervals and removed from the premises to prevent oil from being carried into the sewers. Crankcase drainings and

liquids shall not be dumped into sewers, streams or on the ground, but shall be stored in approved tanks or containers in accordance with Chapter 34 until removed from the premises. Self-closing metal cans shall be used for oily waste.

2211.2.4Spray finishing.Spray finishing with flammable or combustible liquids shall comply with the requirements of Chapter 15.

2211.3Sources of ignition.Sources of ignition shall not be located within 18 inches (457 mm) of the floor and shall comply with the requirements of Chapters 3 and 26.

2211.3.1Equipment.Appliances and equipment installed in a repair garage shall comply with the requirements of the construction codes, including the Building Code, the Mechanical Code, and the Electrical Code.

2211.3.2Smoking.Smoking is prohibited in repair garages.

2211.4Below-grade areas.Pits and below-grade work areas in repair garages shall comply with the requirements of Sections 2211.4.1 through 2211.4.3.

2211.4.1Construction.Pits and below-grade work areas shall be constructed in accordance with the construction codes, including the Building Code.

2211.4.2Means of egress.Pits and below-grade work areas shall be provided with means of egress in accordance with the Building Code.

2211.4.3Ventilation.Where Class I liquids are stored or used within a building having a basement or pit wherein flammable vapors could accumulate, the basement or pit shall be provided with mechanical ventilation in accordance with the construction codes, including the Mechanical Code, at a minimum rate of 1.5 cubic feet per minute per square foot (cfm/ft²) [0.008 m³/(s;tbm²)] to prevent the accumulation of flammable vapors.

2211.5Preparation of vehicles for repair.For vehicles powered by gaseous fuels, the fuel shutoff valves shall be closed prior to repairing any portion of the vehicle fuel system. Vehicles powered by gaseous fuels in which the fuel system has been damaged shall be inspected and evaluated for fuel system integrity prior to being brought into the repair garage. The inspection shall include testing of the entire fuel delivery system for leakage.

2211.5.1Drainage of liquid motor fuel tanks.Portable equipment used for defueling and refueling shall be listed and labeled and shall have fuel storage tanks not exceeding 65 gallons (246 L). Systems for defueling and refueling, other than by use of portable equipment, shall be approved.

2211.6Portable fire extinguishers.Portable fire extinguishers shall be provided in accordance with Section 906.

2211.7Repair garages for vehicles fueled by lighter-than-air fuels.Repair garages for the conversion and repair of vehicles which use CNG, liquefied natural gas (LNG), hydrogen or other lighter-than-air motor fuels shall be designed, installed, operated and maintained in accordance with Sections 2211.7 and 2211.7.2, and, as applicable, Section 2211.

Exception: Repair garages where work is not performed on the fuel system and is limited to exchange of parts and maintenance requiring no open flame or welding.

2211.7.1Ventilation.Repair garages used for the repair of CNG, LNG or hydrogen-fueled vehicles shall be provided with an approved mechanical ventilation system. The mechanical ventilation system shall be in accordance with the construction codes, including the Mechanical Code.

2211.7.2Gas detection system.Repair garages used for repair of vehicles fueled by CNG, LNG or hydrogen shall be provided with an approved flammable gas detection system meeting the requirements of the construction codes, including the Building Code.

2211.8 Defueling of hydrogen from motor vehicle fuel storage containers. Discharge or defueling of hydrogen from motor vehicle fuel storage containers for the purpose of maintenance, container certification or other purposes shall be performed in accordance with Section 2211.8.1.

2211.8.1 Methods of discharge. The discharge of hydrogen from motor vehicle fuel storage containers shall be accomplished through a closed transfer system in accordance with Section 2211.8.1.1 or an approved method of atmospheric venting in accordance with Section 2211.8.1.2.

2211.8.1.1 Closed transfer system. A documented procedure that explains the logic sequence for discharging the storage container shall be provided to the commissioner for review and approval. The procedure shall include the actions the operator is required to take in the event of a low-pressure or high-pressure hydrogen release during discharging activity. Schematic design documents shall be provided illustrating the arrangement of piping, regulators and equipment settings. The design and installation documents shall illustrate the piping and regulator arrangement and shall be shown in spatial relation to the location of the compressor, storage vessels and emergency shutdown devices.

2211.8.1.2 Atmospheric venting of hydrogen from motor vehicle fuel storage containers. When atmospheric venting is used for the discharge of hydrogen from motor vehicle fuel storage containers, such venting shall be performed in accordance with Sections 2211.8.1.2.1 through 2211.8.1.2.4.

2211.8.1.2.1 Defueling equipment required at vehicle maintenance and repair facilities. All facilities for repairing hydrogen systems on hydrogen-fueled vehicles shall have equipment to defuel vehicle storage containers. Equipment used for defueling shall be listed and labeled for the intended use.

2211.8.1.2.1.1 Manufacturer's equipment required. Equipment supplied by the vehicle manufacturer shall be used to connect the vehicle storage containers to be defueled to the vent pipe system.

2211.8.1.2.1.2 Vent pipe maximum diameter. Defueling vent pipes shall have a maximum inside diameter of 1 inch (25 mm) and be installed in an approved manner.

2211.8.1.2.1.3 Maximum flow rate. The maximum rate of hydrogen flow through the vent pipe system shall not exceed 1,000 cfm (28.3 m³/min) at NTP and shall be controlled by means of the manufacturer's equipment, at low pressure and without adjustment.

2211.8.1.2.1.4 Isolated use. The vent pipe used for defueling shall not be connected to a venting system used for another purpose.

2211.8.1.2.2 Design and installation documents. Design and installation documents shall be provided illustrating the defueling system to be utilized. Plan details shall be of sufficient detail and clarity to allow for evaluation of the piping and control systems to be utilized and include the method of support for containers to be used as part of a closed transfer system, the method of grounding and bonding, and other requirements set forth in this section.

2211.8.1.2.3 Stability of containers. A method of rigidly supporting containers used during defueling of hydrogen shall be provided. The method shall provide not less than two points of support and shall be designed to resist lateral movement of the receiving container. The system shall be designed to resist movement of the receiver based on the highest gas-release velocity through valve orifices at the receiver's rated service pressure and volume. Supporting structures or appurtenances used to support containers shall be constructed of noncombustible materials in accordance with the construction codes, including the Building Code.

2211.8.1.2.4 Grounding and bonding. Containers and piping systems used for defueling shall be bonded and grounded. Structures or appurtenances used for supporting the containers shall be grounded in accordance with the Electrical Code. The valve of the vehicle storage container shall be bonded with the defueling system prior to the commencement of discharge or defueling operations.

2211.8.2Repair of hydrogen piping.Piping systems containing hydrogen shall not be opened to the atmosphere for repair without first purging the piping with an inert gas to achieve 1 percent hydrogen or less by volume. Defueling operations and exiting purge flow shall be vented in accordance with Section 2211.8.1.2.

2211.8.3Purging.Each individual component of a hydrogen defueling system shall have a label affixed as well as a description in the installation and owner's manuals describing the procedure for purging air from the system during startup, regular maintenance and for purging hydrogen from the system prior to disassembly (to admit air). For the interconnecting piping between the individual manufactured components, the pressure rating must be at least 20 times the absolute pressure present in the piping when any hydrogen meets any air.

2211.8.3.1System purge required.After installation, repair or maintenance, the hydrogen piping system shall be purged of air in accordance with the manufacturer's specifications.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 23: HIGH-PILED COMBUSTIBLE STORAGE
SECTION FC 2301: GENERAL

NYC Administrative Code § 29-FC 2301

2301.1 Scope.

This chapter shall govern high-piled combustible storage, and the design, installation, operation and maintenance of any building, structure or premises used for such purpose.

2301.2Permits.A permit shall be required as set forth in Section 105.6.

2301.3Permit application.Applications for permits for high-piled combustible storage shall include design and installation documents that contain the following information, and such other information and documentation as the commissioner may prescribe:

1. Floor plan of the building showing locations and dimensions of high-piled storage areas.
2. Usable storage height for each storage area.
3. Number of tiers within each rack, if applicable.
4. Commodity clearance between top of storage and the sprinkler deflector for each storage arrangement.
5. Aisle dimensions between each storage array.
6. Maximum pile volume for each storage array.
7. Location and classification of commodities in accordance with Section 2303.
8. Location of commodities that are banded or encapsulated.
9. Location of required fire department access doors.

10. Type of fire extinguishing and fire detection systems.
11. Location of valves controlling the water supply of ceiling and in-rack sprinklers.
12. Type, location and specifications of smoke removal and curtain board systems.
13. Dimension and location of transverse and longitudinal flue spaces.
14. Such other information, regarding design features, commodities, storage arrangement and fire protection features within the high-piled storage area, as may be required by the commissioner to ensure compliance with the requirements of this chapter.

2301.3.1Records. A copy of the permit application documents shall be maintained on the premises and made available for inspection by any department representative.

2301.4Egress plan. Where the area of the high-piled combustible storage requires a permit, the owner shall prepare and familiarize employees with an egress plan that indicates the location and width of aisles, exits, exit access doors, exit signs, height of storage and location of hazardous materials. Such plan shall be maintained in an approved location and shall be made available for inspection by any representative of the department.

2301.5General. All buildings, structures and premises that contain high-piled combustible storage shall be designed, installed, operated and maintained in accordance with this chapter. In addition to the requirements of this chapter, the following material-specific requirements shall apply:

1. Aerosols shall be in accordance with Chapter 28.
2. Flammable and combustible liquids shall be in accordance with Chapter 34.
3. Hazardous materials shall be in accordance with Chapter 27.
4. Storage of combustible paper records shall be in accordance with NFPA 13.
5. Storage of combustible fibers shall be in accordance with Chapter 29.
6. Storage of miscellaneous combustible material shall be in accordance with Chapter 3.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 23: HIGH-PILED COMBUSTIBLE STORAGE
SECTION FC 2302: DEFINITIONS

NYC Administrative Code § 29-FC 2302

2302.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

ARRAY. Each separate storage configuration, taking into consideration the type of packaging, flue spaces, height of storage and compactness of storage.

ARRAY, CLOSED. A storage configuration having a 6-inch (152 mm) or smaller width vertical flue space that restricts air movement through the stored commodity.

BIN BOX. A five-sided container with the open side facing an aisle. Bin boxes are self-supporting or supported by a structure designed so that little or no horizontal or vertical space exists around the boxes.

COMMODITY. Items in high-piled combustible storage, including products and product packaging.

DRAFT CURTAIN. A structure arranged to limit the spread of smoke and heat along the underside of the ceiling or roof.

EARLY SUPPRESSION FAST-RESPONSE (ESFR) SPRINKLER. A sprinkler listed for early suppression fast-response performance.

EXPANDED PLASTIC. A foam or cellular plastic material having a reduced density based on the presence of numerous small cavities or cells dispersed throughout the material.

EXTRA-HIGH-RACK COMBUSTIBLE STORAGE. Storage on racks of Class I, II, III or IV commodities that exceed 40 feet (12 192 mm) in height and storage on racks of high-hazard commodities that exceed 30 feet (9144 mm) in height.

HIGH-PILED COMBUSTIBLE STORAGE. Storage of combustible materials in closely packed piles or combustible materials on pallets, in racks or on shelves where the top of storage is greater than 12 feet (3658 mm) in height. High-piled combustible storage also includes certain high-hazard commodities, such as rubber tires, Group A plastics, flammable liquids, idle pallets and similar commodities, where the top of storage is greater than 6 feet (1829 mm) in height.

HIGH-PILED STORAGE AREA. An area within a building, structure or premises that is designed or used for high-piled combustible storage.

LONGITUDINAL FLUE SPACE. The flue space between rows of storage perpendicular to the direction of loading.

MANUAL STOCKING METHODS. Stocking methods utilizing ladders or other nonmechanical equipment to move stock.

MECHANICAL STOCKING METHODS. Stocking methods utilizing motorized vehicles or hydraulic jacks to move stock.

RACK STORAGE. Any storage system, except shelf storage.

SHELF STORAGE. Storage on shelves less than 30 inches (762 mm) deep with the distance between shelves not exceeding 3 feet (914 mm) vertically.

SOLID SHELVING. Shelving that is solid, slatted or of other construction located in racks and that obstructs sprinkler discharge down into the racks.

TRANSVERSE FLUE SPACE. The space between rows of storage parallel to the direction of loading.



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Chapter 23: HIGH-PILED COMBUSTIBLE STORAGE
SECTION FC 2303: COMMODITY CLASSIFICATION

NYC Administrative Code§ 29-FC 2303

2303.1 Classification of commodities.

Commodities shall be classified as Class I, II, III, IV or high hazard in accordance with this section. Materials listed within each commodity classification are assumed to be unmodified for improved combustibility characteristics. Use of flame-retarding modifiers or the physical form of the material could change the classification. See Section 2303.7 for classification of Group A, B and C plastics.

2303.2Class I commodities.Class I commodities are essentially noncombustible products on wooden or nonexpanded polyethylene solid deck pallets, in ordinary corrugated cartons with or without single-thickness dividers, or in ordinary paper wrappings with or without pallets. Class I commodities are allowed to contain a limited amount of Group A plastics in accordance with Section 2303.7.4. Examples of Class I commodities include the following:

- Alcoholic beverages not exceeding 20-percent alcohol
- Cement in bags
- Ceramics
- Dairy products in nonwax-coated containers (excluding bottles)
- Dry insecticides
- Electrical appliances, noncombustible
- Foods in noncombustible containers
- Fresh fruits and vegetables in nonplastic trays or containers

Frozen foods

Glass

Glycol in metal cans

Gypsum board

Inert materials, bagged

Insulation, noncombustible

Liquids, noncombustible, in plastic containers having less than a 5-gallon (19 L) capacity

Metal products, noncombustible

2303.3 Class II commodities. Class II commodities are Class I products in slatted wooden crates, solid wooden boxes, multiple-thickness paperboard cartons or equivalent combustible packaging material with or without pallets. Class II commodities are allowed to contain a limited amount of Group A plastics in accordance with Section 2303.7.4. Examples of Class II commodities include the following:

Alcoholic beverages not exceeding 20-percent alcohol, in combustible containers

Foods in combustible containers

Incandescent or fluorescent light bulbs in cartons

Thinly coated fine wire on reels or in cartons

2303.4 Class III commodities. Class III commodities are commodities of wood, paper, natural fiber cloth, or Group C plastics or products thereof, with or without pallets. Products are allowed to contain limited amounts of Group A or B plastics, such as metal bicycles with plastic handles, pedals, seats and tires. Group A plastics shall be limited in accordance with Section 2303.7.4. Examples of Class III commodities include the following:

Aerosol, Level 1 (see Chapter 28)

Combustible fiberboard

Cork, baled

Feed, bagged

Fertilizers, bagged

Food in plastic containers

Furniture: wood, natural fiber, upholstered, nonplastic, wood or metal with plastic-padded and covered arm rests

Glycol in combustible containers not exceeding 25 percent

Liquids, noncombustible, in plastic containers having a capacity of more than 5 gallons (19 L)

Lubricating or hydraulic fluid in metal cans

Lumber

Mattresses, excluding foam rubber and foam plastics

Paints, oil base, in metal cans

Paper, waste, baled

Paper and pulp, horizontal storage, or vertical storage that is banded or protected with approved wrap

Paper in cardboard boxes

Pillows, excluding foam rubber and foam plastics

Plastic-coated paper food containers

Plywood

Rags, baled

Rugs, without foam backing

Sugar, bagged

Wood, baled

Wood doors, frames and cabinets

Yarns of natural fiber and viscose

2303.5 Class IV commodities. Class IV commodities are Class I, II or III products containing Group A plastics in ordinary corrugated cartons and Class I, II and III products, with Group A plastic packaging, with or without pallets. Group B plastics and free-flowing Group A plastics are also included in this class. The total amount of nonfree-flowing Group A plastics shall be in accordance with Section 2303.7.4. Examples of Class IV commodities include the following:

Aerosol, Level 2 (see Chapter 28)

Alcoholic beverages, exceeding 20-percent but less than 80-percent alcohol, in cans or bottles in cartons.

Clothing, synthetic or nonviscose

Combustible metal products (solid)

Furniture, plastic upholstered

Furniture, wood or metal with plastic covering and padding

Glycol in combustible containers (greater than 25 percent and less than 50 percent)

Linoleum products

Paints, oil base in combustible containers

Pharmaceutical, alcoholic elixirs, tonics, etc.

Rugs, foam back

Shingles, asphalt

Thread or yarn, synthetic or nonviscose

2303.6 High-hazard commodities. High-hazard commodities are high-hazard products presenting special fire hazards beyond those of Class I, II, III or IV. Group A plastics not otherwise classified are included in this class. Examples of high-hazard commodities include the following:

Aerosol, Level 3 (see Chapter 28)

Alcoholic beverages, exceeding 80-percent alcohol, in bottles or cartons

Commodities of any class in plastic containers in carousel storage

Flammable solids (except solid combustible metals)

Glycol in combustible containers (50 percent or greater)

Lacquers, which dry by solvent evaporation, in metal cans or cartons

Lubricating or hydraulic fluid in plastic containers

Mattresses, foam rubber or foam plastics

Pallets and flats which are idle combustible

Paper, asphalt, rolled, horizontal storage

Paper, asphalt, rolled, vertical storage

Paper and pulp, rolled, in vertical storage which is unbanded or not protected with an approved wrap

Pillows, foam rubber and foam plastics

Pyroxylin Rubber tires

Vegetable oil and butter in plastic containers

2303.7 Classification of plastics. Plastics shall be designated as Group A, B or C in accordance with this section.

2303.7.1 Group A plastics. Group A plastics are plastic materials having a heat of combustion that is much higher than that of ordinary combustibles, and a burning rate higher than that of Group B plastics. Examples of Group A plastics include the following:

ABS (acrylonitrile-butadiene-styrene copolymer) Acetal (polyformaldehyde)

Acrylic (polymethyl methacrylate)

Butyl rubber

EPDM (ethylene propylene rubber)

FRP (fiberglass-reinforced polyester)

Natural rubber (expanded)

Nitrile rubber (acrylonitrile butadiene rubber)

PET or PETE (polyethylene terephthalate)

Polybutadiene

Polycarbonate

Polyester elastomer

Polyethylene

Polypropylene

Polystyrene (expanded and unexpanded)

Polyurethane (expanded and unexpanded)

PVC (polyvinyl chloride greater than 15 percent plasticized, e.g., coated fabric unsupported film)

SAN (styrene acrylonitrile)

SBR (styrene butadiene rubber)

2303.7.2 Group B plastics. Group B plastics are plastic materials having a heat of combustion and a burning rate higher than that of ordinary combustibles, but not as high as those of Group A plastics. Examples of Group B plastics include the following:

Cellulosics (cellulose acetate, cellulose acetate butyrate, ethyl cellulose)

Chloroprene rubber

Fluoroplastics (ECTFE, ethylene-chlorotrifluoroethylene copolymer; ETFE, ethylene-tetrafluoroethylene copolymer; FEP, fluorinated ethylene-propylene copolymer)

Natural rubber (nonexpanded)

Nylon (Nylon 6, Nylon 6/6)

PVC (polyvinyl chloride greater than 5-percent, but not exceeding 15-percent plasticized)

Silicone rubber

2303.7.3 Group C plastics. Group C plastics are plastic materials having a heat of combustion and a burning rate similar to those of ordinary combustibles. Examples of Group C plastics include the following:

Fluoroplastics (PCTFE, polychlorotrifluoroethylene; PTFE, polytetrafluoro-ethylene)

Melamine (melamine formaldehyde)

Phenol

PVC (polyvinyl chloride, rigid or plasticized less than 5 percent, e.g., pipe, pipe fittings)

PVDC (polyvinylidene chloride)

PVDF (polyvinylidene fluoride)

PVF (polyvinyl fluoride)

Urea (urea formaldehyde)

2303.7.4 Limited quantities of Group A plastics in mixed commodities. Figure 2303.7.4 shall be used to determine the quantity of Group A plastics allowed to be stored in a package or carton or on a pallet without increasing the commodity classification.



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SECTION FC 2304: DESIGNATION OF HIGH-PILED STORAGE AREAS

NYC Administrative Code § 29-FC 2304

2304.1 General.

High-piled storage areas, and portions of high-piled storage areas for storage of a commodity class different from adjacent areas, shall be designed and specifically designated to contain Class I, Class II, Class III, Class IV or high-hazard commodities. The designation of a high-piled combustible storage area, or portion thereof intended for storage of a different commodity class, shall be based on the highest hazard commodity class stored except as provided in Section 2304.2.

2304.2 Designation based on engineering analysis. The designation of a high-piled combustible storage area, or portion thereof, is allowed to be based on a lower hazard class than that of the highest class of commodity stored when a limited quantity of the higher hazard commodity has been demonstrated by engineering analysis to be adequately protected by the sprinkler system provided. The engineering analysis shall consider the ability of the sprinkler system to deliver the higher density required by the higher hazard commodity. The higher density shall be based on the actual storage height of the pile or rack and the minimum allowable design area for sprinkler operation as set forth in the density/area figures provided in NFPA 13. The contiguous area occupied by the higher hazard commodity shall not exceed 120 square feet (11 m²), and additional areas of higher hazard commodity shall be separated from other such areas by 25 feet (7620 mm) or more. The sprinkler system shall be capable of delivering the higher density over a minimum area of 900 square feet (84 m²) for wet pipe systems and 1,200 square feet (11 m²) for dry pipe systems. The shape of the design area shall be in accordance with the construction codes, including the Building Code.



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Chapter 23: HIGH-PILED COMBUSTIBLE STORAGE
SECTION FC 2305: HOUSEKEEPING AND MAINTENANCE

NYC Administrative Code § 29-FC 2305

2305.1 Rack structures.

The structural integrity of racks shall be maintained.

2305.2 Ignition sources. Clearance from ignition sources shall be provided in accordance with Section 305.

2305.3 Smoking. Smoking shall be prohibited. Approved "No Smoking" signs shall be conspicuously posted in accordance with Section 310.

2305.4 Aisle maintenance. When restocking is not being conducted, aisles shall be kept clear of stored or waste material. Fire department access doors, aisles and exit doors shall not be obstructed. During restocking operations using manual stocking methods, a minimum unobstructed aisle width of 24 inches (610 mm) shall be maintained in 48-inch (1219 mm) or smaller aisles, and a minimum unobstructed aisle width of one-half of the required aisle width shall be maintained in aisles greater than 48 inches (1219 mm). During mechanical stocking operations, a minimum unobstructed aisle width of 44 inches (1118 mm) shall be maintained in accordance with Section 2306.9.

2305.5 Pile dimension and height limitations. Pile dimensions and height limitations shall comply with the requirements of Section 2307.3.

2305.6 Arrays. Arrays shall comply with the requirements of Section 2307.4.

2305.7 Flue spaces. Flue spaces shall comply with the requirements of Section 2308.3.



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Chapter 23: HIGH-PILED COMBUSTIBLE STORAGE
SECTION FC 2306: GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES

NYC Administrative Code § 29-FC 2306

2306.1 General.

Fire protection and life safety features for high-piled storage areas shall be in accordance with this section.

2306.2 Extent and type of protection. Where required by Table 2306.2, fire detection systems, smoke and heat removal, draft curtains and sprinkler design densities shall extend the lesser of 15 feet (4572 mm) beyond the high-piled storage area or to a permanent partition. Where portions of high-piled storage areas have different fire protection requirements because of commodity, method of storage or storage height, the fire protection features required by Table 2306.2 within this area shall be based on the most restrictive design requirements.

2306.3 Separation of high-piled storage areas. High-piled storage areas shall be separated from other portions of the building where required by Sections 2306.3.1 through 2306.3.2.2.

2306.3.1 Separation from other uses. Mixed occupancies shall be separated in accordance with the construction codes, including the Building Code.

2306.3.2 Multiple high-piled storage areas. Multiple high-piled storage areas shall be designed and installed in accordance with Section 2306.3.2.1 or 2306.3.2.2.

2306.3.2.1 Aggregate area. The aggregate of all high-piled storage areas within a building shall be used for application of Table 2306.2 unless such areas are separated from each other by 1-hour fire-resistance-rated fire barrier walls constructed in accordance with the construction codes, including the Building Code. Openings in such walls shall be protected by opening protective assemblies having a 1-hour fire protection rating.

2306.3.2.2 Multiclass high-piled storage areas. High-piled storage areas classified as Class I through Class IV not separated from high-piled storage areas classified as high hazard shall utilize the aggregate of all high-piled storage areas as high hazard for purposes of application of Table 2306.2. To be considered as separated, 1-hour

fire-resistance-rated fire barrier walls shall be constructed in accordance with the construction codes, including the Building Code. Openings in such walls shall be protected by opening protective assemblies having a 1-hour fire protection rating.

Exception: As provided for in Section 2304.2.
[SEE graphical material in printed version]

2306.4 Sprinkler systems. Sprinkler systems shall be provided in accordance with Sections 2307, 2308 and 2309.

2306.5 Fire detection. Where fire detection is required by Table 2306.2, an approved automatic fire detection system shall be installed throughout the high-piled storage area. The system shall be monitored and be in accordance with Section 907.

2306.6 Building access. Where building access is required by Table 2306.2, fire apparatus access roads in accordance with Section 503 shall be provided within 150 feet (45 720 mm) of all portions of the exterior walls of buildings used for high-piled storage.

Exception: Where fire apparatus access roads cannot be installed because of topography, railways, waterways, non-negotiable grades or other similar conditions, the commissioner may require additional fire protection.

2306.6.1 Access doors. Where building access is required by Table 2306.2, fire department access doors shall be provided in accordance with this section. Access doors shall be accessible without the use of a ladder.

2306.6.1.1 Number of doors required. A minimum of one access door shall be provided in each 100 lineal feet (30 480 mm), or fraction thereof, of the exterior walls which face required fire apparatus access roads.

2306.6.1.2 Door size and type. Access doors shall not be less than 3 feet (914 mm) in width and 6 feet 8 inches (2032 mm) in height. Roll-up doors shall not be used unless approved.

2306.6.1.3 Locking devices. Only approved locking devices shall be used.

2306.7 Smoke and heat removal. Where smoke and heat removal are required by Table 2306.2, smoke and heat vents shall be provided in accordance with the construction codes, including the Building Code. Where draft curtains are required by Table 2306.2, they shall be provided in accordance with the construction codes, including the Building Code.

2306.8 Fire department hose connections. Where exit passageways are required by the construction codes, including the Building Code for egress, a Class I standpipe system shall be provided in accordance with the construction codes, including the Building Code.

2306.9 Aisles. Aisles providing access to exits and fire department access doors shall be provided in high-piled storage areas exceeding 500 square feet (46 m²), in accordance with Sections 2306.9.1 through 2306.9.3. Aisles separating storage piles or racks shall comply with the requirements of NFPA 13. Aisles shall also comply with the requirements of the construction codes, including the Building Code.

Exception: Where aisles are precluded by rack storage systems, alternate methods of access and protection are allowed when approved.

2306.9.1 Width. Aisle width shall be in accordance with Sections 2306.9.1.1 and 2306.9.1.2.

Exceptions:

1. Cross aisles used only for employee access between aisles shall be a minimum of 24 inches (610 mm) wide.

2. Aisles separating shelves classified as shelf storage shall be a minimum of 30 inches (762 mm) wide.

2306.9.1.1 Sprinklered buildings. Aisles in buildings protected throughout by a sprinkler system shall be a minimum of 44 inches (1118 mm) wide. Aisles shall be a minimum of 96 inches (2438 mm) wide in high-piled storage areas that exceed 2,500 square feet (232 m²) in area, and that are accessible to the public and designated to contain high-hazard commodities.

Exception: Aisles in high-piled storage areas exceeding 2,500 square feet (232 m²) in area, that are accessible to the public and designated to contain high-hazard commodities, and that are protected throughout by a sprinkler system designed for multiple-row racks of high-hazard commodities, shall be a minimum of 44 inches (1118 mm) wide.

Aisles shall be a minimum of 96 inches (2438 mm) wide in areas accessible to the public where mechanical stocking methods are used.

2306.9.1.2 Nonsprinklered buildings. Aisles in buildings not protected throughout by a sprinkler system shall be a minimum of 96 inches (2438 mm) wide.

2306.9.2 Clear height. The required aisle width shall extend from floor to ceiling. Rack structural supports and catwalks are allowed to cross aisles at a minimum height of 6 feet 8 inches (2032 mm) above the finished floor level, provided that such supports do not interfere with fire department hose stream trajectory.

2306.9.3 Dead ends. Dead-end aisles shall be in accordance with the construction codes, including the Building Code.

2306.10 Portable fire extinguishers. Portable fire extinguishers shall be provided in accordance with Section 906.



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SECTION FC 2307: SOLID-PILED AND SHELF STORAGE

NYC Administrative Code § 29-FC 2307

2307.1 General.

Shelf storage and storage in solid piles, solid piles on pallets and bin box storage in bin boxes not exceeding 5 feet (1524 mm) in any dimension, shall be designed and maintained in accordance with Section 2306 and this section.

2307.2 Fire protection. Where sprinkler systems are required for solid-piled and shelf storage pursuant to Table 2306.2, a sprinkler system shall be provided in any area containing such storage that is enclosed in 1-hour fire-rated walls in accordance with the Building Code, or, if such storage is not enclosed within such fire-rated walls, throughout the building. Openings in such walls shall be protected by opening protective assemblies having 1-hour fire protection ratings. The design and installation of the sprinkler system and other applicable fire protection shall be in accordance with this code, the construction codes, including the Building Code, and NFPA 13.

2307.2.1 Shelf storage. Shelf storage greater than 12 feet (3658 mm) but less than 15 feet (4572 mm) in height shall be in accordance with the fire protection requirements set forth in NFPA 13. Shelf storage 15 feet (4572 mm) or more in height shall be protected in an approved manner with special fire protection, such as in-rack sprinklers.

2307.3 Pile dimension and height limitations. Pile dimensions, the maximum permissible storage height and pile volume shall be in accordance with Table 2306.2.

2307.4 Array. Where a sprinkler system design utilizes protection based on a closed array, array clearances shall be provided and maintained as specified by the standard used.



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SECTION FC 2308: RACK STORAGE

NYC Administrative Code § 29-FC 2308

2308.1 General.

Rack storage shall be designed and maintained in accordance with Section 2306 and this section. Bin boxes exceeding 5 feet (1524 mm) in any dimension shall be regulated as rack storage.

2308.2 Fire protection. Where a sprinkler system is required for rack storage pursuant to Table 2306.2, a sprinkler system shall be provided in any area containing such storage that is enclosed in 1-hour fire-rated walls in accordance with the Building Code, or, if such storage is not enclosed within such fire-rated walls, throughout the building. Openings in such walls shall be protected by opening protective assemblies having 1-hour fire protection ratings. The design and installation of the sprinkler system and other applicable fire protection shall be in accordance with this code, the construction codes, including the Building Code, and NFPA 13.

2308.2.1 Plastic pallets and shelves. Storage on plastic pallets or plastic shelves shall be protected by approved specially-engineered fire protection systems.

2308.2.2 Racks with solid shelving. Racks with solid shelving having an area greater than 32 square feet (3 m²), measured between approved flue spaces at all four edges of the shelf, shall be in accordance with this section.

Exceptions:

1. Racks with mesh, grated, slatted or similar shelves having uniform openings not more than 6 inches (152 mm) apart, comprising at least 50 percent of overall shelf area, and with approved flue spaces, are allowed to be treated as racks without solid shelves.
2. Racks used for the storage of combustible paper records, with solid shelving, shall be in accordance with NFPA 13.

2308.2.2.1 Fire protection. Fire protection for racks with solid shelving shall be in accordance with NFPA 13.

2308.3Flue spaces.Flue spaces shall be provided in accordance with Table 2308.3. Required flue spaces shall be maintained.

2308.4Column protection.Steel building columns shall be protected in accordance with NFPA 13.

2308.5Extra-high-rack storage systems.Approval of the commissioner shall be obtained prior to installing extra-high-rack combustible storage.

2308.5.1Fire protection.Buildings with extra-high-rack combustible storage shall be protected with a specially engineered sprinkler system. Extra-high-rack combustible storage shall be provided with additional special fire protection, such as separation from other buildings and additional built-in fire protection features and fire department access, when required by the commissioner.



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SECTION FC 2309: AUTOMATED STORAGE

NYC Administrative Code § 29-FC 2309

2309.1 General.

Automated storage shall be designed and maintained in accordance with this section.

2309.2Sprinkler systems.Where a sprinkler system is required by Table 2306.2, a sprinkler system shall be installed throughout the building. The design and installation of such system shall be in accordance with this code and the construction codes, including the Building Code.

2309.3Carousel storage.High-piled storage areas having greater than 500 square feet (46 m²) of carousel storage shall be provided with automatic shutdown in accordance with one of the following:

1. An automatic smoke detection system installed in accordance with the construction codes, including the Building Code, with coverage extending 15 feet (4575 mm) in all directions beyond unenclosed carousel storage systems and which sounds a local alarm at the operator's station and stops the carousel storage system upon the activation of a single detector.
2. An automatic smoke detection system installed in accordance with the construction codes, including the Building Code and within enclosed carousel storage systems, that sounds a local alarm at the operator's station and stops the carousel storage system upon the activation of a single detector.
3. A single dead-man-type control switch that allows the operation of the carousel storage system only when the operator is present. The switch shall be in the same room as the carousel storage system and located to allow for observation of the carousel system.



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SECTION FC 2310: RECORD STORAGE

NYC Administrative Code § 29-FC 2310

2310.1 General.

Records storage facilities used for the rack or shelf storage of combustible paper records greater than 12 feet (3658 mm) in height shall be designed, installed, operated and maintained in accordance with Sections 2306 and 2308 and NFPA 13. Palletized storage of records shall be designed, installed, operated and maintained in accordance with Section 2307.



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Chapter 24: TENTS AND OTHER MEMBRANE STRUCTURES

SECTION FC 2401: GENERAL

NYC Administrative Code § 29-FC 2401

2401.1 Scope.

This chapter shall govern membrane structures.

2401.2Permits.Permits shall be required as set forth in Section 105.6.



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Chapter 24: TENTS AND OTHER MEMBRANE STRUCTURES
SECTION FC 2402: DEFINITIONS

NYC Administrative Code § 29-FC 2402

2402.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

AIR-INFLATED STRUCTURE. A structure whose structural elements are inflated and maintained by elevated air pressure and are not occupiable spaces.

AIR-SUPPORTED STRUCTURE. A structure, the shape of which is attained and maintained by elevated air pressure, and the occupancy of which is within the area of elevated pressure.

MEMBRANE STRUCTURE. An air-inflated, air-supported, cable or frame-covered structure or tent, as defined in Chapter 31 of the Building Code.

TENT. A non-pressurized membrane structure of a fabric weather barrier supported by poles and guys in which the fabric weather barrier does not impart stability to the structure. Tents need not be fully enclosed on the sides.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 24: TENTS AND OTHER MEMBRANE STRUCTURES
SECTION FC 2404: TENTS AND OTHER MEMBRANE STRUCTURES

NYC Administrative Code § 29-FC 2404

2404.1 General.

All membrane structures shall be designed, installed, operated and maintained in accordance with this section and the construction codes, including the Building Code.

2404.2Flame-resistant treatment.The owner or agent shall file with the commissioner a certificate issued by an approved testing laboratory, certifying that the tent materials and their appurtenances, sidewalls, drops and tarpaulins, floor coverings, bunting, combustible decorative materials and effects, including sawdust when used on floors or passageways, shall be composed of flame-resistant material or shall be treated with a flame retardant in an approved manner and meet the requirements for flame resistance as determined in accordance with NFPA 701 and Chapter 8, and that such flame resistance is effective for the period specified by the permit.

2402.2.1Certification.An affidavit or affirmation shall be submitted to the commissioner and a copy retained on the premises on which the tent is located. The affidavit shall attest to the information required in Chapter 8 and the rules.

2404.2.2Label.Membrane structures shall have a label permanently affixed to them identifying the type and quality of the fabric or other material.

2404.3Location and access.Membrane structures shall be placed and afforded access for firefighting apparatus in accordance with this section.

2404.3.1Access.Fire apparatus access roads shall be provided in accordance with Section 503 and the Building Code.

2404.3.2Location.Membrane structures shall not be located within 20 feet (6096 mm) of parked vehicles or internal combustion engines. For the purpose of determining required distances, support ropes and guy wires shall be considered as part of the membrane structure.

2404.3.3Fire break.An unobstructed fire break not less than 12 feet (3658 mm) wide and free from guy ropes or other obstructions shall be maintained on all sides of all membrane structures unless otherwise approved by the commissioner.

2404.4Means of egress.Means of egress for membrane structures shall be in accordance with this section and the construction codes, including the Building Code.

2404.4.1Seating arrangements.Seating in membrane structures shall be in accordance with the construction codes, including the Building Code.

2404.4.2Exit openings from tents.Exit openings from tents shall remain open unless covered by a flame-resistant curtain. The curtain shall comply with the following requirements:

1. Curtains shall be free sliding on a metal support. The support shall be a minimum of 80 inches (2032 mm) above the floor level at the exit. The curtains shall be so arranged that, when open, no part of the curtain obstructs the exit.

2. Curtains shall be of a color, or colors, that contrasts with the color of the tent.

3. Curtains shall be flame resistant in accordance with Chapter 8.

2404.4.2.1Door operation in air-supported structures.During high winds exceeding 50 miles per hour (80 kph) or in snow conditions, the use of doors in air-supported structures shall be controlled to avoid excessive air loss. Doors shall not be left open.

2404.4.3Aisle arrangement and maintenance.The arrangement of aisles shall be subject to the approval of the commissioner and shall be maintained clear at all times.

2404.4.4Maintenance of means of egress.The required width of exits, aisles and passageways to a public street shall be maintained at all times. Guy wires, guy ropes and other support members shall not cross a means of egress at a height of less than 8 feet (2438 mm). The surface of means of egress shall be maintained in an approved manner.

2404.5Combustible materials.Hay, straw, shavings or similar combustible materials shall not be located within any membrane structure containing an assembly occupancy, except the materials necessary for the daily feeding and care of animals. Sawdust and shavings utilized for a public performance or exhibit shall not be prohibited provided the sawdust and shavings are kept damp. Combustible materials shall not be permitted under stands or seats at any time. The areas within and adjacent to the membrane structure shall be maintained clear of all combustible materials or vegetation that could create a fire hazard within 20 feet (6096 mm) from the structure. Combustible trash shall be removed at least once a day from the structure during the period the structure is occupied by the public.

2404.6Smoking.Smoking shall not be permitted in membrane structures. Approved "No Smoking" signs shall be conspicuously posted in accordance with Section 310.

2404.7Open or exposed flame.Open flame or other devices emitting flame, fire or heat or any flammable or combustible liquids, gas, charcoal or other cooking device or any other unapproved devices shall not be permitted inside or located within 20 feet (6096 mm) of a membrane structure while open to the public unless an open-flame permit has been issued.

2404.8Fireworks and special effects.Any fireworks or special effects displays in or near any membrane structure shall be conducted in accordance with Chapter 33.

2404.9Spot lighting.Spot or effect lighting shall only be by electricity, and all combustible construction located within 6 feet (1829 mm) of such equipment shall be protected with approved noncombustible insulation not less than 9.25 inches (235 mm) thick.

2404.10 Safety film. Motion pictures shall not be displayed in membrane structures unless the motion picture film is safety film.

2404.11 Clearance. There shall be a minimum clearance of at least 3 feet (914 mm) between the surface of a membrane structure and all contents therein.

2404.12 Portable fire extinguishers. Portable fire extinguishers shall be provided as required by Section 906.

2404.13 Fire protection equipment. Fire hose lines, water supplies and other auxiliary fire equipment shall be maintained at the site in such numbers and sizes as required by the commissioner.

2404.14 Occupant load. The occupant load allowed in a membrane structure, shall be determined in accordance with the construction codes, including the Building Code.

2404.15 Heating and cooking equipment. Heating and cooking equipment shall be in accordance with this section.

2404.15.1 Installation. Heating or cooking equipment, tanks, piping, hoses, fittings, valves, tubing and other related components shall be installed as set forth in the construction codes, including the Mechanical Code and the Fuel Gas Code.

2404.15.2 Venting. Gas, liquid and solid fuel-burning equipment designed to be vented shall be vented to the outdoors in accordance with the construction codes, including the Mechanical Code and the Fuel Gas Code. Such vents shall be equipped with approved spark arresters when required. Where vents or flues are used, all portions of the membrane structure shall be not less than 12 inches (305 mm) from the flue or vent.

2404.15.3 Location. Cooking and heating equipment shall not be located within 10 feet (3048 mm) of exits or combustible materials.

2404.15.4 Operations. Operations such as warming of foods, cooking demonstrations and similar operations that use solid flammables shall be approved by the commissioner.

2404.15.5 Cooking. Membrane structures in which cooking is performed shall be separated from other membrane structures by a minimum of 20 feet (6096 mm).

2404.15.6 Outdoor cooking. Outdoor cooking that produces sparks or grease-laden vapors shall not be performed within 20 feet (6096 mm) from a membrane structure.

2404.15.7 Electrical heating and cooking equipment. Electrical cooking and heating equipment shall comply with the requirements of the Electrical Code.

2404.16 LPG. The storage, handling and use of LPG and LPG equipment shall be in accordance with this section and Chapter 38.

2404.16.1 General. Stationary LPG installations, including tanks, piping, hoses, fittings, valves, tubing and other related components shall be approved and in accordance with Chapter 38.

2404.16.2 Location of containers. LPG containers shall be located outside the membrane structure. Pressure relief valves shall be pointed away from the membrane structure.

2404.16.2.1 Containers. Portable LPG containers shall have a minimum separation between the container and structure of not less than 10 feet (3048 mm).

2404.16.3 Protection and security. Portable LPG containers, piping, valves and fittings which are being used to fuel

LPG-fueled devices, equipment or systems inside a membrane structure shall be located outside the membrane structure and shall be secured from movement or other hazard.

2404.17 Flammable and combustible liquids. The storage of flammable and combustible liquids and the use of flammable-liquid-fueled equipment shall be in accordance with this section.

2404.17.1 Use. Flammable-liquid-fueled equipment shall not be used in membrane structures.

2404.17.2 Flammable and combustible liquid storage. Flammable and combustible liquids shall be stored outside the membrane structure in an approved manner not less than 50 feet (15 240 mm) from the membrane structure. Storage shall be in accordance with Chapter 34.

2404.17.3 Refueling. Refueling shall be performed at an approved location not less than 20 feet (6096 mm) from membrane structures.

2404.18 Display of liquid- and gas-fueled motor vehicles. Liquid- and gas-fueled vehicles and equipment may be displayed within a membrane structure in accordance with this section and Chapter 3.

2404.18.1 Batteries. Batteries shall be disconnected in an appropriate manner.

2404.18.2 Fuel systems. Vehicles or equipment shall not be fueled or defueled within the membrane structure.

2404.18.2.1 Quantity limit. Fuel in the fuel tank shall not exceed 1 gallon (3.8 L).

2404.18.2.2 Inspection. Fuel systems shall be inspected for leaks.

2404.18.2.3 Closure. Fuel tank openings shall be locked and sealed to prevent the escape of vapors.

2404.18.3 Location. The location of vehicles or equipment shall not obstruct means of egress.

2404.18.4 Display of CNG/LPG vehicles. When a compressed natural gas (CNG) or liquefied petroleum gas (LPG) powered vehicle is parked inside a membrane structure, all the following conditions shall be met:

1. The quarter-turn shutoff valve or other shutoff valve on the outlet of the CNG or LPG container shall be closed and the engine shall be operated until it stops. Valves shall remain closed while the vehicle is indoors.

2. The hot lead of the battery shall be disconnected.

3. Dual-fuel vehicles equipped to operate on gasoline and CNG or LPG shall comply with the requirements of this section and Sections 2404.18 through 2404.18.3 for gasoline-powered vehicles.

2404.18.5 Competitions and demonstrations. Liquid and gas-fueled vehicles and equipment used for competition or demonstration within a membrane structure shall comply with the requirements of Section 2404.18.5.1.

2404.18.5.1 Fuel storage and dispensing. Fuel for vehicles or equipment shall be stored and dispensed in an approved location outside of the membrane structure in accordance with Section 2404.17.2, Section 2404.17.3 and Chapter 22.

2404.19 Separation of generators. Generators and other internal combustion power sources shall be separated from membrane structures by a minimum of 20 feet (6096 mm) and shall be isolated from contact with the public by fencing, enclosure or other approved means.

2404.20 Fire guards. When the interest of public safety so requires, the commissioner may order the owner of any membrane structure in which a performance, exhibition, display, contest or other activity is to be conducted to provide

one or more fire guards or other qualified persons to remain on duty during the times such places are open to the public, or when such activity is being conducted. Such fire guards shall keep diligent watch for fires during the time such place is open to the public or such activity is being conducted and take prompt measures for extinguishment of fires that occur and assist in the evacuation of the public from the structure.

2404.21Vegetation removal.Vegetation shall be removed from the area occupied by a membrane structure, and from areas within 30 feet (9144 mm) of such structures.

2404.22Waste material.The floor surface inside membrane structures and the grounds outside and within a 30-foot (9144 mm) perimeter shall be kept clear of combustible waste. Such combustible waste shall not be permitted to accumulate and shall be stored in approved containers until removed from the premises and disposed of lawfully.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 25: TIRE REBUILDING AND TIRE STORAGE
SECTION FC 2501: GENERAL

NYC Administrative Code § 29-FC 2501

2501.1 Scope.

This chapter shall govern the design, operation and maintenance of tire rebuilding plants, tire storage and tire byproduct facilities.

2501.2Permits.Permits shall be required as set forth in Section 105.6.

2501.3General.Tire rebuilding plants, tire storage and tire byproduct facilities shall be designed, operated and maintained in accordance with this chapter, NFPA 13, NFPA 231D, and if applicable, Chapter 23.



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NYC Administrative Code § 29-FC 2502

2502.1 Terms defined in Chapter 2.

Terms used in this chapter and defined in Chapter 2 shall have the meanings defined therein.



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SECTION FC 2503: TIRE REBUILDING

NYC Administrative Code § 29-FC 2503

2503.1 Construction.

Tire rebuilding plants shall comply with the requirements of the construction codes, including the Building Code.

2503.2Location. Buffing operations shall be conducted in a room separated from the remainder of the building housing the tire rebuilding or tire recapping operations by a 1-hour fire barrier.

Exception: Buffing operations are not required to be separated where the following requirements are complied with:

1. Buffing operations are protected throughout by a continuous water-spray fire protection system directed at the point of cutting action.
2. Buffing machines are connected to particle-collecting systems providing a minimum air movement of 1,500 cubic feet per minute (cfm) (0.71m³/s) in volume and 4,500 feet per minute (fpm) (23 m/s) in-line velocity.
3. The collecting system shall discharge the rubber particles to an approved outdoor noncombustible or noncombustible container, which is emptied at frequent intervals to prevent overflow.

2503.3Cleaning. The buffing area shall be cleaned and combustible waste regularly removed and disposed of to prevent the accumulation of rubber particles.

2503.4Spray rooms and booths. Spray rooms or spray booths wherein flammable or combustible solvents are applied shall comply with the requirements of Chapter 15.



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SECTION FC 2504: PRECAUTIONS AGAINST FIRE

NYC Administrative Code § 29-FC 2504

2504.1 Open fires and flames prohibited.

It shall be unlawful in a tire storage yard to ignite or maintain an open fire or open flame.

2504.2 Hot work prohibited. It shall be unlawful in a tire storage yard to conduct hot work operations.

2504.3 Smoking prohibited. It shall be unlawful in a tire storage yard to smoke.

2504.4 Power lines. Tire storage piles shall not be located beneath electrical power lines having a voltage in excess of 750 volts or near lines supplying power to fire emergency systems where a fire in such storage piles would damage such lines.

2504.5 Reserved.

2504.6 Communications. A telephone not requiring a coin to operate, or other approved clearly identified means to notify the department, shall be provided at the facility in an approved location. A sign shall be conspicuously posted at or near the telephone indicating that all fires shall be immediately reported to the department, and setting forth the facility's address with cross-street reference and the fire department telephone number.



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SECTION FC 2505: OUTDOOR STORAGE

NYC Administrative Code § 29-FC 2505

2505.1 Individual piles.

Tire storage shall be restricted to individual piles not exceeding 5,000 square feet (464.5 m²) of continuous area. Piles shall not exceed 50,000 cubic feet (1416 m³) in volume or 10 feet (3048 mm) in height.

2505.2 Separation of piles. Individual tire storage piles shall be separated from other piles of salvage by a clear space of at least 40 feet (12 192 mm).

2505.3 Distance between piles of other stored products. Tire storage piles shall be separated by a clear space of at least 40 feet (12 192 mm) from piles of other stored product.

2505.4 Distance from lot lines and buildings. Tire storage piles shall be located at least 50 feet (15 240 mm) from lot lines and buildings unless the commissioner approves a lesser separation distance of tire storage piles in accordance with the criteria set forth in NFPA 231D.

2505.5 Fire breaks. Storage yards shall be maintained free from combustible ground vegetation for a distance of 40 feet (12 192 mm) from the stored material to grass and weeds; and for a distance of 100 feet (30 480 mm) from the stored product to brush and forested areas.

2505.6 Volume more than 150,000 cubic feet. Where the bulk volume of stored material is more than 150,000 cubic feet (4248 m³), fire breaks shall be provided around the perimeter of each group of storage piles in accordance with the following:

1. Individual storage piles shall be arranged so that there are not more than 16 individual storage piles per group.
2. Fire breaks shall at least be 75 feet (22 860 mm) wide.

2505.7 Location of storage. Outdoor waste tire storage shall not be located under bridges, elevated trestles, elevated

roadways or elevated railroads.



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SECTION FC 2506: FIRE DEPARTMENT ACCESS

NYC Administrative Code § 29-FC 2506

2506.1 Required access.

New and existing tire storage yards shall be provided with fire apparatus access roads in accordance with Section 503 and this section.

2506.2 Location. Fire apparatus access roads shall be located within all pile clearances identified in Section 2505.4 and within all fire breaks required in Sections 2505.5 and 2505.6. Access roadways shall be within 150 feet (45 720 mm) of any point in the storage yard where storage piles are located, at least 20 feet (6096 mm) from any storage pile.



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SECTION FC 2507: FENCING

NYC Administrative Code § 29-FC 2507

2507.1 Where required.

Where the bulk volume of stored material is more than 20,000 cubic feet (566 m³), a firmly anchored fence or other approved method of security that controls unauthorized access to the storage yard shall surround the storage yard.

2507.2Construction. The fence shall be constructed of approved materials and shall be at least 6 feet (1829 mm) high and provided with gates at least 20 feet (6096 mm) wide. Where gates are constructed, they shall comply with the vertical clearance requirements of Section 503.6.

2507.3Security. All gates to the storage yard shall be locked when the storage yard is not staffed.



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SECTION FC 2508: FIRE PROTECTION

NYC Administrative Code § 29-FC 2508

2508.1 Water supply.

A public or private fire protection water supply shall be provided in accordance with Section 508. The water supply shall be arranged such that any part of the storage yard can be reached by using not more than 300 feet (91 m) of hose.

2508.2 Portable fire extinguishers. Buildings or structures shall be provided with portable fire extinguishers in accordance with Section 906. Fuel-fired vehicles operating in the storage yard shall be equipped with a minimum 2-A:20-B:C rated portable fire extinguisher.



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SECTION FC 2509: INDOOR STORAGE ARRANGEMENT

NYC Administrative Code § 29-FC 2509

2509.1 Pile dimensions.

Where tires are stored on-tread, the dimension of the pile in the direction of the wheel hole shall not be more than 50 feet (15 240 mm). Tires stored adjacent to or along one wall shall not extend more than 25 feet (7620 mm) from that wall. Other piles shall not be more than 50 feet (15 240 mm) in width.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 26: WELDING AND OTHER HOT WORK
SECTION FC 2601: GENERAL

NYC Administrative Code § 29-FC 2601

2601.1 Scope.

This chapter shall govern welding, cutting and other torch and hot work operations and equipment.

2601.2Permits.Permits shall be required as set forth in Section 105.6.

2601.3Approved locations.Hot work shall be conducted only in the areas set forth in this section or approved by the commissioner.

2601.3.1Authorized areas.Hot work may be conducted in the following areas:

1. Areas designed for hot work operations.
2. Areas authorized for that purpose by the responsible person at the premises when precautions have been taken in compliance with the requirements of this chapter.

2601.3.2Restricted areas.Hot work shall not be conducted in the following areas unless approval has been obtained from the commissioner:

1. Areas where the sprinkler system is impaired.
2. Areas where there exists the potential of an explosive atmosphere, such as locations where flammable gases, liquids or vapors are present.
3. Areas with readily ignitable materials, such as storage of large quantities of bulk sulfur, baled paper, cotton, lint, dust or loose combustible materials.
4. On board marine vessels or watercraft at dock under construction or repair.

2601.4Containers. Compressed gas containers shall be designed, installed, operated and maintained in accordance with this chapter and Chapter 30.

2601.5Design and installation of oxygen-fuel gas systems. An oxygen-fuel gas system shall be designed and installed in accordance with NFPA 51 and ANSI Z49.1, as applicable.

2601.5.1Oxygen at construction sites. The storage and use of oxygen at a construction site shall additionally comply with the requirements of Chapter 14.

2601.6Torches. Torches and tips that utilize a flammable gas for hot work operations shall be listed.



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SECTION FC 2602: DEFINITIONS

NYC Administrative Code § 29-FC 2602

2602.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

FIRE GUARD. A person holding a certificate of fitness for such purpose, who is trained in and responsible for maintaining a fire watch and performing such fire safety duties as may be prescribed by the commissioner.

HOT WORK. Cutting, welding, thermit welding, brazing, soldering, grinding, thermal spraying, thawing pipe, cadwelding, installation of torch-applied roof systems or any other similar operation or activity.

HOT WORK AREA. The area exposed to sparks, hot slag, radiant heat, or convective heat as a result of hot work.

HOT WORK EQUIPMENT. Electric or gas welding or cutting equipment used for hot work.

HOT WORK PROGRAM AUTHORIZATIONS. Authorizations issued by the responsible person under a hot work program allowing welding or other hot work to be performed at the premises.

HOT WORK PROGRAM. A program, implemented by a responsible person designated by the owner of a building or structure in or on which hot work is being performed, to oversee and issue authorizations for such hot work for the purpose of preventing fire and fire spread.

RESPONSIBLE PERSON. A person trained in the fire safety hazards associated with hot work and in the necessary and appropriate measures to minimize those hazards, who is designated by the owner of a premises to authorize the performance of hot work at the premises.

TORCH-APPLIED ROOF SYSTEM. Bituminous roofing systems using membranes that are adhered by heating with a torch and melting asphalt back coating instead of mopping hot asphalt for adhesion.



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SECTION FC 2603: GENERAL REQUIREMENTS

NYC Administrative Code § 29-FC 2603

2603.1 General.

Hot work operations, including temporary and fixed hot work areas, shall be conducted in accordance with this chapter.

2603.1.1 Torch operations using LPG. The use of LPG for torch operations shall additionally comply with the requirements of Chapter 38.

2603.1.2 Torch operations using CNG. The use of CNG for torch operations shall additionally comply with the requirements of Chapter 35.

2603.2 Hot work program. Whenever hot work is performed in any building or structure, on a building roof or on a building setback, the owner shall ensure that such work is performed in accordance with this chapter and shall designate a responsible person to ensure compliance.

2603.2.1 Hot work program responsible person. The responsible person shall ensure that a permit has been obtained from the department when one is required, and ensure that the hot work is performed in compliance with the terms and conditions of the permit. The responsible person shall inspect the hot work site prior to issuing a hot work program authorization and periodically monitor the work as it is being performed to ensure there are no fire safety hazards.

2603.2.2 Responsible person supervision. Hot work operations shall be conducted under the general supervision of the responsible person.

2603.3 Hot work program authorization. A hot work program authorization bearing the signature of the responsible person shall be obtained for any project conducted on a premises involving hot work operations by the person in charge of such hot work operations. Hot work authorizations, issued by the responsible person, shall be available for inspection by any representative of the department during the performance of the work and for 48 hours after the work is complete.

2603.4 Qualifications of operators. An authorization for hot work operations shall not be issued unless the

individuals in charge of performing such operations are capable of performing such operations safely. Demonstration of a working knowledge of the provisions of this chapter shall constitute acceptable evidence of compliance with this requirement.

2603.4.1 Torch operations using oxygen and flammable gases. Torch operations using oxygen and a flammable gas, and any torch operation for torch-applied roof systems, shall be performed by a certificate of fitness holder.

Exception: Torch operations using oxygen and piped natural gas for manufacturing jewelry may be performed under the personal supervision of a certificate of fitness holder, who shall be responsible to regulate the pressure and flow of oxygen and natural gas to each torch.

2603.5 Records. The responsible person for the hot work area shall maintain "prework check" reports in accordance with Section 2604.3.1. These reports shall be maintained on the premises for a minimum of 48 hours after work is complete.

2603.6 Signage. Visible hazard identification signs shall be provided where required by Chapter 27. Where the hot work area is accessible to persons other than the operator of the hot work equipment, signs shall be posted in a conspicuous location to warn others before they enter the hot work area. Such signs shall read as follows: CAUTION HOT WORK IN PROGRESS STAY CLEAR.



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NYC Administrative Code § 29-FC 2604

2604.1 Protection of combustibles.

Combustible material and combustible waste shall be protected in accordance with Sections 2604.1.1 through 2604.1.9.

2604.1.1 Separation from combustibles. Hot work areas shall not be less than 35 feet (10 668 mm) from combustible materials and combustible waste or shall be provided with appropriate shielding to prevent sparks, slag or heat from igniting exposed combustibles.

2604.1.2 Openings. Openings or cracks in walls, floors, ducts or shafts within 35 feet (10 668 mm) of the hot work area shall be tightly covered to prevent the passage of sparks to adjacent combustible areas, or shielded by metal fire-resistant guards, or provided with curtains to prevent passage of sparks or slag.

2604.1.3 Housekeeping. Combustible waste shall not be allowed to accumulate on floors and other surfaces within the hot work area. Hot work areas shall be regularly cleaned and combustible waste removed and disposed of lawfully.

2604.1.4 Conveyor systems. Conveyor systems that are capable of carrying sparks to distant combustibles shall be shielded or shut down.

2604.1.5 Partitions. Partitions segregating hot work areas from other areas of the building shall be of noncombustible construction. In fixed hot work areas, the partitions shall be securely connected to the floor such that no gap exists between the floor and the partition. Partitions shall prevent the passage of sparks, slag, and heat from the hot work area.

2604.1.5.1 Motor-fuel dispensing facilities. The use of a torch within a repair garage located on a property upon which a motor-fuel dispensing facility is situated shall be conducted within a fire-rated enclosure. All doors of such enclosure shall be fireproof and self-closing.

2604.1.5.2 Repair garages. In a repair garage with a capacity for more than one vehicle, hot work shall be conducted within a fire-rated enclosure in compliance with Section 2604.1.5.1 or behind a noncombustible screen that is

positioned and of sufficient size to prevent the passage of sparks, slag, and heat from the hot work area.

2604.1.6 Floors. Fixed hot work areas shall have floors with noncombustible surfaces.

2604.1.7 Precautions in hot work. Hot work shall not be performed on a container or equipment that contains or has contained flammable liquids, gases or solids until the container or equipment has been thoroughly cleaned, inerted or purged; except that "hot tapping" shall be allowed at bulk plants and terminals on tanks and piping when such work is conducted by competent personnel. Hot work involving cutting, welding or heating of any flammable solid in any form shall be conducted only with the approval of the commissioner.

2604.1.8 Sprinkler protection. Sprinkler system protection shall not be shut off or impaired while hot work is performed unless approved by the commissioner. Where hot work is performed close to sprinklers, noncombustible barriers or damp cloth guards shall shield the individual sprinkler heads and shall be removed when the work is completed. If the work extends over several days, the shields shall be removed at the end of each workday.

2604.1.9 Fire detection systems. Approved special precautions shall be taken to avoid accidental operation of automatic fire detection systems.

2604.2 Fire watch. A fire watch shall be maintained and fire guards provided in accordance with Sections 2604.2.1 through 2604.2.7.

2604.2.1 When required. A fire watch shall be maintained during hot work operations. The fire watch shall continue for a minimum of 30 minutes after the conclusion of the work. The commissioner, or the responsible person implementing a hot work program, may extend the duration of the fire watch based on the hazards or work being performed.

2604.2.2 Location. The fire watch shall observe the entire hot work area. Hot work conducted in areas with vertical or horizontal fire exposures that are not observable by a single individual shall have additional personnel assigned to ensure that exposed areas are monitored.

2604.2.3 Duties. Individuals assigned to fire watch duty shall have fire extinguishing equipment readily available and shall be trained in the use of such equipment. Individuals assigned to fire watch duty shall be responsible for identifying and extinguishing spot fires and reporting such fires to the department.

2604.2.4 Fire training. The individuals responsible for performing the hot work, and for the fire watch, shall be trained in the use of portable fire extinguishers.

2604.2.5 Fire hoses. Where hose lines are required, they shall be connected, charged and ready for operation.

2604.2.6 Portable fire extinguishers. A minimum of one portable fire extinguisher complying with the requirements of Section 906 and with a minimum 2-A:20-B:C rating shall be readily accessible within 30 feet (9144 mm) of the location where hot work is performed and where the fire guards are positioned.

2604.2.7 Fire guards for torch operations. The fire watch for torch operations conducted at the following locations shall be conducted by fire guards:

1. Construction sites.
2. On any rooftop, or in connection with any torch-applied roof system operation.
3. In any building or structure, when the torch operation is conducted by a person holding a citywide permit for torch operations.

2604.2.7.1 Construction sites and torch-applied roof systems. A fire guard shall be provided for each torch operation at a construction site and in connection with torch-applied roofing system operations. A fire guard shall be provided for each torch in operation. An additional fire guard shall be provided on the floor or level below the torch operation.

2604.3 Area reviews. Before hot work is authorized and at least once per day while the authorization is in effect, the hot work area shall be inspected by the responsible person to ensure that it is a fire safe area.

2604.3.1 Pre-hot work check. A pre-hot work check shall be conducted by the responsible person prior to work to ensure that all equipment is safe and hazards are recognized and protected. A report of the check shall be kept at the work site during the work and made available for inspection by any representative of the department. The pre-hot work check shall be conducted at least once per day and shall verify the following:

1. The hot work equipment is in good working order.
2. The hot work area is clear of combustibles and flammable solids or that such materials present in the area are protected in accordance with Section 2604.1.1.
3. Exposed construction is of noncombustible materials or, if combustible, is protected.
4. Openings are protected.
5. Hot work area floors are clear of combustible waste accumulation.
6. Reserved.
7. Fire watch personnel, where required, are assigned.
8. Approved actions have been taken to prevent accidental activation of extinguishing and detection equipment in accordance with Sections 2604.1.8 and 2604.1.9.
9. Portable fire extinguishers and fire hoses (where provided) are operable and available.
10. All persons performing hot work possess certificates of fitness, where such certificates are required.
11. All persons performing hot work requiring a permit possess a site-specific permit or citywide permit, authorizing such work.



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TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 26: WELDING AND OTHER HOT WORK
SECTION FC 2605: GAS WELDING AND CUTTING

NYC Administrative Code § 29-FC 2605

2605.1 General.

Devices or attachments mixing air or oxygen with flammable gases prior to consumption, except at the burner or in a standard torch or blow pipe, shall not be allowed unless approved.

2605.2 Container storage, handling and use. Storage, handling and use of compressed gas containers shall be in accordance with this section and Chapter 30.

2605.3 Precautions. Containers, valves, regulators, hose and other apparatus and fittings for oxygen shall be kept free of oil or grease. Oxygen containers, apparatus and fittings shall not be handled with oily hands, oily gloves, or greasy tools or equipment.

2605.4 Acetylene gas. Acetylene gas shall not be piped except in approved container manifolds and container manifold connections, or piped or utilized at a pressure exceeding 15 pounds per square inch gauge (psig) (103 kPa). Acetylene gas stored in containers shall be dissolved in a suitable solvent. Acetylene gas shall not be brought in contact with unalloyed copper, except in a torch.

2605.5 Remote locations. Oxygen and fuel gas containers shall be located at a distance from the hot work area sufficient to protect such containers from heat, sparks, slag, or misdirection of the torch flame.

2605.6 Container shutoff. The torch valve shall be closed and the gas supply to the torch completely shut off when hot work operations are discontinued for a period of 1 hour or more.

2605.6.1 Emergency shut-off. Oxygen and fuel gas container valves shall be accessible to the torch operator or fire guard for immediate shut off of the gas supply in the event of an emergency.

2605.7 Prohibited operations. The following hot work operations shall be prohibited.

1. Welding or cutting operations supported by or resting on compressed gas containers.
2. Torch-applied roof system operations on roofs constructed of combustible materials.
3. Use of acetylene generators.

2605.8Tests. It shall be unlawful to test piping equipment or systems for leaks using a flame. Tests for suspected leaks in piping equipment and systems shall be made using soapy water.



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SECTION FC 2606: ELECTRIC ARC HOT WORK

NYC Administrative Code § 29-FC 2606

2606.1 General.

The frame or case of electric hot work machines, except internal-combustion-engine-driven machines, shall be grounded. Ground connections shall be mechanically strong and electrically adequate for the required current.

2606.2Return circuits.Welding current return circuits from the work to the machine shall have proper electrical contact at joints. The electrical contact shall be periodically inspected.

2606.3Disconnecting.Electrodes shall be removed from the holders when electric arc welding or cutting is discontinued for any period of 1 hour or more. The holders shall be located to prevent accidental contact and the machines shall be disconnected from the power source.

2606.4Emergency disconnect.A switch or circuit breaker shall be provided so that fixed electric welders and control equipment can be disconnected from the supply circuit. The disconnect shall be installed in accordance with the Electrical Code.

2606.5Damaged cable.Damaged cable shall be removed from service until properly repaired or replaced.



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Chapter 26: WELDING AND OTHER HOT WORK
SECTION FC 2609: PIPING MANIFOLDS AND HOSE SYSTEMS FOR FUEL GASES AND OXYGEN

NYC Administrative Code § 29-FC 2609

2609.1 General.

The use of piping manifolds, protective equipment and hose systems in oxygen-fuel gas systems, including natural gas supplied from a utility for use in an oxygen-fuel gas system, shall be designed, installed, operated and maintained in accordance with Section FC 2609, Chapter 30 and NFPA 51.

2609.2 Protection. Piping shall be protected against physical damage.

2609.3 Signage. Signage shall be provided for piping and hose systems as follows:

1. Aboveground piping systems shall be marked in accordance with ANSI A13.1.
2. Station outlets shall be marked to indicate their intended usage.
3. Signs shall be posted, indicating clearly the location and identity of section shutoff valves.

2609.4 Manifolding of containers. Oxygen manifolds shall be located at least 20 feet (6096 mm) away from combustible waste and combustible material, including oil and grease, and gas containers containing flammable gases, unless the gas containers are separated from each other by a fire partition.

2609.5 Identification of manifolds. Signs shall be posted for oxygen manifolds with service pressures not exceeding 250 psig (1379 kPa). Such signs shall read as follows: LOW-PRESSURE MANIFOLD DO NOT CONNECT
HIGH-PRESSURE CONTAINERS MAXIMUM PRESSURE 250 PSIG

2609.6 Clamps. Hose connections shall be clamped or otherwise securely fastened.

2609.7 Inspection. Hoses shall be inspected frequently for leaks, burns, wear, loose connections or other defects.

2609.8 Piped natural gas precautions. When piped natural gas is used with oxygen in any hot work operation, a listed protective device that serves as a combination flashback arrester and backflow check valve shall be provided at an approved location on both the natural gas and oxygen supply lines so as to ensure the safe operation of all devices, equipment and systems, including the utility gas meter. Where pressure of the piped natural gas supply is insufficient to ensure such safe operation, approved equipment shall be provided between the gas meter and the fuel consuming appliance that increases such pressure to the level required for such safe operation. Notwithstanding any section of this code to the contrary, such flashback arresters and check valves, and pressure increasing equipment, shall be installed as components of both new and existing installations. Installations involving the use of piped natural gas with oxygen in any hot work operation shall additionally comply with the rules.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 27: HAZARDOUS MATERIALS-GENERAL PROVISIONS
SECTION FC 2701: GENERAL

NYC Administrative Code § 29-FC 2701

2701.1 Scope.

This chapter shall govern the storage, handling, use and transportation of hazardous materials. Hazardous material storage, handling and use shall additionally comply with the requirements of the New York State Department of Environmental Conservation regulations, as set forth in 6 NYCRR Parts 595 through 614.

Exceptions:

1. The storage, handling and use in retail or wholesale sales occupancies of alcoholic beverages, medicines, foodstuffs, cosmetics, and consumer products containing not more than 50 percent by volume of water-miscible liquids and with the remainder of the solutions not being flammable, when packaged in individual containers not exceeding 1.3 gallons (5 L) in volume.
2. Storage, handling and use of hazardous materials for agricultural purposes as a pesticide, fertilizer or similar application, when approved for such use by the regulatory agency having jurisdiction and when such storage, handling and use is in accordance with the manufacturer's instructions.
3. Reserved.
4. Reserved.
5. Refrigerating systems when designed, installed, operated and maintained in accordance with the Mechanical Code and Section 606.
6. Stationary lead-acid batteries when in accordance with Section 608.
7. The storage, handling and use, including storage for sale, of fireworks, in accordance with Chapter 33.

8. The storage, handling and use of corrosives in Group M occupancies, including storage for sale, of personal and household products, when in the manufacturer's original consumer packaging.

9. The storage of distilled spirits and wines in wooden barrels and casks.

10. The use of wall-mounted dispensers containing alcohol-based hand rubs classified as Class I or Class II liquids when in accordance with Section 3405.5.

2701.1.1 Relationship with other chapters. This chapter shall apply to all hazardous materials, including those materials regulated elsewhere in this code, except that when specific requirements inconsistent with the provisions of this chapter are set forth elsewhere in this code, those specific requirements shall apply to the extent that they are inconsistent. Where a material is in multiple hazard categories, compliance with each hazard category shall be required. Where a material is both a physical hazard and a health hazard, compliance with the requirements for each hazard category shall be required.

2701.2 Material classification. Hazardous materials shall be classified by physical hazard, health hazard and/or other hazards associated with the properties of the material, or if the hazardous material is a mixture, with the hazards associated with the mixture as a whole. The commissioner may determine the appropriate hazard classification of a hazardous material, or may accept the classification set forth in nationally recognized standards, material safety data sheets, or other approved standard or method.

2701.2.1 Reserved.

2701.2.2 Reserved.

2701.2.2.1 Physical hazards. The material categories listed in this section are classified primarily as physical hazards.

1. Explosives and blasting agents.
2. Flammable and combustible liquids.
3. Flammable solids and gases.
4. Organic peroxide materials.
5. Oxidizer materials.
6. Pyrophoric materials.
7. Unstable (reactive) materials.
8. Water-reactive solids and liquids.
9. Cryogenic fluids.

2701.2.2.2 Health hazards. The material categories listed in this section are classified primarily as health hazards.

1. Highly toxic and toxic materials.
2. Corrosive materials.

2701.3 Reserved.

2701.4Retail and wholesale storage and display.For retail and wholesale storage and display of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in Group M occupancies and storage in Group S occupancies, see Section 2703.11.

2701.5Permits.Permits shall be required as set forth in Section 105.6.

2701.5.1Hazardous Materials Management Plan.The commissioner may require each application for a permit to include a Hazardous Materials Management Plan (HMMP). Such plan shall be drawn approximately to scale. The HMMP shall contain the following:

1. Storage, handling and use areas.
2. Maximum amount of each material stored, handled or used in each area.
3. Type and size of containers to be used for storage.
4. Location of valves and devices used to control and mitigate the accidental or unauthorized release of hazardous materials, and where such valves are of the self-indicating type, an illustration of their on and off position.
5. Piping through which hazardous material liquids or gases are transferred, other than utility-owned natural gas lines and low-pressure natural gas lines subject to compliance with the requirements of the Plumbing Code.
6. Reserved.
7. Storage plan showing the storage arrangement, including the location and dimensions of aisles.
8. The location and type of emergency equipment.
9. Such other information and documentation as the commissioner may prescribe.

2701.5.2Hazardous materials reporting.The storage of hazardous materials shall be reported as required by the New York State General Municipal Law Section 209-u. The commissioner may require an application for a permit pursuant to this code to include a copy of the current filing pursuant to such New York State General Municipal Law for the facility or premises for which a permit is sought.

2701.6Facility closure.Facilities shall be placed permanently out of service in accordance with Sections 2701.6.2 and 2701.6.3 and, as applicable, with the New York State Department of Environmental Conservation regulations as set forth in 6 NYCRR Sections 598.10 and 613.9.

2701.6.1Reserved.

2701.6.2Permanently out of service facilities.Facilities that are not operated for a period of more than one year or for which a permit has lapsed for more than one year shall be deemed to be permanently out of service and shall be closed in an approved manner.

2701.6.3Facility closure plan.The commissioner may require permittees to apply for approval to permanently close a facility that manufactures, stores, handles or uses hazardous materials. Such application shall be submitted at least 30 days prior to the planned closure of the facility. Such plan and/or such other requirements as the commissioner may prescribe shall demonstrate that hazardous materials that are manufactured, stored, handled or used in the facility will be lawfully disposed of in a manner that eliminates the need for further maintenance and any threat to public health and safety.



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SECTION FC 2702: DEFINITIONS

NYC Administrative Code § 29-FC 2702

2702.1 Definitions.

The following terms shall, for the purposes of this chapter, Chapters 28 through 44, and as used elsewhere in this code, have the meanings shown herein.

BOILING POINT. The temperature at which the vapor pressure of a liquid equals the atmospheric pressure of 14.7 pounds per square inch (psia) (101 kPa) or 760 mm of mercury. Where a boiling point is unavailable for the material in question, or for mixtures which do not have a constant boiling point, for the purposes of this classification, the 20-percent evaporated point of a distillation performed in accordance with ASTM D 86 shall be used as the boiling point of the liquid.

CARGO TANK. A vehicle other than a railroad tank car or marine vessel, with a tank mounted thereon or built as an integral part thereof, used for the transportation of flammable or combustible liquids, LPG or other hazardous materials, including self-propelled vehicles and full trailers and semi-trailers, with or without motive power, and carrying part or all of the load.

CEILING LIMIT. The maximum concentration of an airborne contaminant to which one may be exposed shall be as established by the regulations of the United States Department of Labor, as set forth in 29 CFR Part 1910.1000, or if not listed therein, the ceiling Recommended Exposure Limit (REL-C) concentrations published by the U.S. National Institute for Occupational Safety and Health (NIOSH), the Threshold Limit Value-Ceiling (TLV-C) concentrations published by the American Conference of Governmental Industrial Hygienists (ACGIH), the ceiling Workplace Environmental Exposure Level (WEEL-Ceiling) Guides published by the American Industrial Hygiene Association (AIHA), or other approved standard.

CHEMICAL. An element, chemical compound or mixture of elements or compounds or both.

CHEMICAL NAME. The scientific designation of a chemical in accordance with the nomenclature system

developed by the International Union of Pure and Applied Chemistry, the Chemical Abstracts Service rules of nomenclature, or a name that will clearly identify a chemical for the purpose of conducting an evaluation.

CLOSED CONTAINER. A container sealed by means of a lid or other device capable of preventing the escape of liquid, vapor or dusts in the ordinary course of storage, handling or use.

CONTAINER. For solid and liquid hazardous materials, a vessel of 60 gallons (227 L) or less in capacity used for storage or transportation. For compressed gases, a cylinder, pressure vessel or tank designed for pressures greater than one atmosphere at 68(degrees)F (20(degrees)C). Pipes, piping systems, engines and engine fuel tanks associated with solid or liquid hazardous materials or compressed gases, shall not be deemed to be containers if in active use.

CONTROL AREA. Spaces within a building that are enclosed and bounded by exterior walls, fire walls, fire barriers and roofs, or a combination thereof, where quantities of hazardous materials not exceeding the maximum allowable quantities per control area are stored, handled or used, including any dispensing.

DEFLAGRATION. An exothermic reaction, such as the extremely rapid oxidation of a flammable dust or vapor in air, in which the reaction progresses through the unburned material at a rate less than the velocity of sound. A deflagration can have an explosive effect.

DESIGN PRESSURE. The maximum gauge pressure that a pressure vessel, device, component or system is designed to withstand safely under the temperature and conditions of use.

DETACHED BUILDING. A separate single-story building, without a basement or crawl space, used for the storage, handling or use of hazardous materials and located an approved distance from other buildings or structures.

DISPENSING. The pouring or transferring by other means of any material from a container, tank or similar vessel, which would release dusts, fumes, mists, vapors or gases to the atmosphere, unless such release is prevented by a device, equipment or system designed for that purpose.

EXCESS FLOW CONTROL. A fail-safe system or other approved device, equipment or system designed to shut off flow caused by a rupture in a pressurized piping system.

EXHAUSTED ENCLOSURE. A device, typically consisting of a hood equipped with a fan that serves to capture and exhaust fumes, mist, vapors and gases generated at a workstation or other local environment. An exhausted enclosure does not include a room provided with general ventilation.

EXPLOSION. An effect produced by the sudden violent expansion of gases, whether or not accompanied by a shock wave or disruption, of enclosing materials, including the effects of the following sources of explosion:

1. Chemical changes such as rapid oxidation, deflagration or detonation, decomposition of molecules and runaway polymerization (usually detonations).
2. Physical changes such as pressure tank ruptures.
3. Atomic changes (nuclear fission or fusion).

FLAMMABLE VAPORS OR FUMES. The concentration of flammable constituents in air that exceeds 25 percent of their lower flammable limit (LFL).

GAS CABINET. A fully enclosed, noncombustible enclosure used to provide an isolated environment for compressed gas containers in storage or use, including any doors and access ports for exchanging containers and accessing pressure-regulating controls.

GAS ROOM. A separately ventilated, fully enclosed room in which only compressed gases and associated equipment and supplies are stored or used.

HANDLING. The movement of a material in its container, the removal of the material from its container, or any other action or process that may affect the material, other than its storage or use.

HAZARDOUS MATERIALS. Those chemicals or substances that are physical hazards or health hazards as defined and classified in this chapter, whether the materials are in usable or waste condition.

HEALTH HAZARD. A classification of a chemical for which there is statistically significant evidence that acute or chronic health effects are capable of occurring in exposed persons. The term "health hazard" includes chemicals that are toxic, highly toxic and corrosive.

IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH). The concentration of air-borne contaminants that poses a threat of death, immediate or delayed permanent adverse health effects, or effects that could prevent escape from such an environment, as established by the National Institute of Occupational Safety and Health (NIOSH) based on both toxicity and flammability. It generally is expressed in parts per million by volume (ppm v/v) or milligrams per cubic meter (mg/m³). If adequate data do not exist for precise establishment of IDLH concentrations, an independent certified industrial hygienist, industrial toxicologist, appropriate regulatory agency or other source approved by the commissioner shall make such determination.

INCOMPATIBLE MATERIALS. Materials that, if mixed or combined, could explode, generate heat, gases or other byproducts, or react in a way hazardous to life or property.

LABORATORY CHEMICAL. A material with a health, flammability and/or instability hazard ranking of 2, 3 or 4 as defined in NFPA 704.

LABORATORY UNIT. An enclosed space of a minimum one-hour fire rated construction, designed or used as a non-production laboratory. Laboratory units may include one or more separate laboratory work areas, and accessory storage rooms or spaces within or contiguous with the laboratory unit, such as offices and lavatories.

LIQUID. A material having a melting point that is equal to or less than 68(degrees)F (20(degrees)C) and a boiling point that is greater than 68(degrees)F (20(degrees)C) at 14.7 psia (101 kPa). When not otherwise identified, the term "liquid" includes both flammable and combustible liquids.

LOWER EXPLOSIVE LIMIT (LEL). See "Lower flammable limit."

LOWER FLAMMABLE LIMIT (LFL). The minimum concentration of vapor in air at which propagation of flame will occur in the presence of an ignition source. The LFL is sometimes referred to as LEL or lower explosive limit.

MATERIAL SAFETY DATA SHEET (MSDS). A document prepared in accordance with the regulations of the United States Department of Labor, as set forth in 29 CFR Part 1910.1200 or a federally approved state OSHA plan which sets forth information concerning a hazardous material.

MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA. The maximum amount of a hazardous material allowed to be stored or used within a control area inside a building or structure or an outdoor control area.

NON-PRODUCTION LABORATORY. A building or portion thereof wherein chemicals or gases are stored, handled or used on a non-production basis for testing, research, experimental, instructional or educational purposes.

NORMAL TEMPERATURE AND PRESSURE (NTP). A temperature of 70(degrees)F (21(degrees)C) and a pressure of 1 atmosphere.

OUTDOOR CONTROL AREA. An outdoor area that contains hazardous materials in amounts not exceeding the maximum allowable quantities of Table 2703.1.1(3) or 2703.1.1(4).

PERMISSIBLE EXPOSURE LIMIT (PEL). The maximum permitted 8-hour time-weighted average concentration of an air-borne contaminant as established by the regulations of the United States Department of Labor, as set forth in 29 CFR Part 1910.1000, the Recommended Exposure Limit (REL) concentrations published by the U.S. National Institute for Occupational Safety and Health (NIOSH), the Threshold Limit Value-Time Weighted Average (TLV-TWA) concentrations published by the American Conference of Governmental Industrial Hygienists (ACGIH), the Workplace Environmental Exposure Level (WEEL) Guides published by the American Industrial Hygiene Association (AIHA), or other approved standard.

PESTICIDE. A substance or mixture of substances, including fungicides, but excluding any product defined as a drug in the Federal Food, Drug and Cosmetic Act, intended for the purpose of preventing, repelling or killing pests or pest infestations, or for use as a plant regulator, defoliant or desiccant.

PRESSURE VESSEL. A closed vessel designed to operate at pressures above 15 psig (103 kPa).

SAFETY CAN. An approved container with a capacity of not more than 5-gallons (19 L) and equipped with a spring-closing lid and spout cover designed to relieve internal pressure when exposed to fire.

SECONDARY CONTAINMENT. A device, equipment or system designed to contain liquid or solid, that is external to and separate from the primary containment device, equipment or system.

SOLID. A material that has a melting point and decomposes or sublimates at a temperature greater than 68(degrees)F (20(degrees)C).

STANDARD CUBIC FEET (SCF). Cubic feet of gas at normal temperature and pressure (NTP).

SYSTEM. An assembly of devices, equipment, containers, appurtenances, pumps, compressors and connecting piping that is designed to perform a complex and/or complete function.

TANK, ATMOSPHERIC. A storage tank designed to operate at pressures from atmospheric through 1.0 pound per square inch gauge (760 mm Hg through 812 mm Hg) measured at the top of the tank.

TANK, PORTABLE. A container of more than 60-gallon (227 L) capacity, and designed to be loaded into or on or temporarily attached to a transport vehicle or marine vessel and equipped with skids, mountings or accessories to facilitate handling of the tank by mechanical means. It does not include any cargo tank or tank car.

TANK, STATIONARY. A container having not less than 1,000-pound (454 kg) water capacity, designed primarily for stationary installations, and not intended to be moved in the course of normal use.

VAPOR PRESSURE. The pressure exerted by a volatile fluid, as determined in accordance with ASTM D 323.



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SECTION FC 2703: GENERAL REQUIREMENTS

NYC Administrative Code § 29-FC 2703

2703.1 General.

Hazardous materials shall be manufactured, stored, handled, used and transported in accordance with this chapter.

2703.1.1Maximum allowable quantity per control area.The maximum allowable quantity per control area shall be as specified in Tables 2703.1.1(1) through 2703.1.1(4), and for retail and wholesale storage and display in Group M occupancies, and Group S storage, as specified in Section 2703.11.

2703.1.2Conversion.A conversion factor of 10 pounds per gallon (1.2 kg/L) shall be used to ascertain the weight per gallon of liquid when such weight is not provided or otherwise available to the commissioner.

2703.1.3Quantities not exceeding the maximum allowable quantity per control area.The storage, handling and use of hazardous materials in quantities not exceeding the maximum allowable quantity per control area indicated in Tables 2703.1.1(1) through 2703.1.1(4) shall be in accordance with Sections 2701 and 2703.

2703.1.4Quantities exceeding the maximum allowable quantity per control area.The storage, handling and use of hazardous materials in quantities exceeding the maximum allowable quantity per control area indicated in Tables 2703.1.1(1) through 2703.1.1(4) shall be in accordance with this chapter.

2703.1.5Additional specific requirements.The storage, handling and use of hazardous materials shall additionally comply with the specific requirements of Chapters 28 through 44, as applicable.

2703.2Devices, equipment, systems and processes.Devices, equipment, systems and processes utilized for storage, handling and use of hazardous materials shall be in accordance with Sections 2703.2.1 through 2703.2.8 and the regulations of the New York State Department of Environmental Conservation as set forth in 6 NYCRR Parts 596, 598, 599, 612, 613 and 614.

2703.2.1Design and construction of containers and tanks.Containers and tanks shall be designed and constructed in

accordance with approved standards. Containers, tanks and other means used for containment of hazardous materials shall be of an approved type.

2703.2.2 Piping, tubing, valves and fittings. Piping, tubing, valves and fittings conveying hazardous materials, except piping for inlet connections to prevent backflow or piping for pressure relief devices, shall be designed and installed in accordance with approved standards and Sections 2703.2.2.1 and 2703.2.2.2.

2703.2.2.1 Design and construction. Piping, tubing, valves, fittings and ancillary equipment used for hazardous materials shall be in accordance with the following:

1. Piping, tubing, valves, fittings and ancillary equipment shall be designed and fabricated from materials compatible with the material to be contained and shall be of adequate strength and durability to withstand the pressure, structural and seismic stress, and exposure to which they are subjected.

2. Piping and tubing shall be identified in accordance with ANSI A13.1 to indicate the material conveyed.

3. Readily accessible manual valves, or automatic remotely-activated fail-safe emergency shutoff valves, shall be installed on supply piping and tubing at the point of use and at the tank, container or other source of supply.

4. Emergency shutoff valves shall be clearly visible and readily accessible. A durable sign shall be conspicuously posted immediately adjacent to such valves that identifies their location.

5. Backflow prevention or check valves shall be provided when the backflow of hazardous materials could create a hazardous condition or cause the unauthorized discharge of hazardous materials.

6. Where gases or liquids having a hazard ranking of health hazard Class 3 or 4, flammability Class 4, or reactivity Class 3 or 4 in accordance with NFPA 704 are conveyed in pressurized piping above 15 pounds per square inch gauge (psig) (103 kPa), an approved means of leak detection and emergency shutoff or excess flow control shall be provided. Where the piping originates from within a hazardous material storage room or area, the excess flow control shall be located within the storage room or area. Where the piping originates from any other source of supply, the excess flow control shall be located as close to the source of supply as practical.

Exceptions:

1. Piping for inlet connections designed to prevent backflow.

2. Piping for pressure relief devices.

2703.2.2.2 Additional regulations for supply piping for health-hazard materials. Supply piping and tubing for gases and liquids having a health-hazard ranking of 3 or 4 in accordance with NFPA 704 shall be in accordance with ANSI B31.3 and the following:

1. Piping and tubing utilized for the transmission of highly toxic, toxic or highly volatile corrosive liquids and gases shall have welded, threaded or flanged connections throughout, except where connections are located within a ventilated enclosure if the material is a gas, or an approved method of drainage or containment is provided for connections if the material is a liquid.

2. Piping and tubing shall not be located within corridors, within any portion of a means of egress required to be enclosed in fire-resistance-rated construction or in concealed spaces in areas not classified as Group H occupancies.

Exception: Piping and tubing within the space defined by the walls of corridors and the floor or roof above or in concealed spaces above other occupancies when installed in accordance with Section 415.9.6.3 of the Building Code for Group H5 occupancies.

2703.2.3Devices, equipment and systems.Devices, equipment and systems, including required detection and alarm systems, installed or used in conjunction with the storage, handling and use of hazardous materials shall be listed or approved.

2703.2.4Installation of tanks.Installation of tanks shall be in accordance with Sections 2703.2.4.1 through 2703.2.4.2.1 and with the regulations of the New York State Department of Environmental Conservation as set forth in 6 NYCRR Sections 599.6, 614.7 and 614.13.

2703.2.4.1Underground tanks.Underground tanks used for the storage of liquid hazardous materials shall be provided with secondary containment.

2703.2.4.2Aboveground tanks.Aboveground stationary tanks used for the storage of liquid hazardous materials shall be located and protected in compliance with the requirements for outdoor storage of the particular material involved.

2703.2.4.2.1Marking.Aboveground stationary tanks shall be marked as required by Section 2703.5.

2703.2.5Empty containers and tanks.Empty containers and tanks previously used for the storage of hazardous materials shall be free from residual material and vapor in compliance with the requirements of DOTn, the Resource Conservation and Recovery Act (RCRA) or other governmental agencies having jurisdiction, or shall be stored, handled and used in compliance with the requirements of this code.

2703.2.6Maintenance.In addition to the requirements of Section 2703.2.3, all devices, equipment and systems used in conjunction with hazardous materials, including tanks, and detection and alarm systems, shall be maintained in good working order. Defective devices, equipment and systems shall be removed from service and repaired or replaced, or disposed of lawfully.

2703.2.6.1Tanks out of service for 30 days.Stationary tanks not used for a period of 30 days or more shall be properly safeguarded or removed in an approved manner. Such tanks shall have the fill line, gauge opening and pump connection secured against tampering. Vent lines shall be properly maintained. Stationary tanks containing flammable and combustible liquid out of service for a period of 30 days or more shall additionally comply with the requirements of Section 3404.2.13.

2703.2.6.1.1Return to service.Tanks that are returned to service shall be tested in an approved manner prior to use.

2703.2.7Liquid-level limit control.Atmospheric tanks that contain hazardous material liquids shall be equipped with a liquid-level limit control or other approved means to prevent overfilling of the tank.

Exception: Tanks with a capacity not exceeding 500 gallons (1893 L) that are filled from a source other than a cargo tank or tank car.

2703.2.8Seismic protection.Machinery and equipment utilizing hazardous materials shall be braced and anchored in accordance with the seismic design requirements of the Building Code for the seismic design category in which the machinery or equipment is classified.

2703.3Release and disposal of hazardous materials.It shall be unlawful to release or dispose of any amount of hazardous material, including pesticides and fertilizers used for domestic, agricultural or horticultural purposes, into a sewer, storm drain, ditch, drainage canal, creek, stream, river, lake or tidal waterway or on the ground, sidewalk, street, highway or into the atmosphere, except when allowed by federal, state or local regulations or permits, including the regulations of the New York State Department of Environmental Conservation, as set forth in 6 NYCRR Parts 595 and 611.

2703.3.1Reporting of discharges. When hazardous materials are released in quantities reportable under federal, state or local regulations, the commissioner shall be notified and the following procedures required in accordance with Sections 2703.3.1.1 through 2703.3.1.4.

2703.3.1.1Records. Accurate records shall be kept of the discharge of hazardous materials.

2703.3.1.2Preparation. Provisions shall be made for controlling and mitigating accidental discharges.

2703.3.1.3Control. When a discharge is caused by a container failure, the container shall be repaired or removed from service.

2703.3.1.4Responsibility for cleanup. The owner of a facility or other person responsible for an accidental discharge shall undertake all actions necessary to remediate such discharge. When deemed necessary by the commissioner, cleanup may be initiated by the department or other city agency. Costs associated with such cleanup shall be borne by the owner or other person responsible for the discharge. The department shall give such owner or other person written notice of such costs and an opportunity to be heard. Payment of such costs shall be recoverable in any manner authorized by law, rule or regulation. Failure to pay such costs shall cause a lien to be placed upon the premises pursuant to the provisions of Section 117.4 of this code, as applicable, or against vehicles or other personal property in accordance with the provisions applicable thereto. Nothing in this section shall be construed to preclude the implementation of response measures, or the recovery of the costs of such measures, by any other city agency, either prior or subsequent to any response measure implemented pursuant to this section.

2703.4Material Safety Data Sheets. Material Safety Data Sheets (MSDS) shall be readily available on the premises for hazardous materials regulated by this chapter.

2703.5Hazard identification signs. Unless otherwise exempted by the commissioner, hazard identification signs as set forth in NFPA 704 for the specific material contained shall be conspicuously affixed on stationary containers and aboveground tanks and at entrances to locations where hazardous materials are stored, handled or used, including dispensing, in quantities requiring a permit, including locations where such materials are dispensed, and at such other locations as may be designated by the commissioner.

2703.5.1Markings. Individual containers, cartons or packages shall be conspicuously marked or labeled in an approved manner. Signs reading "COMPRESSED GAS" shall be conspicuously posted at the entrance to rooms or on cabinets containing compressed gases.

2703.6Signs. Signs and markings required by Sections 2703.5 and 2703.5.1 shall not be obscured or removed, shall be in English as a primary language or in symbols allowed by this code, shall be durable, and the size, color and lettering shall be acceptable to the commissioner.

2703.7Sources of ignition. Sources of ignition shall comply with the requirements of Sections 2703.7.1 through 2703.7.3.

2703.7.1Smoking. It shall be unlawful to smoke in the following locations, and "No Smoking" signs shall be provided in English as a primary language and in symbols complying with the requirements of Section 310:

1. In rooms or areas where hazardous materials are stored or used in open systems in amounts requiring a permit.
2. Within 25 feet (7620 mm) of outdoor hazardous material storage, handling and use areas, including dispensing areas.
3. Facilities or areas within facilities in which smoking has been entirely prohibited shall have "No Smoking" signs conspicuously placed at all entrances to the facility or area. Facilities or areas within facilities in which smoking is

permitted in designated areas shall have signs indicating that smoking is permitted in designated areas only.

4. In rooms or areas where flammable or combustible hazardous materials are stored, handled or used.

2703.7.2Open flames.Open flames and devices that generate or operate at a high temperature shall be kept a safe distance from hazardous material in storage or use.

2703.7.3Industrial trucks.Powered industrial trucks used in areas designated as hazardous (classified) locations in accordance with the Electrical Code shall be listed and labeled in accordance with NFPA 505.

2703.8Construction requirements.Buildings, structures, control areas, enclosures and cabinets for hazardous materials shall be designed and constructed in accordance with Sections 2703.8.1 through 2703.8.6.2.

2703.8.1Buildings.Buildings, structures, or portions thereof, in which hazardous materials are stored, handled or used shall be constructed in accordance with the construction codes, including the Building Code.

2703.8.2Required detached buildings.Group H occupancies containing quantities of hazardous materials in excess of those set forth in Table 2703.8.2 shall be in detached buildings.

2703.8.3Control areas.Control areas shall be those spaces within a building or structure and outdoor areas where quantities of hazardous materials not exceeding the maximum quantities allowed by this code are stored, handled or used.

2703.8.3.1Construction requirements.Control areas shall be separated from each other by not less than a 1-hour fire barrier constructed in accordance with the construction codes, including the Building Code.

2703.8.3.2Number.The maximum number of control areas within a building or structure shall be in accordance with Table 2703.8.3.2.

2703.8.3.3Separation.The required fire-resistance rating for fire barrier assemblies shall be in accordance with Table 2703.8.3.2. The floor construction of the control area and construction supporting the floor of the control area shall have a minimum 2-hour fire-resistance rating.

2703.8.3.4Hazardous materials in Group M and S occupancies.The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials allowed within a single control area of a Group M or S occupancy is allowed to exceed the maximum allowable quantities specified in Tables 2703.1.1(1) and 2703.1.1(2) without classifying the building or use as a Group H occupancy, provided that the materials are stored in accordance with Section 2703.11.

2703.8.4Gas rooms.Where a gas room is provided to comply with the requirements of Chapter 37, the gas room shall be in accordance with Sections 2703.8.4.1 and 2703.8.4.2.

2703.8.4.1Construction.Gas rooms shall be protected with a sprinkler system. Gas rooms shall be separated from the remainder of the building in accordance with the construction codes, including the Building Code, based on the occupancy group into which the building has been classified.

2703.8.4.2Ventilation system.The ventilation system for gas rooms shall be designed to operate at a negative pressure relative to the surrounding area. Highly toxic and toxic gases shall additionally comply with the requirements of Section 3704.2.2.6. The ventilation system shall be installed in accordance with the construction codes, including the Mechanical Code.

2703.8.5Exhausted enclosures.Where an exhausted enclosure is used to increase maximum allowable quantity per control area or when the location of hazardous materials in exhausted enclosures is provided to comply with the

requirements of Chapter 37, the exhausted enclosure shall be in accordance with Sections 2703.8.5.1 through 2703.8.5.3.

2703.8.5.1 Construction. Exhausted enclosures shall be of noncombustible construction.

2703.8.5.2 Ventilation. The ventilation system for exhausted enclosures shall be designed to operate at a negative pressure relative to the surrounding area. Ventilation systems used for highly toxic and toxic gases shall additionally comply with the requirements of Sections 3704.1.2(1), 3704.1.2(2) and 3704.1.2(3). The ventilation system shall be installed in accordance with the construction codes, including the Mechanical Code.

2703.8.5.3 Fire extinguishing system. Exhausted enclosures where flammable materials are used shall be protected by a fire extinguishing system in accordance with Chapter 9 and the construction codes, including the Building Code.

2703.8.6 Gas cabinets. Where a gas cabinet is used to increase the maximum allowable quantity per control area or when the location of compressed gases in gas cabinets is provided to comply with the requirements of Chapter 37, the gas cabinet shall be in accordance with Sections 2703.8.6.1 through 2703.8.6.3.

2703.8.6.1 Construction. Gas cabinets shall be constructed of not less than 0.097-inch (2.5 mm) (No. 12 gauge) steel; provided with self-closing limited access ports or noncombustible windows to give access to equipment controls; and have all interior surfaces treated, coated or constructed of materials that are compatible with the hazardous materials stored.

2703.8.6.2 Ventilation. The ventilation system for gas cabinets shall be designed to operate at a negative pressure relative to the surrounding area. Ventilation systems used for highly toxic and toxic gases shall additionally comply with the requirements of Sections 3704.1.2(1), 3704.1.2(2) and 3704.1.2(3). The ventilation system shall be installed in accordance with the construction codes, including the Mechanical Code.

2703.8.6.3 Maximum number of containers per gas cabinet. The number of containers stored in a single gas cabinet shall not exceed three.

2703.8.7 Hazardous materials storage cabinets. Where storage cabinets are used to increase maximum allowable quantity per control area or to comply with the requirements of this chapter, such cabinets shall be in accordance with Sections 2703.8.7.1 and 2703.8.7.2.

2703.8.7.1 Construction. All interior surfaces of such cabinets shall be treated, coated or constructed of materials that are nonreactive with the hazardous material stored. Cabinets shall either be listed in accordance with UL 1275 as suitable for the intended storage or constructed in accordance with the following:

1. Cabinets shall be of steel having a thickness of not less than 0.0478 inch (1.2 mm) (No. 18 gage). The cabinet, including the door, shall be double walled with a 1.5 inch (38 mm) airspace between the walls. Joints shall be riveted or welded and shall be tight fitting. Doors shall be well fitted, self-closing and equipped with a selflatching device.

2. The bottoms of cabinets utilized for the storage of liquids shall be liquid tight to a minimum height of 2 inches (51 mm).

2703.8.7.1.1 Electrical equipment. Electrical equipment and devices within cabinets used for the storage of hazardous gases or liquids shall be in accordance with the Electrical Code.

2703.8.7.2 Warning markings. Cabinets shall be clearly identified in an approved manner with red letters on a contrasting background to read: HAZARDOUS-KEEP FIRE AWAY.

2703.9 General safety precautions. General precautions for the safe storage, handling and use of hazardous materials shall be in accordance with Sections 2703.9.1 through 2703.9.9.

2703.9.1 Personnel training and written procedures. Persons responsible for the operation of areas in which hazardous materials are stored, handled or used, including dispensing, shall be familiar with the chemical nature of the materials and the appropriate mitigating actions necessary in the event of fire, leak or spill. A certificate of fitness shall be required when specified by this code or the rules or as a condition of a permit.

2703.9.1.1 Fire department liaison. One or more responsible persons shall be designated to serve as a liaison to the department in connection with any emergency response to the premises, for purposes of providing access to the location where hazardous materials are stored on the premises, providing access to Material Safety Data Sheets, and otherwise assisting in the development and implementation of emergency procedures. The names and telephone numbers of such responsible persons shall be included on the annual inventory required by New York State General Municipal Law Section 209-u and on a hazardous materials management plan when such plan is required. Telephone numbers shall include a 24-hour contact number for such responsible persons.

2703.9.2 Security. Storage, handling and use areas, including dispensing areas, shall be secured against unauthorized entry and safeguarded in a manner approved by the commissioner.

2703.9.3 Protection from vehicles. Posts or other approved means shall be provided to protect storage tanks and connected piping, valves and fittings; use areas; and dispensing areas subject to vehicular damage in accordance with Section 312.

2703.9.4 Electrical wiring and equipment. Electrical wiring and equipment shall be installed and maintained in accordance with the Electrical Code.

2703.9.5 Static accumulation. When conditions exist that could cause a flammable mixture to be ignited by static electricity, equipment shall be grounded and all other necessary and appropriate actions taken to prevent the accumulation of a static charge.

2703.9.6 Protection from light. Materials that are sensitive to light shall be stored in containers designed to protect them from such exposure.

2703.9.7 Shock protection. Materials that are sensitive to shock shall be padded, suspended or otherwise protected against jarring, seismic activity or other movement.

2703.9.8 Separation of incompatible materials. Incompatible materials shall be separated while in storage or use except for stored materials in containers having a capacity of not more than 5 pounds (2 kg) or 0.5 gallon (2 L). Separation shall be accomplished by:

1. Segregating incompatible materials in storage by a distance of not less than 20 feet (6096 mm).
2. Isolating incompatible materials in storage by a noncombustible partition extending not less than 18 inches (457 mm) above and to the sides of the stored material.
3. Storing liquid and solid materials in hazardous material storage cabinets. Materials that are incompatible shall not be stored in the same cabinet.
4. Storing compressed gases in gas cabinets or exhausted enclosures in accordance with Sections 2703.8.5 and 2703.8.6. Materials that are incompatible shall not be stored within the same cabinet or exhausted enclosure.

2703.9.9 Shelf storage. Shelving shall be of substantial construction, and shall be braced and anchored in accordance with the seismic design requirements of the construction codes, including the Building Code, for the seismic zone in which the material is located. Shelving shall be treated, coated or constructed of materials that are compatible with the hazardous materials stored. Shelves shall be provided with a lip or guard when used for the storage of individual

containers.

Exceptions:

1. Storage in hazardous material storage cabinets or laboratory furniture specifically designed for such use.
2. Storage of hazardous materials in amounts not requiring a permit in accordance with Section 105.6.

Shelf storage of hazardous materials shall be maintained in an orderly manner.

2703.10 Handling. In addition to the requirements of Section 2703.2, the handling of hazardous materials in corridors or exit enclosures shall be in accordance with Sections 2703.10.1 through 2703.10.3.6.

2703.10.1 Valve protection. Hazardous material gas containers and tanks moved during handling shall have their protective caps in place. Containers and tanks of highly toxic or toxic compressed gases shall have their valve outlets capped or plugged with an approved closure device in accordance with Chapter 30.

2703.10.2 Carts and trucks required. Containers of hazardous materials having a hazard ranking of 3 or 4 pursuant to NFPA 704, and liquids in containers exceeding 5 gallons (19 L), shall be moved during handling on a cart or truck meeting the requirements of Section 2703.10.3, when moved through any corridor or exit enclosure.

Exceptions:

1. Two hazardous material liquid containers, which are hand carried in acceptable safety carriers.
2. Not more than four drums not exceeding 55 gallons (208 L) each, which are moved by suitable drum trucks.
3. Containers of compressed gases, which are moved by approved hand trucks, and containers not exceeding 25 pounds (11 kg), which are hand carried.
4. Solid hazardous materials not exceeding 100 pounds (45 kg), which are moved by approved hand trucks, and a single container not exceeding 50 pounds (23 kg), which is hand carried.

2703.10.3 Carts and trucks. Carts and trucks required by Section 2703.10.2 to be used to move hazardous materials shall be designed and constructed in accordance with Sections 2703.10.3.1 through 2703.10.3.6.

2703.10.3.1 Design. Carts and trucks used to move hazardous materials shall be designed to provide a stable base for such movement during handling and shall have a means of restraining containers to prevent accidental dislodgement. Compressed gas containers placed on carts and trucks shall be individually restrained.

2703.10.3.2 Speed-control devices. Carts and trucks shall be provided with a device that will enable the operator to safely control movement by providing stops or speed reduction devices.

2703.10.3.3 Construction. The cart or truck shall be sturdily constructed of materials compatible with the material being moved.

2703.10.3.4 Spill control. Carts and trucks used to move liquids shall be capable of containing a spill from the largest single container being moved.

2703.10.3.5 Attendance. Carts and trucks used to move materials shall not obstruct or be left unattended in any corridor, exit enclosure, or other means of egress.

2703.10.3.6 Incompatible materials. Incompatible materials shall not be moved during handling on the same cart or truck.

2703.10.4Emergency alarm. Where hazardous materials having a hazard ranking of 3 or 4 pursuant to NFPA 704 are handled through corridors or exit enclosures, there shall be an emergency telephone system, a local manual alarm station or an approved alarm-initiating device at not more than 150-foot (45 720 mm) intervals throughout the handling route, and at each exit doorway throughout the handling route. The signal shall be relayed to an approved central station or remote supervising station or a constantly attended on-site location and shall also initiate a local audible alarm.

2703.11Group M storage and display and Group S storage. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials stored and displayed within a single control area of a Group M occupancy, or an outdoor control area, or stored in a single control area of a Group S occupancy, may exceed the maximum allowable quantity per control area indicated in Section 2703.1 when stored and displayed in accordance with Sections 2703.11.1 through 2703.11.3.10.

2703.11.1Maximum allowable quantity per control area in Group M or S occupancies. The aggregate amount of nonflammable solid and nonflammable or noncombustible liquid hazardous materials stored and displayed within a single control area of a Group M occupancy or stored in a single control area of a Group S occupancy shall not exceed the amounts set forth in Table 2703.11.1.

2703.11.2Maximum allowable quantity per outdoor control area in Group M or S occupancies. The aggregate amount of nonflammable solid and nonflammable or noncombustible liquid hazardous materials stored and displayed within a single outdoor control area of a Group M occupancy shall not exceed the amounts set forth in Table 2703.11.1.

2703.11.3Storage and display. Storage and display shall be in accordance with Sections 2703.11.3.1 through 2703.11.3.10.

2703.11.3.1Density. Storage and display of solids shall not exceed 200 pounds per square foot (976 kg/m²) of floor area actually occupied by solid merchandise. Storage and display of liquids shall not exceed 20 gallons per square foot (0.50 L/m²) of floor area

actually occupied by liquid merchandise.

2703.11.3.2Storage and display height. Display height shall not exceed 6 feet (1829 mm) above the finished floor in display areas of Group M occupancies. Storage height shall not exceed 8 feet (2438 mm) above the finished floor in storage areas of Group M and Group S occupancies.

2703.11.3.3Container location. Individual containers less than 5 gallons (19 L) or less than 25 pounds (11 kg) shall be stored or displayed on pallets, racks or shelves.

2703.11.3.4Racks and shelves. Racks and shelves used for storage or display shall be in accordance with Section 2703.9.9.

2703.11.3.5Container type. Containers shall be approved for the intended use and identified as to their content.

2703.11.3.6Container size. Individual containers shall not exceed 100 pounds (45 kg) for solids or 10 gallons (38 L) for liquids in storage and display areas.

2703.11.3.7Incompatible materials. Incompatible materials shall be separated in accordance with Section 2703.9.8.

2703.11.3.8Floors. Floors shall be in accordance with Section 2704.12.

2703.11.3.9Aisles. Aisles 4 feet (1219 mm) in width shall be maintained on three sides of the storage or display area.

2703.11.3.10Signs. Hazard identification signs shall be provided in accordance with Section 2703.5.

2703.12 Outdoor control areas. Outdoor control areas for hazardous materials in amounts not exceeding the maximum allowable quantity per outdoor control area shall be in compliance with the following requirements:

1. Outdoor control area shall be kept free from vegetation, rubbish and other combustible waste, and combustible materials not necessary to the storage. The area surrounding an outdoor control area shall be kept clear of such materials for a minimum of 15 feet (4572 mm).

2. Outdoor control areas shall be located at least 5 feet (1524 mm) from a building opening and at least 15 feet (4572 mm) from Group A occupancies. Outdoor control areas shall be located at least 20 feet (6096 mm) from a lot line, public street or private road.

Exception: A 2-hour fire-resistance-rated wall without openings extending not less than 30 inches (762 mm) above and to the sides of the storage area is allowed in lieu of such distances required from a building opening, lot line, public street or private road.

3. Where a property exceeds 10,000 square feet (929 m²), there may be two outdoor control areas separated by a minimum distance of 50 feet (15 240 mm), when approved.

4. Where a property exceeds 35,000 square feet (3252 m²), there may be multiple outdoor control areas, separated a minimum distance of 50 feet (15 240 mm), when approved.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 27: HAZARDOUS MATERIALS-GENERAL PROVISIONS
SECTION FC 2704: STORAGE

NYC Administrative Code § 29-FC 2704

2704.1 General.

Hazardous materials in amounts exceeding the maximum allowable quantity per control area as set forth in Section 2703.1 shall be stored in accordance with Sections 2701, 2703 and 2704. Hazardous materials in amounts not exceeding the maximum allowable quantity per control area as set forth in Section 2703.1 shall be stored in accordance with Sections 2701 and 2703. Nonflammable solid and nonflammable and noncombustible liquid hazardous materials in Group M retail occupancies and Group S wholesale storage shall be stored and displayed in accordance with Section 2703.11.

2704.2 Spill control and secondary containment for liquid and solid hazardous materials. Buildings, structures, rooms or areas used for the storage of liquid or solid hazardous materials shall be provided with spill control and secondary containment in accordance with Sections 2704.2.1 through 2704.2.3.

Exception: Outdoor storage of containers on approved containment pallets in accordance with Section 2704.2.3.

2704.2.1 Spill control for hazardous material liquids. Buildings, structures, rooms or areas used for the storage of hazardous material liquids in individual vessels having a capacity of more than 55 gallons (208 L), or in which the aggregate capacity of multiple vessels exceeds 1,000 gallons (3785 L), shall be provided with spill control to prevent the flow of liquids to adjoining areas. Floors in indoor locations, and similar surfaces in outdoor locations, shall be constructed to contain a spill from the largest single vessel by one of the following methods:

1. Liquid-tight sloped or recessed floors in indoor locations or similar protection in outdoor locations.
2. Liquid-tight floors and raised or recessed sills or dikes in indoor locations or similar protection in outdoor locations.
3. Sumps and collection systems.

4. Other approved engineered systems. Except for surfacing, the floors, sills, dikes, sumps and collection systems shall be constructed of noncombustible material, and the liquid-tight seal shall be compatible with the material stored. When liquid-tight sills dikes are provided, they are not required at perimeter openings having an open-grate trench across the opening that connects to an approved collection system.

2704.2.2 Secondary containment for hazardous material liquids and solids. Where required by Table 2704.2.2, buildings, structures, rooms or areas used for the storage of hazardous materials liquids or solids shall be provided with secondary containment in accordance with this section when the capacity of an individual vessel or the aggregate capacity of multiple vessels exceeds the following quantities:

1. Liquids: Capacity of an individual vessel exceeds 55 gallons (208 L) or the aggregate capacity of multiple vessels exceeds 1,000 gallons (3785 L).

2. Solids: Capacity of an individual vessel exceeds 550 pounds (250 kg) or the aggregate capacity of multiple vessels exceeds 10,000 pounds (4540 kg).

2704.2.2.1 Containment and drainage methods. The building, structure, room or area shall contain or drain the hazardous materials and fire protection water through the use of one of the following methods:

1. Liquid-tight sloped or recessed floors in indoor locations or similar protection in outdoor locations.
2. Liquid-tight floors and raised or recessed sills or dikes in indoor locations or similar protection in outdoor locations.
3. Sumps and collection systems.
4. Drainage systems leading to an approved location.
5. Other approved engineered systems.

2704.2.2.2 Incompatible materials. Incompatible materials used in open systems shall be separated from each other in the secondary containment system.

2704.2.2.3 Indoor design. Secondary containment for indoor storage areas shall be designed to contain a spill from the largest vessel plus the design flow volume of fire protection water calculated to discharge from the fire extinguishing system over the minimum required system design area or area of the room or area in which the storage is located, whichever is smaller. The containment capacity shall be designed to contain the flow for a minimum period of 20 minutes.

2704.2.2.4 Outdoor design. Secondary containment for outdoor storage areas shall be designed to contain a spill from the largest individual vessel. If the area is open to rainfall, secondary containment shall be designed to include the volume of a 24-hour rainfall as determined by a 25-year storm but in no case less than 110% of the largest individual vessel and provisions shall be made to drain accumulations of ground water and rainwater.

2704.2.2.5 Monitoring. Monitoring shall be provided to detect hazardous materials in the secondary containment system. The method of monitoring may be visual inspection of the primary or secondary containment, or other approved means. Where secondary containment is subject to the intrusion of water, a monitoring method for detecting water shall be provided. Where monitoring devices are provided, they shall be connected to approved audible or visible alarms.

2704.2.2.6 Drainage system design. Drainage systems shall be in accordance with the Plumbing Code and the following requirements:

1. The slope of floors to drains in indoor locations, or similar protection in outdoor locations, shall not be less than

1 percent.

2. Drains from indoor storage areas shall be sized to carry the volume of the fire protection water as determined by the design density discharged from the fire extinguishing system over the minimum required system design area or area of the room or area in which the storage is located, whichever is smaller.

3. Drains from outdoor storage areas shall be sized to carry the volume of the fire flow and the volume of a 24-hour rainfall as determined by a 25-year storm.

4. Materials of construction for drainage systems shall be compatible with the materials stored.

5. Incompatible materials used in open systems shall be separated from each other in the drainage system.

6. Drains shall terminate in an approved location away from buildings, structures, valves, means of egress, fire access roadways, adjoining property and storm drains.

2704.2.3 Containment pallets. When used as an alternative to spill control and secondary containment for outdoor storage in accordance with the exception set forth in Section 2704.2, containment pallets shall be in compliance with the following requirements:

1. A liquid-tight sump accessible for visual inspection shall be provided.
2. The sump shall be designed to contain not less than 66 gallons (250 L).
3. Exposed surfaces shall be compatible with material stored.
4. The containment pallet shall be protected to prevent collection of rainwater within the sump.

2704.3 Ventilation. Indoor storage areas and storage buildings shall be provided with mechanical exhaust ventilation or natural ventilation where natural ventilation can be shown to be acceptable for the materials as stored.

Exception: Storage areas for flammable solids complying with the requirements of Chapter 36.

2704.3.1 System requirements. Exhaust ventilation systems shall comply with the following requirements:

1. Installation shall be in accordance with the Mechanical Code.
2. Mechanical ventilation shall be at a rate of not less than 1 cubic foot per minute per square foot [$0.00508 \text{ m}^3/(\text{s m}^2)$] of floor area over the storage area.
3. Systems shall operate continuously unless alternative designs are approved.
4. A manual shutoff control shall be provided outside of the room in a position adjacent to the access door to the room or in an approved location. The switch shall be of the break-glass type and shall be labeled: VENTILATION SYSTEM EMERGENCY SHUTOFF.
5. Exhaust ventilation shall be designed to consider the density of the potential fumes or vapors released. For fumes or vapors that are heavier than air, exhaust shall be taken from a point within 12 inches (305 mm) of the floor.
6. The location of both the exhaust and inlet air openings shall be designed to provide air movement across all portions of the floor or room to prevent the accumulation of vapors.
7. Exhaust ventilation shall not be recirculated within the room or building if the materials stored are capable of emitting hazardous vapors.

2704.4 Separation of incompatible hazardous materials. Incompatible materials shall be separated in accordance with Section 2703.9.8.

2704.5 Sprinkler systems. Indoor storage areas and storage buildings shall be protected throughout by a sprinkler system. The design of the sprinkler system shall not be less than that required for Ordinary Hazard Group 2 with a minimum design area of 3,000 square feet (279 m²). Where the materials or storage arrangement are required by other regulations to be provided with a higher level of sprinkler system protection, the higher level of sprinkler system protection shall be provided.

2704.6 Explosion control. Buildings, structures and indoor rooms and other areas shall be provided with explosion control in accordance with Section 911.

2704.7 Emergency power. Where mechanical ventilation, treatment systems, temperature control, alarm, detection or other electrically operated systems are required, such systems shall be provided with an emergency power system in accordance with the Electrical Code, and the construction codes, including the Building Code, and Section 604.

Exceptions:

1. Storage areas for Class 1 and 2 oxidizers.
2. Storage areas for Class III, IV and V organic peroxides.
3. Storage areas for highly toxic or toxic materials, in accordance with Sections 3704.2.2.8 and 3704.3.2.6.
4. Storage areas for which an approved fail-safe engineered system has been installed for mechanical ventilation, treatment systems or temperature control systems.

2704.8 Limit controls. Limit controls shall be provided in accordance with Sections 2704.8.1 and 2704.8.2.

2704.8.1 Temperature control. Materials that must be kept at temperatures other than normal ambient temperatures shall be provided with an approved means to maintain the temperature within a safe range. Redundant temperature control equipment that will operate on failure of the primary temperature control system, or other approved means to maintain the required temperature range, shall be provided.

2704.8.2 Pressure control. Stationary tanks and equipment containing hazardous material liquids that can generate pressures exceeding design limits because of exposure fires or internal reaction, shall have some form of construction or other approved means that will relieve excessive internal pressure. The means of pressure relief shall vent to an approved location outdoors or to an exhaust scrubber or treatment system in accordance with Chapter 37.

2704.9 Emergency alarm. An approved manual emergency alarm system shall be provided in buildings, rooms or areas used for storage of hazardous materials. Emergency alarm-initiating devices shall be installed outside of each interior exit or exit access door of storage buildings, rooms or areas. Activation of an emergency alarm-initiating device shall sound a local alarm to alert occupants of an emergency situation involving hazardous materials.

2704.10 Supervision. Emergency alarm, detection and fire extinguishing systems required by Section 2704 shall be supervised by an approved central, proprietary or remote station service or shall initiate an audible and visual signal at a constantly attended on-site location.

2704.11 Clearance from combustibles. The area surrounding an outdoor storage area or tank shall be kept clear of vegetation, rubbish and other combustible waste, and combustible materials, for a minimum distance of 25 feet (7620 mm).

2704.12 Noncombustible floor. Except for surfacing, floors of storage areas shall be of noncombustible construction.

2704.13 Weather protection. Outdoor hazardous material storage areas sheltered by overhead noncombustible construction shall not be considered indoor storage when the area is constructed in accordance with the requirements for weather protection as required by the construction codes, including the Building Code.

Exception: Storage of explosives shall be considered as indoor storage.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 27: HAZARDOUS MATERIALS-GENERAL PROVISIONS
SECTION FC 2705: HANDLING AND USE

NYC Administrative Code § 29-FC 2705

2705.1 General.

Hazardous materials in amounts exceeding the maximum allowable quantity per control area set forth in Section 2703.1 shall be handled and used, including dispensed, in accordance with Sections 2701, 2703 and 2705. Hazardous materials in amounts not exceeding the maximum allowable quantity per control area set forth in Section 2703.1 shall be handled and used, including dispensed, in accordance with Sections 2701 and 2703.

2705.1.1 Separation of incompatible materials. Separation of incompatible materials shall be in accordance with Section 2703.9.8.

2705.1.2 Noncombustible floor. Except for floor finishing operations, floors of areas where liquid or solid hazardous materials are used in open systems shall be of noncombustible, liquid-tight construction.

2705.1.3 Spill control and secondary containment for hazardous material liquids. Where required by other provisions of Section 2705, spill control and secondary containment shall be provided for hazardous material liquids in accordance with Section 2704.2.

2705.1.4 Limit controls. Limit controls shall be provided in accordance with Sections 2705.1.4.1 through 2705.1.4.4.

2705.1.4.1 High-liquid-level control. Open tanks in which liquid hazardous materials are used shall be equipped with a liquid-level limit control or other means to prevent overfilling of the tank.

2705.1.4.2 Low-liquid-level control. Approved safeguards shall be provided to prevent a low-liquid level in a tank from creating a hazardous condition, including overheating of a tank or its contents.

2705.1.4.3 Temperature control. Temperature control shall be provided in accordance with Section 2704.8.1.

2705.1.4.4 Pressure control. Pressure control shall be provided in accordance with Section 2704.8.2.

2705.1.5Emergency power. Where mechanical ventilation, treatment systems, temperature control, alarm, detection or other electrically operated systems are required, such systems shall be provided with an emergency power system in accordance with the Electrical Code, the construction codes, including the Building Code, and Section 604.

Exceptions:

1. Areas in which an approved fail-safe engineered system has been installed for mechanical ventilation, treatment systems and temperature control systems.

2. Systems for highly toxic or toxic gases provided with emergency power in accordance with Sections 3704.2.2.8 and 3704.3.2.6.

2705.1.6Supervision. Alarm, detection and fire extinguishing systems required by other provisions of Section 2705 shall be supervised by an approved central station or shall initiate an audible and visible signal at a continuously attended on-site location.

2705.1.7Lighting. Adequate lighting by natural or artificial means shall be provided.

2705.1.8Fire extinguishing systems. Indoor rooms or areas in which hazardous materials are handled or used shall be protected by a fire extinguishing system in accordance with Chapter 9 and the construction codes, including the Building Code. The design of any sprinkler system shall not be less than that required for Ordinary Hazard, Group 2, with a minimum design area of 3,000 square feet (279 m²). Where the materials or storage arrangement are required by other regulations to be provided with a higher level of sprinkler system protection, the higher level of sprinkler system protection shall be provided.

2705.1.9Ventilation. Indoor use areas, including dispensing areas, shall be provided with exhaust ventilation in accordance with Section 502.8 of the Mechanical Code.

Exception: Ventilation is not required for flammable solids, unless they are in the form of finely divided particles or generate finely divided particles during use.

2705.1.10Liquid transfer. Liquids having a hazard ranking of 3 or 4 pursuant to NFPA 704 shall be transferred by one of the following methods:

1. From safety cans complying with the requirements of UL 30.
2. Through an approved closed piping system.
3. From containers or tanks by an approved pump taking suction through an opening in the top of the container or tank.
4. From containers or tanks by gravity through an approved self-closing or automatic-closing valve when the container or tank and dispensing operations are provided with spill control and secondary containment in accordance with Section 2704.2. Highly toxic liquids shall not be dispensed by gravity from tanks.
5. Approved engineered liquid transfer systems.

Exceptions:

1. Liquids having a hazard ranking of 4 when dispensed from approved containers not exceeding 1.3 gallons (5 L).
2. Liquids having a hazard ranking of 3 when dispensed from approved containers not exceeding 5.3 gallons (20 L).

2705.2Indoor use.Indoor use, including dispensing, of hazardous materials shall be in buildings complying with the requirements of the construction codes, including the Building Code, and in accordance with Section 2705.1 and Sections 2705.2.1 through 2705.2.2.5.

2705.2.1Open systems.Use of hazardous materials in open containers or systems shall be in accordance with Sections 2705.2.1.1 through 2705.2.1.4.

2705.2.1.1Ventilation.Where gases, liquids or solids having a hazard ranking of 3 or 4, as defined in NFPA 704 are used, mechanical exhaust ventilation shall be provided to capture fumes, mists or vapors at the point of generation.

Exception: Gases, liquids or solids that do not generate harmful fumes, mists or vapors.

2705.2.1.2Explosion control.Explosion control shall be provided in accordance with Section 2704.6 when an explosive environment can occur because of the characteristics or nature of the hazardous materials or the manner in which they are used.

2705.2.1.3Spill control for hazardous material liquids.Buildings, rooms or areas where hazardous material liquids are dispensed into vessels exceeding a 1.3-gallon (5 L) capacity or used in open systems exceeding a 5.3-gallon (20 L) capacity shall be provided with spill control in accordance with Section 2704.2.1.

2705.2.1.4Secondary containment for hazardous material liquids.Where required by Table 2705.2.1.4, buildings, structures, rooms or areas where hazardous material liquids are used in open systems shall be provided with secondary containment in accordance with Section 2704.2.2 when the capacity of an individual vessel or system or the capacity of multiple vessels or systems exceeds the following quantities:

1. Individual vessel or system: greater than 1.3 gallons (5 L).
2. Multiple vessels or systems: greater than 5.3 gallons (20 L).

2705.2.2Closed systems.Use of hazardous materials in closed containers or systems shall be in accordance with Sections 2705.2.2.1 through 2705.2.2.5.

2705.2.2.1Design.Systems shall be suitable for the use intended and shall be designed by a qualified person. Controls shall be designed to prevent materials from entering or leaving the process or reaction systems at other than the intended time, rate or path. Where automatic controls are provided, they shall be designed to be fail safe.

2705.2.2.2Ventilation.Where closed systems are designed to be opened as part of normal operations, ventilation shall be provided in accordance with Section 2705.2.1.1.

2705.2.2.3Explosion control.Explosion control shall be provided in accordance with Section 2704.6 where an explosive environment exists because of the hazardous materials or the manner in which they are used.

Exception: Where process vessels are designed to contain fully the worst-case explosion anticipated within the vessel under process conditions based on the most likely failure.

2705.2.2.4Spill control for hazardous material liquids.Buildings, rooms or areas where hazardous material liquids are used in individual vessels exceeding a 55-gallon (208 L) capacity shall be provided with spill control in accordance with Section 2704.2.1.

2705.2.2.5Secondary containment for hazardous material liquids.Where required by Table 2705.2.1.4, buildings, rooms or areas where hazardous material liquids are used in vessels or systems shall be provided with secondary containment in accordance with Section 2704.2.2 when the capacity of an individual vessel or system or the capacity of multiple vessels or systems exceeds the following quantities:

1. Individual vessel or system: greater than 55 gallons (208 L).

2. Multiple vessels or systems: greater than 1,000 gallons (3785 L).

2705.3 Outdoor use. Outdoor use, including dispensing, of hazardous materials shall be in accordance with Sections 2705.3.1 through 2705.3.9.

2705.3.1 Quantities exceeding the maximum allowable quantity per control area. Outdoor use of hazardous materials, in either closed or open containers or systems, in amounts exceeding the maximum allowable quantity per control area indicated in Tables 2703.1.1(3) and 2703.1.1(4) shall be in accordance with Sections 2701, 2703, 2705.1 and 2705.3.

2705.3.2 Quantities not exceeding the maximum allowable quantity per control area. Outdoor use of hazardous materials, in either closed or open containers or systems, in amounts not exceeding the maximum allowable quantity per control area indicated in Tables 2703.1.1(3) and 2703.1.1(4) shall be in accordance with Sections 2701 and 2703.

2705.3.3 Location. Outdoor use areas for hazardous materials shall be located as required for outdoor storage in accordance with Section 2704.

2705.3.4 Spill control for hazardous material liquids in open systems. Outdoor areas where hazardous material liquids are dispensed in vessels exceeding a 1.3-gallon (5 L) capacity or used in open systems exceeding a 5.3-gallon (20 L) capacity shall be provided with spill control in accordance with Section 2704.2.1.

2705.3.5 Secondary containment for hazardous material liquids in open systems. Where required by Table 2705.2.1.4, outdoor areas where hazardous material liquids are used in open systems shall be provided with secondary containment in accordance with Section 2704.2.2 when the capacity of an individual vessel or system or the capacity of multiple vessels or systems exceeds the following quantities:

1. Individual vessel or system: greater than 1.3 gallons (5 L).

2. Multiple vessels or systems: greater than 5.3 gallons (20 L).

2705.3.6 Spill control for hazardous material liquids in closed systems. Outdoor areas where hazardous material liquids are used in closed systems exceeding 55 gallons (208 L) shall be provided with spill control in accordance with Section 2704.2.1.

2705.3.7 Secondary containment for hazardous material liquids in closed systems. Where required by Table 2705.2.1.4, outdoor areas where hazardous material liquids are used in closed systems shall be provided with secondary containment in accordance with Section 2704.2.2 when the capacity of an individual vessel or system or the capacity of multiple vessels or systems exceeds the following quantities:

1. Individual vessel or system: greater than 55 gallons (208 L).

2. Multiple vessels or systems: greater than 1,000 gallons (3785 L).

2705.3.8 Clearance from combustibles. The area surrounding an outdoor use area, including an area used for dispensing, shall be kept clear of vegetation, rubbish and other combustible waste, and combustible materials, for a minimum distance of 30 feet (9144 mm).

2705.3.9 Weather protection. Outdoor hazardous material use areas sheltered by overhead noncombustible construction shall not be considered indoor use when the area is constructed in accordance with the requirements for weather protection as required in the construction codes, including the Building Code.

Exception: Use of explosives shall be considered as indoor use.

2705.4 Handling. Handling of hazardous materials shall be in accordance with Sections 2705.4.1 through 2705.4.4.

2705.4.1 Quantities exceeding the maximum allowable quantity per control area. Handling of hazardous materials in indoor and outdoor locations in amounts exceeding the maximum allowable quantity per control area indicated in Tables 2703.1.1(1) through 2703.1.1(4) shall be in accordance with Sections 2701, 2703, 2705.1 and 2705.4.

2705.4.2 Quantities not exceeding the maximum allowable quantity per control area. Handling of hazardous materials in indoor locations in amounts not exceeding the maximum allowable quantity per control area indicated in Tables 2703.1.1(1) and 2703.1.1(2) shall be in accordance with Sections 2701, 2703 and 2705.1. Handling of hazardous materials in outdoor locations in amounts not exceeding the maximum allowable quantity per control area indicated in Tables 2703.1.1(3) and 2703.1.1(4) shall be in accordance with Sections 2701 and 2703.

2705.4.3 Location. Outdoor handling areas for hazardous materials shall be located as required for outdoor storage in accordance with Section 2704.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 27: HAZARDOUS MATERIALS-GENERAL PROVISIONS
SECTION FC 2706: NON-PRODUCTION CHEMICAL LABORATORIES

NYC Administrative Code § 29-FC 2706

2706.1 Scope.

This section shall govern the storage, handling and use of laboratory chemicals in a non-production laboratory and accessory storage of laboratory chemicals in a storage room. The design and construction of non-production laboratories and accessory storage rooms for laboratory chemicals shall comply with the requirements of the construction codes, including the Building Code and the Mechanical Code.

2706.2General.Laboratory chemicals within a laboratory unit shall be stored, handled and used in accordance with this section and, except as otherwise provided in this section, NFPA 45 laboratory unit fire hazard class D requirements.

2706.3Permits.Permits shall be required as set forth in Section 105.6.

2706.4Supervision.Non-production laboratory operations requiring a permit shall be under the personal supervision of a certificate of fitness holder. At least one certificate of fitness holder shall be present on each floor of the laboratory unit on which laboratory operations are being conducted while the laboratory is in operation. Additional certificate of fitness holders shall be provided as the commissioner may require as a condition of the permit. Accessory laboratory chemical storage rooms shall be under the general supervision of a certificate of fitness holder.

2706.5Prohibitions.It shall be unlawful in any non-production laboratory or any accessory storage of laboratory chemicals in a storage room to:

1. Store, handle or use any explosive.
2. Store, handle or use any unclassified detonable organic peroxide, detonable pyrophoric material, detonable unstable (reactive) material or detonable water-reactive material.
3. Store, handle or use any Class 4 unstable (reactive) material.

4. Store, handle or use any Class 4 oxidizing material.
5. Store, handle or use below grade any flammable gas.
6. Use an open flame for heating or distilling any flammable solid, flammable liquid or flammable gas.

2706.6 Quantity limitations.

2706.6.1 Flammable and combustible liquids. The density and total quantity of flammable and combustible liquids allowed within a laboratory unit, excluding storage rooms, shall be in accordance with Table 10.1.1 of NFPA 45 for laboratory unit fire hazard class D.

Exceptions. For laboratory units other than educational or instructional laboratories pursuant to NFPA 45:

1. The density of flammable and combustible liquids allowed within a laboratory unit may be increased to those set forth in Table 10.1.1 of NFPA 45 for laboratory unit fire hazard class B provided the total quantity of flammable and combustible liquid, including any in storage cabinets or safety cans, does not exceed 25 gallons (95 L).

2. The density of flammable and combustible liquids allowed within a laboratory unit may be increased to those set forth in Table 10.1.1 of NFPA 45 for laboratory unit fire hazard class B provided the total quantity of flammable and combustible liquid, including any in storage cabinets or safety cans, does not exceed 30 gallons (114 L) and the walls, floors and ceilings of the laboratory unit are separated from all adjoining areas by 2-hour fire rated construction.

3. The quantity of flammable and combustible liquids allowed within a laboratory unit, excluding quantities in storage cabinets or safety cans, may be increased to 100 gallons (379 L), and the total quantities of flammable and combustible liquids, including quantities in storage cabinets or safety cans, may be increased to 200 gallons (757 L) provided the walls, floors and ceilings of the laboratory unit are separated from all adjoining areas by 2-hour fire rated construction.

2706.6.2 Flammable solids. The storage, handling and use of flammable solids within a laboratory unit shall be in accordance with Chapters 27 and 36. The total quantity of flammable solids stored, handled and used, excluding any quantities in a storage room, shall not exceed 10 pounds (4.54 kg).

Exception: The total quantity of flammable solids allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire rated construction shall not exceed 15 pounds (6.81 kg).

2706.6.3 Oxidizers and organic peroxides. The storage, handling and use of solid and liquid oxidizers and organic peroxides within a laboratory unit shall be in accordance with Chapters 27, 39 and 40 and the total quantity of all such material, excluding any quantities in a storage room, shall not exceed 40 pounds (18.16 kg), provided that not more than 2 pounds (0.908 kg) of such oxidizers are Class 3 oxidizers and not more than 1 pound (0.454 kg) of such peroxides are Class I organic peroxides.

Exception: The total aggregate quantity of solid and liquid oxidizers and organic peroxides allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire rated construction shall not exceed 50 pounds (22.7 kg), provided that not more than 2 pounds (0.908 kg) of such oxidizers are Class 3 oxidizers and not more than 1 pound (0.454 kg) of such peroxides are Class I organic peroxides.

2706.6.4 Unstable (reactive) material. The storage, handling and use of unstable (reactive) material within a laboratory unit shall be in accordance with Chapters 27 and 43 and the total quantity, excluding any quantities in a storage room, shall not exceed 6 pounds (2.724 kg), provided not more than 1 pound (0.454 kg) of such reactive

material is Class 3 unstable (reactive).

Exception: The total quantity of unstable (reactive) material allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire rated construction shall not exceed 12 pounds (5.44 kg), provided not more than 1 pound (0.454 kg) of such reactive material is Class 3 unstable (reactive).

2706.6.5 Water reactive material. The storage, handling and use of water reactive material within a laboratory unit shall be in accordance with Chapters 27 and 44 and the total quantity, excluding any quantities in a storage room, shall not exceed 2.5 pounds (1.135 kg).

Exception: The total quantity of water reactive material allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire rated construction shall not exceed 5 pounds (2.27 kg).

2706.6.6 Pyrophoric material. The storage, handling and use of solid or liquid pyrophoric material within a laboratory unit shall be in accordance with Chapters 27 and 41 and the total quantity, excluding any quantities in a storage room, shall not exceed 0.5 pounds (0.227 kg).

Exception: The total quantity of solid or liquid pyrophoric material allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire rated construction shall not exceed 1 pound (0.454 kg).

2706.6.7 Highly toxic material. The storage, handling and use of solid or liquid highly toxic material within a laboratory unit shall be in accordance with Chapters 27 and 37 and the total quantity, excluding any quantities in a storage room, shall not exceed 5 pounds (2.27 kg).

2706.6.8 Toxic material. The storage, handling and use of solid or liquid toxic material within a laboratory unit shall be in accordance with Chapters 27 and 37 and the total quantity, excluding any quantities in a storage room, shall not exceed 250 pounds (113.5 kg).

2706.6.9 Corrosive material. The storage, handling or use of solid or liquid corrosive material within a laboratory shall be in accordance with Chapters 27 and 31 and the total quantity, excluding any quantity in a storage room, shall not exceed 250 gallons (946 L).

2706.6.10 Highly toxic and toxic gases. It shall be unlawful to store, handle or use in any educational and instructional laboratory unit any combination of highly toxic and toxic gases in quantities that exceed 20 SCF (0.566 m³).

2706.7 Storage room classification. Storage rooms for laboratory chemicals accessory to a laboratory unit shall be classified as set forth in the Building Code.

2706.8 Storage rooms. In addition to the quantities that may be stored, handled and used in a laboratory unit pursuant to Section 2706.6, chemicals for use in a laboratory unit may be stored in a dedicated storage room complying with the following requirements:

1. Storage room capacity shall not exceed a maximum of 300 gallons (1136 L) of chemicals or 5 gallons per square foot (204 L/m²) of floor area.
2. Flammable gas storage rooms shall not contain more than 2,500 SCF (70.8 m³) of flammable gas.
3. Chemicals that are incompatible with each other shall not be stored in the same storage room, unless in compliance with the requirements of this chapter.

4. Chemicals shall not be used within the storage room.

2706.9 Safety showers. Where more than 5 gallons (19 L) of corrosive liquid or flammable liquid are stored, handled or used, suitable facilities with fixed overhead or flexible hand-held showers shall be provided. Such shower shall be within 25 feet (7620 mm) of the laboratory unit and storage room door and shall be maintained in good working order, and readily accessible at all times.

2706.10 Neutralizing or absorbing agents. Where more than 5 gallons (19 L) of corrosive liquids are stored, handled or used, a sufficient quantity of suitable neutralizing or absorbing agents shall be provided.

2706.11 Curtains and drapes. Curtains and drapes installed in a laboratory unit shall comply with the flame resistance requirements of Chapter 8.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 27: HAZARDOUS MATERIALS-GENERAL PROVISIONS
SECTION FC 2707: TRANSPORTATION OF HAZARDOUS MATERIALS

NYC Administrative Code § 29-FC 2707

2707.1 Scope.

This section shall govern the transportation of hazardous materials, as defined in the regulations of the United States Department of Transportation, as set forth in 49 CFR Part 173.

2707.2General.Transportation of hazardous materials shall be in accordance with the regulations of the United States Department of Transportation and this section.

2707.3Prohibitions.It shall be unlawful to:

1. Transport hazardous materials in or through the city where such transport is prohibited or restricted by federal or state law, rule or regulation, including restrictions on transportation of hazardous materials over bridges and through tunnels.
2. Transport in or through the city hazardous materials of such type, in such quantities, or in such manner as is prohibited by this code or the rules, except where such transport is in accordance with approved routes and times or other approved procedures or safety measures.
3. Transport hazardous materials in quantities requiring a permit pursuant to this code or the rules without such permit.
4. Deliver hazardous materials in quantities requiring a permit pursuant to this code or the rules to any location unless the owner or other person taking delivery thereof is in possession of a permit for the storage, handling and/or use of such hazardous material at such location.

2707.4Permits.Permits to transport hazardous materials shall be required as set forth in Section 105.6. Such permits shall be issued to a particular vehicle or marine vessel for such transportation. Any hazardous material for which a permit is required pursuant to Section 105.6 for transportation, may be transported without a permit provided that such

cargo originates outside New York State and: (1) remains in continuous transit without picking up or delivering such cargo in the city; or (2) remains in continuous transit through the city until delivering such cargo to piers, airports and shipping terminals for transshipment out of the city. Such transport shall be in accordance with approved routes and times or other approved procedures and safety measures.

2707.5Transportation of hazardous materials by vehicle.Transportation of hazardous materials by vehicle shall be in accordance with this section, the rules, and the requirements contained in the regulations of the United States Department of Transportation, as set forth in 49 CFR, Parts 171, 172, 173, 177, 178, 180, 383, 387, 390, 392, 393, 396 and 397 and their appendices, and any amendments thereto, with respect to:

1. The design, construction, maintenance and equipment of cargo tanks and other vehicles.
2. The marking and placarding of vehicles.
3. The preparation, execution and use of shipping documents.
4. The handling, loading and unloading of hazardous materials.
5. The qualifications and commercial driver's license requirements of vehicle operators.
6. Insurance and other financial requirements.

2707.6Transportation of explosives by vehicle.Transportation of explosives by vehicle for storage, handling and use in the city shall additionally comply with the requirements of Sections 2707.6.1 through 2707.6.6.

2707.6.1Approved vehicles.It shall be unlawful to transport, including delivering, any blasting materials or Division 1.1 or 1.5 explosives for storage, handling or use in the city, except in a vehicle designed and constructed in accordance with the rules, and for which a permit has been issued.

2707.6.2Nitroglycerine.It shall be unlawful to transport any nitroglycerine-containing material, except nitroglycerine in the form of tablets, pills or granules, in quantities not exceeding 10,000, containing not more than 1/50 of a grain each, or to transport frozen nitroglycerine.

2707.6.3Packing and marking.Other than as prescribed or approved by the commissioner, it shall be unlawful to sell or deliver for use any explosive except in original and unopened packages, packed in accordance with Sections 2707.6.3.1 through 2707.6.3.3.

2707.6.3.1Explosives containing liquids.Dynamite and other explosives containing a liquid which may exude a liquid shall be transported in DOTn approved cases, lined with a liquid-proof plastic lining sufficient to prevent the exudation of the liquid. Such cases shall contain not more than 50 pounds (22.7 kg) of net explosive weight.

2707.6.3.2Other explosives.Other blasting materials (except black powder, blasting powder and smokeless propellant) that do not contain a substance subject to deterioration or instability by exposure to moisture shall be transported in DOTn approved cases each containing not more than 50 pounds (22.7 kg) of net explosive weight.

2707.6.3.3Sticks or cartridges.All explosives in the form of sticks or cartridges shall be packed so as to lie on their sides; and, when the boxes are loaded in or upon a vehicle or marine vessel, they shall be so arranged that the sticks or cartridges rest on their sides.

2707.6.4Detonators.Transportation of blasting caps and other detonators shall additionally comply with the requirements of Sections 2707.6.4.1 and 2707.6.4.2.

2707.6.4.1Packaging.It shall be unlawful to bring into, transport, or deliver within the city any blasting caps and

other detonators, unless packaged in original, unopened boxes.

2707.6.4.2 Delivery vehicles. It shall be unlawful to transport any detonators in quantities exceeding 5,000, or to transport or cause to be transported, detonators together with any other explosives, except in an approved container in accordance with the regulations of the United States Department of Transportation, as set forth in 49 CFR Part 177.

2707.6.5 Black powder, blasting powder or smokeless propellants. Black powder, blasting powder or smokeless propellant shall be transported in containers of not more than 25 pounds (11.35 kg).

2707.6.6 Restrictions. Vehicles transporting explosives shall comply with the following requirements:

1. Vehicles shall deliver explosives only during daylight hours.
2. No unnecessary stops shall be made in transit.
3. Vehicles shall be escorted in accordance with Section 2707.12, as applicable.
4. If explosives are being transported in more than one vehicle, the vehicles shall maintain a safe distance from each other of not less than 250 feet (76 200 mm).
5. It shall be unlawful to transport or deliver any explosives in a subway or other underground tunnel or conveyance, except as approved for blasting operations.

2707.7 Transportation of explosives by marine vessel. Transportation of explosives by marine vessel shall be in accordance with the regulations of the United States Department of Transportation, as set forth in CFR Part 176, and any amendments thereto, and shall additionally comply with the requirements of Sections 2707.7.1 through 2707.7.5.

2707.7.1 Temporary storage on marine vessel. It shall be unlawful to store for more than 48 hours on board of any marine vessel lying to at a wharf, pier, bulkhead or other structure over or contiguous to navigable waters within the city, any explosives in excess of the amount required for the vessel's own use for signaling or life saving purposes.

2707.7.2 Supervision. Any powder-boat or other marine vessel used to transport explosives upon the navigable waters within the city for delivery at a wharf, pier, bulkhead or other structure over or contiguous to navigable waters, or to a marine vessel lying thereto, shall, while transporting explosives, have on board at all times two persons, each holding a certificate of fitness for explosives handling. Only such certificate holders, the permit holder and the marine vessel's crew shall be allowed in or upon such vessel. Whenever practicable, all explosives shall be stowed on deck under a waterproof cover or otherwise kept dry.

2707.7.3 Detonators. Except for marine vessels engaged in export trade, it shall be unlawful to carry in or upon a marine vessel transporting explosives within the city, detonators together with any other explosives, except in approved containers in accordance with the regulations of the United States Department of Transportation, as set forth in 49 CFR Part 176.

2707.7.4 Unloading. It shall be unlawful to unload explosives onto a wharf, pier, bulkhead or other structure over or contiguous to navigable waters. Explosives intended for storage, handling or use within the city shall be transferred from the marine vessel making the delivery directly to a vehicle at a wharf, pier, bulkhead or other structure over or contiguous to navigable waters approved by the commissioner. Explosives intended for shipment to points outside the city may be transferred from a marine vessel directly to another marine vessel lying at a wharf, pier, bulkhead or other structure within the city over or contiguous to navigable waters approved by the commissioner, provided the amount so transferred does not exceed 2,500 pounds (1135 kg). All such shipments in quantities exceeding 2,500 pounds (1135 kg) but not more than 5,000 pounds (2270 kg), may be transferred from marine vessel to marine vessel at a distance of not less than 1,000 feet (304 800 mm) from any pier line.

2707.7.5Smoking and intoxicated persons.It shall be unlawful to smoke or maintain any flame while in or upon any marine vessel carrying explosives, or allow in or upon such vessel, any intoxicated person.

2707.8Transportation of fireworks by vehicle.Transportation of fireworks by vehicle for firework displays in the city shall additionally comply with the requirements of Section 2707.8.1 and 2707.8.2.

2707.8.1Delivery to display site.It shall be unlawful to transport fireworks through the city unless such fireworks are being transported to or from a display site for which a permit has been issued and such vehicle is escorted by department firefighting apparatus in accordance with Section 2207.12.

2707.8.2Restrictions.Vehicles transporting fireworks shall comply with the requirements of Section 2707.6.6.

2707.9Transportation of flammable and combustible liquids by vehicle.Transportation of flammable and combustible liquids by vehicle shall additionally comply with the requirements of Sections 2707.9.1 through 2707.9.5.

2707.9.1Operation of cargo tanks.Cargo tanks shall be maintained and operated in accordance with Sections 2707.9.1.1 through 2707.9.1.13.

2707.9.1.1Vehicle maintenance.Cargo tanks shall not be used unless they are in good working order and free from accumulation of grease, oil or other flammable or combustible waste.

2707.9.1.2Monitoring of loading and unloading.The operator of a cargo tank shall not remain in the vehicle during loading or unloading of the cargo and shall personally supervise such operation from a location at which the operator may observe the vehicle, the delivery and vapor recovery hoses, the fill connection and any overfilling of the tank.

2707.9.1.3Vehicle shutdown.The cargo tank motor shall be shut down during the making and breaking of hose connections. If loading or unloading is performed without the use of a power pump, the cargo tank motor shall be shut down throughout such operations.

2707.9.1.4Secured from movement.All appropriate actions shall be taken to prevent vehicle movement during the loading and unloading of the cargo, including setting the parking brake and chocking of tires.

2707.9.1.5Outage.A cargo tank or compartment thereof shall not be loaded to absolute capacity. The vacant space in a cargo tank or compartment thereof shall not be less than 1 percent to prevent leakage from or distortion of such tank or compartment by expansion of the contents caused by a rise in temperature.

2707.9.1.6Overfill prevention.The operator of a cargo tank shall, before making delivery to a tank, determine the unfilled capacity of the tank by use of a suitable gauging device, and shall not deliver cargo in excess of that amount.

2707.9.1.7Securing hatches.During the loading of cargo tanks with openable domes, the domes shall be secured on all but the receiving compartment, except that during loading of gasoline, all domes shall be secured.

2707.9.1.8Cargo temperature.Flammable and combustible liquids shall not be loaded into or transported in a cargo tank or delivered at a temperature above the material's ignition temperature.

2707.9.1.9Bonding to underground tanks.An external bond-wire connection or bondwire integral to the delivery hose shall be provided when transferring flammable liquids into underground tanks.

2707.9.1.10Smoking.It shall be unlawful for the operator of a cargo tank to smoke in and around the vehicle while transporting, loading or unloading cargo or to allow others to do so.

2707.9.1.11Hose connections.Flammable and combustible liquids shall be transferred to tanks by means of approved liquid and vapor tight connections between the delivery hose and fill tank connection. Where underground

tanks are equipped with a vapor recovery system, all connections required for the safe and proper functioning of the vapor recovery system shall be made and maintained liquid and vapor tight throughout the unloading process. Vapors shall not be discharged at grade level during delivery.

2707.9.1.12Hose protection.In making any delivery of flammable or combustible liquid the operator of the cargo tank shall ensure, prior to unloading, that all hoses utilized for liquid delivery and vapor recovery are protected from physical damage, including damage by motor vehicles. Such protection shall be provided by positioning the cargo tank to prevent motor vehicles from passing through the area or areas occupied by hoses, or by other approved equivalent means.

2707.9.1.13Method of discharge.Gasoline that is transferred to underground tanks shall be discharged by gravity only.

2707.9.2Parking restrictions.Parking of cargo tanks shall be in accordance with Sections 2707.9.2.1 and 2707.9.2.2, except that in the event of an accident, mechanical breakdown or other emergency, a cargo tank may be parked and left unattended at any safe location while the operator is obtaining assistance.

2707.9.2.1Restricted areas.It shall be unlawful to:

1. Leave a cargo tank unattended at any time on a public street, or any off street location within 250 feet (76 200 mm) of an occupied building, or any other restricted location designated by the commissioner by rule or as a condition of a permit.

2. Park cargo tanks indoors.

2707.9.2.2Approved parking.Cargo tanks temporarily parked during working hours shall be parked at an approved off street location not less than 250 feet (76 200mm) from an occupied building. Cargo tanks shall be parked during non-working hours on the grounds of a bulk plant or terminal, not less than 25 feet (7620 mm) from the nearest lot line; or at other approved location, not less than 50 feet (15 240 mm) from any building.

2707.9.3Portable fire extinguishers.Cargo tanks shall be equipped with a portable fire extinguisher complying with the requirements of Section 906 and having a minimum rating of 2-A:20-B:C. During unloading of the cargo tank, the portable fire extinguisher shall be outside of the vehicle and shall be readily available, but at a distance of at least 15 feet (4572 mm) from the unloading valves.

2707.9.4Unloading of cargo.Flammable liquids being transported by vehicle other than a cargo tank shall not be dispensed from a container prior to removal of the container from the vehicle.

2707.9.5Emergency transfers between vehicles.Department representatives may authorize a transfer from one cargo tank directly into a permitted or other approved cargo tank in the interest of public safety, such as when a cargo tank has been involved in a vehicular accident or has otherwise been damaged.

2707.10Transportation of compressed gases by cargo tank.Transportation of compressed gases by cargo tank shall additionally comply with the requirements of Section 2707.10.1.

2707.10.1Prohibited compressed gases.It shall be unlawful to transport the following compressed gases in a cargo tank:

1. Acetylene.
2. Liquefied carbon monoxide.
3. Liquefied chlorine.

4. Cyanogen.
5. Cyclopropane.
6. Diborane.
7. Di-, mono-, and tri-methylamines.
8. Dimethyl ether.
9. Ethylene.
10. Fluorine.
11. Liquefied hydrogen.
12. Hydrogen cyanide.
13. Hydrogen sulfide.
14. Liquefied petroleum gases (LPG).
15. Liquefied natural gas (LNG).
16. Methylacetylene propadiene mixture-stabilized, including propyns, mapp gas or apache gas.
17. Methyl chloride.
18. Methyl mercaptan.
19. Phosgene.
20. Phosphine.
21. Vinyl chloride.
22. Vinyl fluoride.
23. Vinyl methyl ether.
24. Any gas mixtures of the foregoing.
25. Any gas that contains:
 - 25.1 Bromacetone.
 - 25.2 Cyanogen chloride containing less than 0.9 percent water.
 - 25.3 Diphosgene.
 - 25.4 Ethyldichlorarsine.
 - 25.5 Methyldichlorarsine.
 - 25.6 Nitrogen peroxide (tetroxide).

25.7 Nitrogen tetroxide-nitric oxide mixtures containing up to 33.2 percent weight nitric oxide.

2707.11Route and time requirements.Vehicles transporting hazardous materials shall comply with such route and time requirements as the commissioner may promulgate by rule, except that vehicles for which a permit has been issued for the transportation of hazardous materials may transport such hazardous materials, including delivery, without having to comply with such route and time requirements.

2707.12Escort requirements for vehicles transporting explosives and fireworks.Vehicles transporting explosives and fireworks shall additionally comply with the requirements of Sections 2707.12.1 and 2707.12.2.

2707.12.1Vehicles transporting explosives.Vehicles transporting in or through the city any amount of Division 1.1, 1.2, 1.3 or 1.5 explosives, or more than 50 pounds (22.7 kg) of Division 1.4 or 1.6 explosives, including vehicles in continuous transit or transporting such explosives on approved routes at approved times, shall be escorted by department firefighting apparatus unless such explosives are transported in a vehicle permitted for such explosives.

2707.12.2Vehicles transporting fireworks.Vehicles transporting any amount of fireworks, 1.3, or more than 50 pounds (22.7 kg) of fireworks, 1.4, whether in continuous transit through the city or to or from a fireworks display in the city, shall be escorted by department firefighting apparatus, in accordance with approved routes and times.



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TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 28: AEROSOLS
SECTION FC 2801: GENERAL

NYC Administrative Code § 29-FC 2801

2801.1 Scope.

This chapter shall govern the manufacture, storage, handling and use of combustible Level 1, 2 and 3 aerosol products, including the display of such products in any building, structure or premises.

2801.2Permits.Permits shall be required as set forth in Section 105.6.

2801.3Reserved.

2801.4General.Combustible Level 1, 2 and 3 aerosol products shall be manufactured, stored, handled and used in accordance with this chapter, the construction codes, including the Building Code, and NFPA 30B.

2801.5Manufacturing prohibited.It shall be unlawful to manufacture Level 1, 2 or 3 aerosol products.

2801.6Aerosol container size limitations.It shall be unlawful to store, handle or use Level 1, 2 or 3 aerosol products in metal cans exceeding 33.8 fluid ounces (1000 ml), or in glass or plastic bottles exceeding 4 fluid ounces (118 ml).

Exceptions:

1. Level 3 aerosol products shall be stored, handled and used in containers with a maximum capacity of 24 fluid ounces (708 ml).

2. Pressurized ether shall be stored, handled or used only in metal containers with a maximum capacity of 8 fluid ounces (236 ml).

3. Level 1, 2 and 3 oven cleaning aerosol products shall be stored, handled or used in containers with a maximum capacity of 16 fluid ounces (472 ml).



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Chapter 28: AEROSOLS
SECTION FC 2802: DEFINITIONS

NYC Administrative Code § 29-FC 2802

2802.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

AEROSOL. A product that is dispensed from a container by a propellant, classified as follows:

Level 1. Aerosol products with a total chemical heat of combustion that is greater than 0 and less than or equal to 8,600 British thermal units per pound (Btu/lb) (20 kJ/g).

Level 2. Aerosol products with a total chemical heat of combustion that is greater than 8,600 Btu/lb (20 kJ/g), but less than or equal to 13,000 Btu/lb (30 kJ/g).

Level 3. Aerosol products with a total chemical heat of combustion that is greater than 13,000 Btu/lb (30 kJ/g).

AEROSOL CONTAINER. A metal can, or a glass or plastic bottle designed to dispense an aerosol.

AEROSOL WAREHOUSE. A Group H or S occupancy used exclusively for the non-retail storage of aerosol products.

PROPELLANT. The liquefied or compressed gas in an aerosol container that expels the contents from an aerosol container when the valve is actuated. A propellant is considered flammable if it forms a flammable mixture with air, or if a flame is self-propagating in a mixture with air.

RETAIL DISPLAY AREA. The area of a Group M occupancy open for the purpose of viewing or purchasing merchandise offered for sale. Individuals in such establishments are free to circulate among the items offered for sale which are typically displayed on shelves, racks or the floor.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 28: AEROSOLS
SECTION FC 2803: CLASSIFICATION OF AEROSOL PRODUCTS

NYC Administrative Code § 29-FC 2803

2803.1 Classification levels.

Aerosol products shall be classified as Level 1, 2 or 3 in accordance with Section 2802.1. Aerosol products in cartons which are not identified shall be classified as Level 3.

2803.2 Identification. Cartons shall be identified on at least one side with the classification level of the aerosol products contained within the carton as follows: LEVEL||AEROSOLS



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 28: AEROSOLS
SECTION FC 2804: INDOOR STORAGE OF AEROSOL PRODUCTS

NYC Administrative Code § 29-FC 2804

2804.1 General.

Indoor storage of Level 2 and 3 aerosol products shall comply with the requirements of Sections 2804.2 through 2804.7 and NFPA 30B. Level I aerosol products shall be considered equivalent to a Class III commodity and shall comply with the requirements for palletized or rack storage set forth in NFPA 13.

2804.2Storage in Groups A, B, E, F, I and R.Except as otherwise provided in Section 2804.2.1, it shall be unlawful to store Level 2 and 3 aerosol products in Group A, B, E, F, I and R occupancies in excess of the following amounts:

1. A net weight of 1,000 pounds (454 kg) of Level 2 aerosol products.
2. A net weight of 500 pounds (227 kg) of Level 3 aerosol products.
3. A combined net weight of 1,000 pounds (454 kg) of Level 2 and 3 aerosol products.

2804.2.1Excess storage.Level 2 and 3 aerosol products exceeding the maximum quantities set forth in Section 2804.2 may be lawfully stored in accordance with Sections 2804.2.1.1 and 2804.2.1.2.

2804.2.1.1Storage cabinets.Aerosol products in a quantity not to exceed 100 percent of the maximum storage limitation may be stored in storage cabinets in accordance with Section 3404.3.2.

2804.2.1.2Storage rooms.Level 2 and 3 aerosol products in a quantity exceeding that set forth in Section 2804.2 may be lawfully stored indoors in a flammable liquid storage room in accordance with Section 2804.5.

2804.3Storage in general purpose warehouses.Storage of aerosol products in general purpose warehouses, as defined in NFPA 30B, utilized only for warehousing-type operations involving mixed commodities shall comply with the requirements of Section 2804.3.1 or 2804.3.2.

2804.3.1 Nonsegregated storage. Storage consisting of solid pile, palletized or rack storage of Level 2 and 3 aerosol products not segregated into areas utilized exclusively for the storage of aerosols shall comply with the requirements of Table 2804.3.1. Table 2804.3.1 Nonsegregated Storage of Level 2 and 3 Aerosol Products in General Purpose Warehouses

Aerosol Level	Maximum Net Weight Per Floor (pounds)	Palletized or solid-pile storage	Unprotected	Protected	Rack storage	Unprotected	Protected
2	2,500	12,000	2,500	24,000	3	1,000	12,000
3	1,000	12,000	1,000	24,000			

Combination 2 and 32,500 12,000 2,500 24,000 For SI: 1 foot = 304.8 mm, 1 pound = 0.454 kg, 1 square foot = 0.0929 m². a. Sprinkler system protection and storage arrangements shall comply with the requirements of NFPA 30B. Sprinkler system protection shall extend 20 feet beyond the storage area containing the aerosol products. b. Storage quantities indicated are the maximum permitted in any 50,000-square-foot area.

2804.3.2 Segregated storage. Storage of Level 2 and 3 aerosol products segregated into areas utilized exclusively for the storage of aerosols shall be in accordance with Table 2804.3.2 and Sections 2804.3.2.1 and 2804.3.2.2.

2804.3.2.1 Chain-link fence enclosures. Chain-link fence enclosures required by Table 2804.3.2 shall comply with the following requirements:

1. The fence shall not be less than No. 9 gage steel wire, woven into a maximum 2-inch (51 mm) diamond mesh.
2. The fence shall be installed from the floor to the underside of the roof or ceiling above.
3. Class III, IV and high-hazard commodities shall be stored outside of the aerosol storage area and a minimum of 8 feet (2438 mm) from the fence.
4. Access openings in the fence shall be provided with either self-closing or automatic-closing devices or a labyrinth opening arrangement preventing aerosol containers from rocketing through the access openings.
5. Not less than two means of egress shall be provided from the fenced enclosure.

2804.3.2.2 Aisles. The minimum aisle requirements for segregated storage in general purpose warehouses shall be in accordance with Table 2804.3.2.2.

2804.4 Storage in aerosol warehouses. The total quantity of Level 2 and 3 aerosol products in a warehouse exclusively utilized for the storage, shipping and receiving of aerosol products shall not be restricted in structures complying with the requirements of Sections 2804.4.1 through 2804.4.4. Table 2804.3.2 Segregated Storage of Level 2 and 3 Aerosol Products in General Warehouses

Storage Separation	Maximum Segregated Storage Area	Percentage of building area (percent)	Area limitation (square feet)	Sprinkler Requirements	Separation area
a	15	20,000	Notes b, c	Chain-link fence enclosed	20
b	20,000	Notes b, c	1-hour fire-resistance-rated interior walls	20	30,000
c	Note b	2-hour fire-resistance-rated interior walls	25	40,000	Note b
d	3-hour fire-resistance-rated interior walls	30	50,000	Note b	

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m². a. The maximum segregated storage area shall be limited to the smaller of the two areas resulting from the percentage of building area limitation and the area limitation. b. Sprinkler system protection in aerosol product storage areas shall comply with the requirements of NFPA 30B and be approved. Other building areas not containing aerosol product storage shall be protected throughout by a sprinkler system in accordance with the construction codes, including the Building Code. c. Sprinkler system protection in aerosol product storage areas shall comply with the requirements of NFPA 30B and be approved. Sprinkler system protection shall extend a minimum 20 feet beyond the aerosol storage area. d. Chain-link fence enclosures shall comply with the requirements of Section 2804.3.2.1. e. A separation area shall be defined as an area extending outward from the periphery of the segregated aerosol product storage area as follows. e. 1. The limits of the aerosol product storage shall be clearly marked on the floor. 2. The separation distance shall be a minimum of 25 feet and maintained clear of all materials with a commodity classification greater than Class III in accordance with Section 903.3.1.1. f. Separation areas shall be allowed when approved. Table 2804.3.2.2 Segregated Storage Aisle Widths and Distance to Aisles in General Purpose Warehouses

Storage Condition	Minimum Aisle Width (feet)	Maximum Distance from Storage to Aisle (feet)
Solid pile or palletized	4 feet between piles	25
Racks with ESFR sprinklers	4 feet between racks and adjacent Level 2 and 3	

aerosol product storage 25 Racks without ESFR sprinklers a 8 feet between racks and adjacent Level 2 and 3 aerosol product storage 25 For SI: 1 foot = 304.8 mm.a. Sprinklers shall comply with the requirements of NFPA 30B.

2804.4.1Sprinkler system.Aerosol warehouses shall be protected throughout by a wet-pipe sprinkler system in accordance with NFPA 30B. Sprinkler protection shall be designed based on the highest classification level of aerosol product present.

2804.4.2Pile and palletized storage aisles.Solid pile and palletized storage shall be arranged so the maximum travel distance to an aisle is 25 feet (7620 mm). Aisles shall have a minimum width of 4 feet (1219 mm).

2804.4.3Rack storage aisles.Rack storage shall be arranged with a minimum aisle width of 8 feet (2438 mm) between rows of racks and 8 feet (2438 mm) between racks and adjacent solid pile or palletized storage. Where early suppression fast-response (ESFR) sprinklers provide sprinkler protection, the minimum aisle width shall be 4 feet (1219 mm).

2804.4.4Combustible commodities.Combustible commodities other than flammable and combustible liquids may be stored in an aerosol warehouse.

Exception: Flammable and combustible liquids in 1-quart (0.95 L) metal containers and smaller may be stored in an aerosol warehouse.

2804.5Storage in indoor flammable liquid storage rooms.Indoor flammable liquid storage rooms shall comply with the requirements of Section 3404.3.7. The maximum quantities of aerosol products shall comply with the requirements of Section 2804.5.1 or 2804.5.2.

2804.5.1Storage rooms of 500 square feet or less.The storage of aerosol products in flammable liquid storage rooms less than or equal to 500 square feet (46 m²) in area shall not exceed the following quantities:

1. A net weight of 1,000 pounds (454 kg) of Level 2 aerosol products.
2. A net weight of 500 pounds (227 kg) of Level 3 aerosol products.
3. A combined net weight of 1,000 pounds (454 kg) of Level 2 and 3 aerosol products.

2804.5.2Storage rooms greater than 500 square feet.The storage of aerosol products in flammable liquid storage rooms greater than 500 square feet (46 m²) in area shall not exceed the following quantities:

1. A net weight of 2,500 pounds (1135 kg) of Level 2 aerosol products.
2. A net weight of 1,000 pounds (454 kg) of Level 3 aerosol products.
3. A combined net weight of 2,500 pounds (1135 kg) of Level 2 and 3 aerosol products. The maximum aggregate storage quantity of Level 2 and 3 aerosol products permitted in separate indoor storage rooms protected by a sprinkler system in accordance with NFPA 30B shall be 5,000 pounds (2270 kg).

2804.6Storage in liquid warehouses.The storage of Level 2 and 3 aerosol products in liquid warehouses, as defined in NFPA 30B, shall comply with the requirements of NFPA 30B. The storage shall be located within segregated storage areas in accordance with Section 2804.3.2 and Sections 2804.6.1 through 2804.6.3.

2804.6.1Containment.Spill control or drainage shall be provided to prevent the flow of liquid to within 8 feet (2438 mm) of the segregated storage area.

2804.6.2Sprinkler design.Sprinkler protection shall be designed based on the highest level of aerosol product

present.

2804.6.3 Opening protection into segregated storage areas. Fire doors or gates opening into the segregated storage area shall either be self-closing or provided with automatic closing devices activated by sprinkler water flow or an approved fire detection system.

2804.7 Storage in Group M occupancies. Storage of Level 2 and 3 aerosol products in occupancies in Group M shall comply with the requirements of Table 2804.7. Retail display shall comply with the requirements of Section 2806. Table 2804.7 Maximum Quantities of Level 2 and 3 Aerosol Products in Retail Storage Areas Maximum Net Weight Per Floor (pounds) Floor Nonsegregated storage^a,^b Segregated storage Storage cabinets^b Separated from retail area^c Basement, cellar or other area below grade Not permitted Not permitted Not permitted Ground floor 2,500 5,000 Note d Upper floors 500 1,000 Note d For SI: 1 pound = 0.454 kg, 1 square foot = 0.0929 m². a. The total aggregate quantity on display and in storage shall not exceed the maximum retail display quantity indicated in Section 2806.3.b. Storage quantities indicated are the maximum permitted in any 50,000-square-foot area. c. The storage area shall be separated from the retail area with a 1-hour fire-resistance-rated assembly. d. See Table 2804.3.2.



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Chapter 28: AEROSOLS
SECTION FC 2805: OUTDOOR STORAGE

NYC Administrative Code § 29-FC 2805

2805.1 General.

The outdoor storage of Level 2 and 3 aerosol products, including storage in temporary storage trailers, shall be separated from exposures in accordance with Table 2805.1. Table 2805.1 Distance to Exposures for Outdoor Storage of Level 2 and 3 Aerosol Products Exposure Minimum Distance from Aerosol Storage (feet)

	Public streets or private roads	Buildings	Exit discharge to a public street or private road	Lot lines	Other outdoor hazardous material storage
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.	a				

a. The minimum separation distance indicated is not required where exterior walls having a 2-hour fire-resistance rating without penetrations separate the storage from the exposure. The walls shall extend not less than 30 inches above and to the sides of Level 2 and 3 aerosol products.



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 SECTION FC 2806: RETAIL DISPLAY

NYC Administrative Code § 29-FC 2806

2806.1 General.

This section shall apply to the retail display of Level 2 and 3 aerosol products.

2806.2 Maximum quantities in retail display areas. Aerosol products in retail display areas shall not exceed quantities needed for display and normal merchandising and shall not exceed the quantities in Table 2806.2. Table 2806.2 Maximum Quantities of Level 2 and 3 Aerosol Products in Retail Display Areas

Floor	Maximum Net Weight Per Floor (pounds)	a, b Unprotected	c Protected	d Basement, cellar or other area below grade	Not allowed
Ground	2,500	10,000	Upper 500	2,000	For SI: 1 pound = 0.454 kg, 1 square foot = 0.0929 m ² .

a. The total quantity shall not exceed 1,000 pounds net weight in any one 100-square-foot retail display area. b. When packaged, stored and protected in accordance with NFPA 30B, quantity limits shall be limited to those specified in NFPA 30B. c. Per 25,000-square-foot retail display area. d. Minimum Ordinary Hazard Group 2 wet-pipe sprinkler system throughout the retail sales occupancy.

2806.3 Maximum quantities in storage areas. Aerosol products in storage areas adjacent to retail display areas shall not exceed the quantities in Table 2806.3. Table 2806.3 Maximum Storage Quantities for Storage Areas Adjacent to Retail Display of Level 2 and Level 3 Aerosols

Floor	Maximum Net Weight Per Floor (pounds)	a Unseparated	b Separated	c Storage cabinets	d 1-hour occupancy separation	e Basement, cellar or other area below grade	Not allowed
Ground	2,500	5,000	In accordance with NFPA 30B, Sections 4-3.4.2 and 4-3.4.3	Upper 500	1,000	In accordance with NFPA 30B, Sections 4-3.4.2 and 4-3.4.3	For SI: 1 pound = 0.454 kg, 1 square foot = 0.0929 m ² .

The aggregate quantity in storage and retail display shall not exceed the quantity limits for retail display. b. In any 50,000-square-foot area.

2806.4 Display of containers. Aerosol containers shall not be stacked more than 6 feet (1829 mm) high from the base of the aerosol array to the top of the aerosol array unless the containers are placed on fixed shelving or otherwise secured in an approved manner. When storage or retail display is on shelves, the height of such storage or retail display to the top of aerosol containers shall not exceed 8 feet (2438 mm) from the floor.

Exception: Storage or display protected in accordance with Sections 2806.2 and 2806.3.

2806.5 Combustible cartons. Aerosol products located in retail display areas shall be removed from combustible cartons.

Exceptions:

1. Display areas that use a portion of combustible cartons, which consist of only the bottom panel and not more than 2 inches (51 mm) of side panel are allowed.

2. When the display area is protected in accordance with Table 4-3 of NFPA 30B, storage of aerosol products in combustible cartons is allowed.

2806.6 Aisles. Aisles not less than 4 feet (1219 mm) in width shall be maintained on three sides of a retail display area containing aerosol products.

Exception: An approved aggregate quantity of aerosol product in the occupancy of less than 100 pounds (45.4 kg).

2806.7 Retail display sprinkler system. When a sprinkler system is required for the protected retail display of aerosol products, the wet-pipe sprinkler system shall be in accordance with this code, and the construction codes, including the Building Code. The minimum system design shall be for an Ordinary Hazard Group 2 occupancy. The system shall be provided throughout the retail display area.

2806.8 Storage fire extinguishing system. When the height of any stored or displayed aerosol products exceeds the height limitations set forth in Section 2806.4, the design of the sprinkler system shall be in accordance with NFPA 30B.



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TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 29: COMBUSTIBLE FIBERS
SECTION FC 2901: GENERAL

NYC Administrative Code § 29-FC 2901

2901.1 Scope.

This chapter shall govern the storage and handling of combustible fibers.

2901.2 General. Combustible fibers shall be stored and handled in accordance with this chapter.

2901.3 Permits. Permits shall be required as set forth in Section 105.6.

2901.4 Approved facility or location. Combustible fibers in quantities requiring a permit shall be stored in an approved facility or other approved location.

2901.5 Prohibition. It shall be unlawful to store combustible fibers in a quantity that covers more than two-thirds of the floor area of any floor or in a quantity that is to a height greater than two-thirds of the distance from the floor to the ceiling.



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Chapter 29: COMBUSTIBLE FIBERS
SECTION FC 2902: DEFINITIONS

NYC Administrative Code § 29-FC 2902

2902.1 Definition.

The following term shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

COMBUSTIBLE FIBERS. Readily ignitable and free-burning fibers, such as cocoa fiber, cotton, excelsior, hay, hemp, henequen, istle, jute, kapok, oakum, sisal, Spanish moss, straw, tow, wastepaper, or other natural or synthetic fibers that possess similar qualities.



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SECTION FC 2903: GENERAL REQUIREMENTS

NYC Administrative Code § 29-FC 2903

2903.1 Combustible waste.

Ashes, rubbish or other combustible waste shall not be placed in wooden or other combustible containers and shall be removed daily from the facility.

2903.2Vegetation.Grass, vines, weeds, brush or other combustible vegetation shall not be allowed to accumulate within 15 feet (4570 mm) of any combustible fiber storage location.

2903.3Clearances.A minimum clearance of 3 feet (914 mm) shall be maintained between sprinkler heads and the top of piles.

2903.4Agricultural products.Hay, straw or similar agricultural products shall not be stored in an area adjoining any combustible fiber storage location unless a clear horizontal distance equal to the height of a pile is maintained between such agricultural products and such storage location. Storage shall be limited to stacks of 100 tons (91 metric tons) each. Stacks shall be separated by a minimum of 20 feet (6096 mm) of clear space.

2903.5Dust collection.Where located within a building, devices, equipment and systems that generate or emit combustible fibers shall be provided with an approved dust-collecting and exhaust system. Such system shall comply with the requirements of Chapter 13 and the construction codes, including the Mechanical Code.

2903.6Portable fire extinguishers.Portable fire extinguishers shall be provided in accordance with Section 906 governing extra-hazard occupancy protection, as set forth in Table 906.3(1).



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SECTION FC 2904: LOOSE FIBER STORAGE

NYC Administrative Code § 29-FC 2904

2904.1 Reserved.

2904.2Storage of 100 cubic feet or less.Loose combustible fibers in quantities of not more than 100 cubic feet (3 m3) located in a building or structure shall be stored in a metal or metallined bin equipped with a self-closing cover.

2904.3Storage of more than 100 cubic feet to 500 cubic feet.Loose combustible fibers in quantities exceeding 100 cubic feet (3 m3) but not exceeding 500 cubic feet (14 m3) shall be stored in rooms enclosed with 1-hour fire-resistance-rated fire barriers, with openings protected by an approved opening protective assembly having a fire protection rating of 3/4-hour, constructed in accordance with the construction codes, including the Building Code.

2904.4Storage of more than 500 cubic feet to 1,000 cubic feet.Loose combustible fibers in quantities exceeding 500 cubic feet (14 m3) but not exceeding 1,000 cubic feet (28 m3) shall be stored in rooms enclosed with 2-hour fire-resistance-rated fire barriers, with openings protected by an approved opening protective assembly having a fire protection rating of 1 1/2-hours, and constructed in accordance with the construction codes, including the Building Code.

2904.5Storage of more than 1,000 cubic feet to 2,500 cubic feet.Loose combustible fibers in quantities exceeding 1,000 cubic feet (28 m3) but not exceeding 2,500 cubic feet (70 m3) shall be stored in rooms enclosed with 2-hour fire-resistance-rated fire barriers, with openings protected by an approved opening protective assembly having a fire protection rating of 1 1/2-hours, and constructed in accordance with the construction codes, including the Building Code. The storage room shall be protected throughout by a sprinkler system.

2904.6Storage of more than 2,500 cubic feet; detached storage structure.Loose combustible fibers in quantities exceeding 2,500 cubic feet (70 m3) but not exceeding 10,000 cubic feet (280 m3) shall be stored in a detached structure suitably located, with openings protected against entrance of sparks. The structure shall not be occupied for any other purpose. Loose combustiblefibers in quantities exceeding 10,000 cubic feet (280 m3) may be stored only with the approval of the commissioner.

2904.7 Separation from hazardous materials. No hazardous material shall be stored in any room or detached structure containing loose combustible fibers.



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SECTION FC 2905: BALED STORAGE

NYC Administrative Code § 29-FC 2905

2905.1 Bale size and separation.

Baled combustible fibers shall be limited to single blocks or piles not more than 25,000 cubic feet (700 m³) in volume, not including aisles or clearances. Blocks or piles of baled fiber shall be separated from adjacent storage by aisles not less than 5 feet (1524 mm) wide, or by flash-fire barriers constructed of continuous sheets of noncombustible material extending from the floor to a minimum height of 1 foot (305 mm) above the highest point of the piles and projecting not less than 1 foot (305 mm) beyond the sides of the piles.

2905.2 Special baling conditions. Sisal and other fibers in bales bound with combustible tie ropes, jute and other fibers that swell when wet, shall be stored to allow for expansion in any direction without affecting building walls, ceilings or columns. A minimum clearance of 3 feet (914 mm) shall be required between walls and sides of piles, except that where the storage compartment is not more than 30 feet (9144 mm) wide, the minimum clearance at side walls shall be 1 foot (305 mm), provided that a center aisle not less than 5 feet (1524 mm) wide is maintained.



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Chapter 29: COMBUSTIBLE FIBERS
SECTION FC 2906: STORAGE OF COMBUSTIBLE FIBERS ON WATERFRONT STRUCTURES

NYC Administrative Code § 29-FC 2906

2906.1 Scope.

This section shall govern the storage and handling of combustible fibers on waterfront structures, including piers, wharfs and bulkheads except when combustible fibers are stored and handled exclusively in sealed metal shipping containers.

2906.2General. Combustible fiber shall be stored and handled on waterfront structures in accordance with this section.

2906.3Prohibitions. It shall be unlawful to:

1. Unload and store loose combustible fibers on a waterfront structure.
2. Conduct hot work operations on a waterfront structure where combustible fibers are in storage or being handled.

2906.4Supervision of standpipe and sprinkler systems. A person holding a certificate of fitness for a standpipe system and a certificate of fitness for sprinkler system maintenance shall inspect the standpipe and sprinkler systems not more than 24 hours prior to the delivery of the combustible fibers. Combustible fibers shall not be unloaded if the standpipe or sprinkler system is out of service. While combustible fibers are present on the waterfront structure, the certificate of fitness holder shall inspect the standpipe and sprinkler systems, and portable fire extinguishers at least once each day. A record of all inspections shall be maintained on the premises and made available for inspection by any representative of the department.

2906.5Notification. Before combustible fibers are unloaded to a waterfront structure from any marine vessel or vehicle, advance notice of at least 48 hours shall be given to the department by the owner of the waterfront structure.

2906.6Fire protection. Waterfront structures where combustible fibers are stored or handled shall be provided with fire protection in accordance with Sections 2209.6.1 through 2209.6.4.

2906.6.1Superstructure.The superstructure of the waterfront structure shall be protected throughout by a sprinkler system.

2906.6.2Substructure.The substructure of the waterfront structure shall be protected by one of the following methods:

1. Fire stops at intervals of 150 feet (45 720 mm); and

- 1.1. A sprinkler system arranged for discharge of water to the entire substructure area; or

- 1.2. Protected openings through decking for revolving nozzles or other water discharge equipment, so arranged as to permit water discharge onto the entire substructure area. Such openings shall be a minimum of 6.5 inches (165.1 mm) in diameter and spaced at 25 feet (7620 mm) intervals longitudinally and transversely. No cargo shall be stored on deck openings adjacent to the substructure fire stops and those in the main and fire hose aisles.

2. A system of water spray nozzles arranged to permit water discharge onto the entire substructure area and installed in accordance with the Building Code.

3. A system of trenches across the waterfront structure every 100 feet (30 480 mm). Such trenches shall not exceed 12 inches (304.8 mm) in width, shall be of substantial construction that conforms to the rest of the waterfront structure, shall extend to within 5 feet (1524 mm) of the sides of the waterfront structure, and shall have openings protected in sections not to exceed 25 feet (7620 mm) for access or removal in the event of fire. No cargo shall be placed directly above these openings, and durable signs shall be conspicuously posted on the waterfront structure to indicate the location of these openings.

4. A system of deck openings and under-deck sprinkler protection approved by the commissioner. Openings shall be spaced at 25 feet (7620 mm) intervals longitudinally and transversely. No cargo shall be placed directly above these openings, and durable signs shall be conspicuously posted on the waterfront structure to indicate the location of these openings.

2906.6.3LPG or gasoline-fueled equipment.Any LPG or gasoline-fueled devices, equipment or systems used to handle combustible fibers, or operated in the immediate area of combustible fiber storage or handling, shall be equipped with exhaust spark arresters and carburetor traps.

2906.6.4Portable fire extinguishers.The combustible fiber storage area shall be provided with portable fire extinguishers in accordance with Section 906 governing extra-high hazards (Class A fires).

2906.7Storage and handling.Bales of combustible fibers facing aisles shall be covered on top and sides with tarpaulins or other suitablecovering. Whenever possible, the combustible fibers shall be stacked on one side of the waterfront structure only, preferably at the water end of waterfront structure. Combustible fibers shall be tiered no higher than 12 feet (3658 mm) and a clearance of not less than 18 inches (457.2 mm) between the sprinkler head and the upper level of the top tier shall be maintained. An aisle space of not less than 5 feet (1524 mm) extending to the side of the waterfront structure shall be provided at right angles to the main aisle at intervals not exceeding 75 feet (22 860 mm) in the combustible fiber storage area.

2906.8Operation and maintenance.Waterfront structures upon which combustible fibers are stored or handled shall be operated and maintained in accordance with Sections 2906.8.1 through 2906.8.3.

2906.8.1Fire guard.A fire guard shall be required and positioned approximately every 200 feet (60 960 mm) throughout the length of the combustible fiber storage area. Each fire guard shall be instructed:

1. To keep diligent watch for fires, take prompt measures for extinguishment of fires, and transmit an alarm to the

department at the first sign of fire.

2. As to the location of all fire alarm manual pull stations in the area.

3. As to the location and the use of portable fire extinguishers and standpipe system valves and hoses.

2906.8.2 Access. Access to combustible fibers and the aisles between the stored combustible fibers shall be restricted to personnel handling the combustible fibers, fire guards and representatives of the department.

2906.8.3 Loading and unloading. When loading and unloading combustible fibers, two persons shall be assigned to each loading or unloading operation to stand by with the standpipe hose. These persons shall be instructed as to the location and use of the standpipe system valves and hoses.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 30: COMPRESSED GASES
SECTION FC 3001: GENERAL

NYC Administrative Code § 29-FC 3001

3001.1 Scope.

This chapter shall govern the storage, handling and use of compressed gases in compressed gas containers and systems, including those gases regulated elsewhere in this code.

Exceptions:

1. Compressed gases used as refrigerants in refrigerating systems in accordance with Chapter 6.
2. Compressed natural gas (CNG) stored, handled or used as a vehicular fuel in accordance with Chapter 22, NFPA 52 and the Fuel Gas Code.
3. Compressed gases connected for use in a fire extinguishing system.

3001.2Permits.Permits shall be required as set forth in Section 105.6.

3001.3General.Compressed gases shall be stored, handled and used in accordance with this chapter.

3001.3.1Cutting and welding gases.Cutting and welding gases shall additionally comply with the requirements of Chapter 27.

3001.3.2Cryogenic fluids.Cryogenic fluids shall additionally comply with the requirements of Chapter 32.

3001.3.3Hazardous materials.Compressed gases classified as hazardous materials shall additionally comply with the requirements of Chapter 27 and any other applicable chapters of this code, including Chapters 35 (Flammable Gases), 37 (Highly Toxic and Toxic Materials), 40 (Oxidizers) and 41 (Pyrophoric), as applicable.

3001.3.4Liquefied petroleum gas (LPG).LPG shall additionally comply with the requirements of Chapter 38 and

the Fuel Gas Code.

3001.4Supervision.The storage, handling, use and compression of compressed gases shall be supervised as set forth in Sections 3001.4.1 through 3001.4.3.

3001.4.1Handling and use.The handling and use of compressed gases in quantities requiring a permit, including piped medical gas systems, shall be under the personal supervision of a person holding a certificate of fitness.

3001.4.2Storage.The storage of compressed gases in quantities requiring a permit, including medical gases that are not piped, shall be under the general supervision of a person holding a certificate of fitness.

3001.4.3Compressing.The compressing of gases requiring a permit shall be performed by or under the personal supervision of a person holding a certificate of fitness.

Exception: Compressing atmospheric air may be under the general supervision of a person holding a certificate of fitness.

3001.4.4Filling of containers.The transfer of nonflammable compressed gases between containers shall be performed by a person holding a certificate of fitness.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 30: COMPRESSED GASES
SECTION FC 3002: DEFINITIONS

NYC Administrative Code § 29-FC 3002

3002.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

COMPRESSED GAS. A material, or mixture of materials that is a gas at 68(degrees)F (20(degrees)C) or less at 14.7 psia (101 kPa) of pressure; and has a boiling point of 68(degrees)F (20(degrees)C) or less at 14.7 psia (101 kPa) that is either liquefied, nonliquefied or in solution at that temperature and pressure, except that gases which have no other health- or physical-hazard properties are not considered to be compressed until the pressure in the packaging exceeds 41 psia (28 kPa) at 68(degrees)F (20(degrees)C). Compressed gases shall be classified as follows:

Nonliquefied compressed gases. Gases, other than those in solution, that are in a packaging under the charged pressure and are entirely gaseous at a temperature of 68(degrees)F (20(degrees)C).

Liquefied compressed gases. Gases that, in a packaging under the charged pressure, are partially liquid at a temperature of 68(degrees)F (20(degrees)C).

Compressed gases in solution. Nonliquefied gases that are dissolved in a solvent.

Compressed gas mixtures. A mixture of two or more compressed gases contained in a single packaging, the hazard properties of which are represented by the properties of the mixture as a whole.

COMPRESSED GAS CONTAINER. A pressure container designed to hold compressed gases at pressures greater than one atmosphere at 68(degrees)F (20(degrees)C).

COMPRESSED GAS SYSTEM. An assembly of components, such as containers, reactors, pumps, compressors and connecting piping and tubing, designed to contain, distribute or transport compressed gases.

NESTING. A method of securing flat-bottomed compressed gas containers upright in a tight mass using a contiguous three-point contact system whereby all containers within a group have a minimum of three points of contact with other containers, walls or bracing.



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Chapter 30: COMPRESSED GASES
SECTION FC 3003: GENERAL REQUIREMENTS

NYC Administrative Code § 29-FC 3003

3003.1 Containers.

Compressed gas containers shall comply with the requirements of this section. Compressed gas containers shall be designed and fabricated in accordance with the specifications of the ASME Boiler and Pressure Vessel Code or DOTn regulations, or be otherwise approved. Compressed gas containers that are not designed for refillable use shall not be refilled after use of the original contents.

3003.1.1Partially full compressed gas containers.Partially full compressed gas containers containing residual gases shall be considered as full for the purposes of the controls required.

3003.2Marking.Stationary and portable compressed gas containers and systems shall be marked in accordance with Sections 3003.2.1, 3003.2.2 and 3003.2.3.

3003.2.1Stationary compressed gas containers.Stationary compressed gas containers shall be marked with the name of the gas and in accordance with Sections 2703.5 and 2703.6. Markings shall be visible from any direction of approach. All uninsulated stationary outdoor compressed gas containers shall be of light-reflective design or painted with a light-reflecting color.

3003.2.2Portable containers.Portable compressed gas containers shall be marked in accordance with CGA C-7 and DOTn regulations.

3003.2.3Piping systems.Piping systems shall be marked in accordance with ANSI A13.1. Markings used for piping systems shall consist of the name of the contents and include an arrow indicating direction of flow. Markings shall be provided at each valve; at wall, floor or ceiling penetrations; at each change of direction; and at a minimum of every 20 feet (6096 mm) or fraction thereof throughout the piping run.

Exceptions:

1. Piping that is designed or intended to carry more than one compressed gas at various times shall have appropriate signs or markings posted at the manifold, along the piping and at each point of use to provide clear identification and warning.

2. Piping within gas-manufacturing plants, gas-processing plants and similar occupancies shall be marked in an approved manner.

3003.2.4 Out-of-service containers. Out-of-service compressed gas containers shall be marked to indicate that they are no longer available for service.

3003.3 Container protection. Compressed gas containers and systems shall be secured and protected against physical damage and tampering in accordance with Sections 2703.9.2, 3003.3.2 and 3003.3.3.

3003.3.1 Reserved.

3003.3.2 Physical protection. Compressed gas containers and systems that could be exposed to physical damage shall be protected. Posts or other approved means shall be provided to protect compressed gas containers and systems indoors and outdoors from vehicular damage and shall comply with the requirements of Section 312.

3003.3.3 Securing compressed gas containers. Compressed gas containers shall be secured to prevent movement from contact, vibration or seismic activity, utilizing one or more of the following methods:

1. Securing containers to a fixed object with one or more noncombustible restraints. Containers shall not be secured to plumbing systems or electrical conduits.

2. Securing containers on a cart or other mobile device designed for the movement of compressed gas containers.

3. Nesting of compressed gas containers at container filling or servicing facilities or in seller's warehouses not accessible to the public. Nesting shall be allowed provided the nested containers, if dislodged, do not obstruct any required means of egress.

4. Securing of compressed gas containers to or within a rack, framework, cabinet or similar assembly designed for such use, except when the containers are in the process of examination, filling, transport or servicing.

5. Securing stationary compressed gas containers to a foundation designed for such use in accordance with the construction codes, including the Building Code.

3003.4 Valve protection. Compressed gas container valves shall be protected from physical damage by means of protective caps, collars or similar devices, in accordance with Sections 3003.4.1 and 3003.4.2.

3003.4.1 Compressed gas container protective caps or collars. Compressed gas containers designed to be fitted with protective caps, collars or other protective devices shall have such caps or devices in place except when the containers are in use or are being serviced or filled.

3003.4.2 Caps and plugs. Valves of compressed gas containers designed to accept protection caps or other protective devices shall have such caps or devices attached. Outlet caps or plugs shall be in place except when the compressed gas containers are in use or are being serviced or filled.

3003.5 Separation from hazardous conditions. Compressed gas containers and systems in storage or use shall be separated from materials and conditions that present potential hazards to them, or to which they present potential hazards. Compressed gas containers and systems in storage or use shall be separated in accordance with Sections 3003.5.1 through 3003.5.10.

3003.5.1 Incompatible materials. Compressed gas containers shall be separated from each other based on the hazard class of their contents. Compressed gas containers shall be separated from incompatible materials in accordance with Section 2703.9.8.

3003.5.2 Combustible waste and vegetation. Combustible waste and vegetation shall be kept a minimum of 10 feet (3048 mm) from compressed gas containers and systems. A noncombustible partition, without openings or penetrations extending not less than 18 inches (457 mm) above the height of the tallest container or system piping and not less than 18 inches (457 mm) to the sides of the storage area is allowed in lieu of such distance. The wall shall either be an independent structure, or the exterior wall of the building adjacent to the storage area.

3003.5.3 Ledges, platforms and elevators. Compressed gas containers shall not be placed near elevators, unprotected platform ledges or other areas where the container could drop a distance exceeding one-half the height of the container.

3003.5.4 Temperature extremes. Compressed gas containers, whether full or partially full, shall not be exposed to temperatures exceeding 125(degrees)F (52(degrees)C) or less than mean low atmospheric temperatures unless designed for use under the exposed conditions.

3003.5.5 Falling objects. Compressed gas containers and systems shall not be placed in areas where they are exposed to damage from falling objects.

3003.5.6 Heating. Compressed gas containers shall not be heated by devices that could raise the surface temperature of the container to above 125(degrees)F (52(degrees)C). Heating devices shall comply with the requirements of the Mechanical Code and the Electrical Code. Approved heating methods not capable of producing surface temperatures above 125(degrees)F (52(degrees)C) are allowed to be used by trained personnel. Devices designed to maintain individual compressed gas containers at constant temperature shall be approved and shall be designed to be fail-safe.

3003.5.7 Sources of ignition. Open flames and high-temperature devices shall not be used in a manner that creates a hazardous condition.

3003.5.8 Exposure to chemicals. Compressed gas containers and systems shall not be exposed to corrosive chemicals or fumes that could damage containers, valves or valve-protective caps.

3003.5.9 Exhausted enclosures. When exhausted enclosures are provided as a means to segregate compressed gas containers from exposure hazards, such enclosures shall comply with the requirements of Section 2703.8.5.

3003.5.10 Gas cabinets. When gas cabinets are provided as a means to separate compressed gas containers from exposure hazards, such gas cabinets shall comply with the requirements of Section 2703.8.6.

3003.6 Wiring and equipment. Electrical wiring and equipment shall comply with the requirements of the Electrical Code. Compressed gas containers and systems shall not be located where they could become part of an electrical circuit. Compressed gas containers and systems shall not be used for electrical grounding.

3003.7 Service and repair. Service, repair, modification or removal of valves, pressure-relief devices or other compressed gas container appurtenances shall be performed by competent personnel.

3003.8 Unauthorized use. Compressed gas containers and systems shall not be used for any purpose other than as a vessel for the materials that they are designed to contain.

3003.9 Exposure to fire. Compressed gas containers that have been exposed to fire shall be removed from service. Containers so removed shall be handled by qualified persons under the personal supervision of a certificate of fitness holder. Containers exposed to fire shall not be used unless they have been requalified in accordance with the standards set forth in ASME or DOTn regulations, or otherwise approved by the commissioner.

3003.10 Leaks, damage or corrosion. Leaking, damaged or corroded compressed gas containers shall be removed from service under the personal supervision of a certificate of fitness holder, and properly repaired or disposed.

3003.11 Protection against corrosion. Except as otherwise provided in this section, compressed gas containers may be stored or used without being placed under overhead cover. Containers shall be protected from direct contact with soil or unimproved surfaces to prevent bottom corrosion. The surface of the area upon which the containers are placed shall be graded to prevent accumulation of water.

3003.12 Overhead cover. Compressed gas containers in quantities requiring a permit are allowed to be stored or used in the sun except in locations where extreme temperatures prevail. When extreme temperatures prevail, overhead covers shall be provided. Overhead covers shall also be provided to prevent accumulations of ice and snow on the valves of containers connected for use.

3003.13 Lighting. Areas used for the storage, handling and use of compressed gas containers and systems shall be provided with approved lighting by natural or artificial means.



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SECTION FC 3004: STORAGE OF COMPRESSED GASES

NYC Administrative Code § 29-FC 3004

3004.1 Upright storage.

Compressed gas containers, except those designed for use in a horizontal position, and all compressed gas containers containing nonliquefied gases, shall be stored in an upright position with the valve end up. The axis of the container stored in the upright position may be inclined as much as 45 degrees (0.80 rad) from the vertical provided that it is properly secured.

Exception: Compressed gas containers with an internal volume less than 0.174 ft³ (0.005 m³) may be stored in a horizontal position.

3004.2 Material-specific regulations. In addition to the requirements of this section, indoor and outdoor storage of compressed gases shall comply with the material-specific requirements of Chapters 31, 35 and 37 through 44.



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SECTION FC 3005: HANDLING AND USE OF COMPRESSED GASES

NYC Administrative Code § 29-FC 3005

3005.1 Compressed gas systems.

Compressed gas systems shall be suitable for the use intended and shall be designed and installed by persons competent in such design and installation. Compressed gas devices and systems shall be listed or approved.

3005.2 Controls. Compressed gas system controls shall be designed to prevent materials from entering or leaving process or reaction systems at other than the intended time, rate or path. Automatic controls shall be designed to be fail-safe.

3005.3 Piping systems. Piping, including tubing, valves, fittings and pressure regulators, shall comply with the requirements of this section and Chapter 27. Piping, tubing, pressure regulators, valves and other apparatus shall be kept gas tight to prevent leakage. Adequate pressure-relief devices shall be provided where refrigerated liquefied gas can become trapped in the piping.

3005.4 Valves. Valves utilized on compressed gas systems shall be suitable for the use intended and shall be accessible. Valve handles or operators for required shutoff valves shall not be removed or otherwise altered to prevent access or hinder operation.

3005.5 Venting. Venting of gases shall be directed to an approved location. Venting shall comply with the requirements of the Mechanical Code.

3005.6 Upright use. Compressed gas containers, except those designed for use in a horizontal position, and all compressed gas containers containing nonliquefied gases, shall be used in an upright position with the valve end up. The axis of a container being used in an upright position may be inclined as much as 45 degrees (0.80 rad) from the vertical provided that it is properly secured. Use of nonflammable liquefied gases in the inverted position when the compressed gas is in the liquid state shall be allowed provided that the container is properly secured and the dispensing apparatus is designed for such liquefied gas use.

Exception: Compressed gas containers with an internal volume less than 0.174 ft³ (0.005 m³) may be used in a horizontal position.

3005.7Transfer. Transfer of nonflammable compressed gases between containers shall be performed using equipment and operating procedures specified in CGA P-1 and NFPA 99.

3005.8Use of compressed gas for inflation. Inflatable equipment, devices or balloons shall be pressurized or filled only with nonflammable gases.

3005.9Material-specific regulations. In addition to the requirements of this section, indoor and outdoor use of compressed gases shall comply with the material-specific requirements of Chapters 31, 35 and 37 through 44.

3005.10Handling. The handling of compressed gas containers shall comply with the requirements of Sections 3005.10.1 and 3005.10.2.

3005.10.1Carts and trucks. Containers shall be moved using an approved method. Where containers are moved by hand cart, hand truck or other mobile device, such carts, trucks or devices shall be designed for the secure movement of containers. Carts and trucks utilized for moving compressed gas containers indoors shall comply with the requirements of Section 2703.10. Carts and trucks utilized for moving compressed gas containers outdoors shall be designed so that the containers will be secured against dropping or otherwise striking against each other or other surfaces.

3005.10.2Lifting of containers. Ropes, chains or slings shall not be used to suspend compressed gas containers unless such containers have been designed for such handling. Valves of compressed gas containers shall not be used for lifting.



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TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 30: COMPRESSED GASES
SECTION FC 3006: MEDICAL GAS STORAGE

NYC Administrative Code § 29-FC 3006

3006.1 General.

The storage of compressed gases intended for inhalation or sedation including, but not limited to, analgesics for dentistry, podiatry, veterinary and similar uses at hospitals and other medical facilities shall comply with the requirements of this section in addition to other requirements of this chapter.

3006.2Storage locations within buildings.Medical gases shall be stored in areas dedicated to the storage of such gases without other storage or uses. Where containers of medical gases in quantities greater than the maximum allowable quantity per control area are located inside buildings or structures, they shall be stored in a 1-hour room or a gas cabinet in accordance with Section 3006.2.1or 3006.2.3.

3006.2.1One-hour rooms.A 1-hour room shall be a room separated from the remainder of the building or structure by fire barriers with a fire-resistance rating of not less than 1 hour. Openings between the room and interior spaces shall be protected by self-closing smoke and draft-control assemblies having a fire protection rating of not less than 1 hour. Rooms having an exterior wall shall be provided with at least two vents in such wall, each having not less than 36 square inches (0.023 m²) free area. One vent shall be within 6 inches (152 mm) of the floor and one shall be within 6 inches (152 mm) of the ceiling. Rooms with no exterior wall shall be exhausted through a duct to the outdoors. Supply and exhaust ducts shall be enclosed in a 1-hour-rated shaft enclosure from the room to the outdoors. Approved mechanical ventilation shall comply with the requirements of the Mechanical Code and be provided at a minimum rate of 1 cubic foot per minute per square foot [0.00508 m³/(s;bm²)] of the area of the room. Rooms shall be protected by a sprinkler system.

3006.2.2Reserved.

3006.2.3Gas cabinets.Gas cabinets shall be constructed in accordance with Section 2703.8.6 and the following:

1. The average velocity of ventilation at the face of access ports or windows shall not be less than 200 feet per

minute (61 m/s) with a minimum of 150 feet per minute (46 m/s) at any point of the access port or window.

2. Connected to an exhaust system.
3. Internally protected by a sprinkler system.

3006.3Outdoor storage locations.The storage of oxidizing medical gases located outdoors in quantities greater than the amount requiring a permit shall be located in accordance with Section 4004.2.1.

3006.4Medical gas storage.Medical gas storage, including containers, supply manifolds, connections, pressure regulators, relief devices and valves, shall comply with the requirements of NFPA 99 and this chapter.



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Chapter 30: COMPRESSED GASES
SECTION FC 3007: COMPRESSED GASES NOT OTHERWISE REGULATED

NYC Administrative Code § 29-FC 3007

3007.1 General.

Compressed gases in storage or use not regulated by the material-specific provisions of Chapters 6, 31, 35 and 37 through 45, including asphyxiant, irritant and radioactive gases, shall comply with the requirements of this section in addition to other requirements of this chapter.

3007.2 Ventilation. Indoor storage and use areas and storage buildings shall be provided with mechanical exhaust ventilation or natural ventilation in accordance with Section 2704.3 or 2705.1.9. Mechanical exhaust ventilation shall be provided where required by Section 2705.2.1.1 or 2705.2.2.2. When mechanical ventilation is provided, the systems shall be operational during such time as the building or space is occupied.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 30: COMPRESSED GASES
SECTION FC 3008: ETHYLENE OXIDE

NYC Administrative Code § 29-FC 3008

3008.1 Scope.

This section shall govern the storage, handling and use of gases containing ethylene oxide used for sterilization purposes. The storage, handling and use of gases containing ethylene oxide for purposes other than sterilization shall comply with the other applicable requirements of this chapter. The storage, handling and use of flammable gases containing ethylene oxide shall additionally comply with the requirements of Chapter 35.

3008.2General. The storage, handling and use of gases containing ethylene oxide used for sterilization purposes shall comply with the other requirements of this chapter, as applicable, and shall additionally be in accordance with this section.

3008.3Prohibitions. It shall be unlawful to sterilize pressurized oxygen equipment with gases containing ethylene oxide.

3008.4Application. Prior to storing or using gases containing ethylene oxide, or modifying an existing installation or system, the owner shall file with the department an application for the approval of the design and installation of the sterilization system which contains such information and documentation as the commissioner may prescribe.

3008.5Design and installation requirements. The design and installation of sterilization systems shall comply with the requirements of Sections 3008.5.1 through 3008.5.3.

3008.5.1Compliance with other codes and standards. The design and installation of sterilization systems and the storage of gases containing ethylene oxide shall be in accordance with the construction codes, including the Building Code, the Electrical Code, the manufacturer's specifications and the approved testing laboratory that listed the sterilizer.

3008.5.2Sterilization system room and local area ventilation. Sterilization systems shall be installed in rooms that are ventilated as follows:

3008.5.2.1Room ventilation.Sterilizers shall be installed in a well-ventilated room or other area provided with an independent, non-recirculating mechanical ventilation system that discharges outdoors. Ventilation supply and exhaust registers shall be located such that there are no stagnant air spaces in the immediate area of the sterilizer and that the direction of air movement is away from the operator.

3008.5.2.2Local area ventilation.Where a local ventilation system is required by the regulations of the United States Department of Labor, such ventilation system shall be an independent, dedicated and non-recirculating system that discharges directly outdoors or to an emission control system and only metallic ductwork impervious to ethylene oxide shall be used. The amount of flexible ducting and the number of elbows in the duct shall be kept to a minimum.

3008.5.3Vent lines.Sterilizer vent lines shall be designed and installed in accordance with the following requirements:

1. Each sterilizer shall be equipped with an independent, dedicated and gas-tight vent line for the discharge of gases containing ethylene oxide.
2. Vent lines shall discharge directly outdoors or to an emission control system. Such vent lines shall not discharge into any other ventilation or exhaust system.
3. The piping and the point of discharge for all vent lines discharging outdoors shall be designed and installed to prevent moisture from entering the vent line.
4. Vent lines, including piping, fittings and other components, shall be in accordance with the specifications of the sterilizer manufacturer. Pipe lengths shall not exceed the maximum lengths specified by the manufacturer. Vertical travel distances, elbows, sharp bends and any reduction in vent line size shall be kept to a minimum.

3008.6Operation and maintenance.The operation and maintenance of sterilization systems shall be as follows:

1. Sterilization systems shall be operated and maintained in compliance with the manufacturer's specifications and the approved testing laboratory listing requirements.
2. Air compressors and their air intakes shall be located such that any gas that may leak from the sterilization system or stored containers will not enter the compressor.
3. Sterilizers shall not be operated if the room ventilation system, local area ventilation system or vent pipe is not operational.

3008.7Emergency plan.Where required by the regulations of the United States Department of Labor, a written emergency plan to be implemented in the event of an ethylene oxide spill or leak shall be prepared, shall be maintained on the premises and made available for inspection by any representative of the department.

3008.8Recordkeeping.A copy of the manufacturer's instructions for the installation, operation and maintenance of the sterilizer shall be maintained in the room or other area in which the sterilization system is located.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 3: GENERAL PRECAUTIONS AGAINST FIRE
SECTION FC 301: GENERAL

NYC Administrative Code § 29-FC 301

301.1 Scope.

This chapter shall govern the operation and maintenance of buildings, structures and premises with respect to precautions to prevent fire and the spread of fire. This chapter shall additionally govern the design, installation, operation and maintenance of the operations, facilities and premises set forth herein.

301.2 Permits. Permits shall be required as set forth in Section 105.6.



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SECTION FC 302: DEFINITIONS

NYC Administrative Code § 29-FC 302

302.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

AUTOMOTIVE SALVAGE AND WRECKING FACILITY. Any premises used for the dismantling and/or wrecking of motor vehicles in connection with the sale of auto parts or scrap metal.

HI-BOY. A cart used to move hot roofing materials on a roof.

OPEN FIRES. The burning of materials wherein products of combustion are emitted directly into the ambient air without passing through a stack or chimney from an enclosed chamber. For the purpose of this definition, a chamber shall be regarded as enclosed when, during the time combustion occurs, only apertures, ducts, stacks, flues or chimneys necessary to provide combustion air and permit the escape of exhaust gas are open.

OPEN FLAME. A flame that is generated by any material or device in a sustained and controlled manner and that is not securely enclosed by noncombustible material, such as a candle that is unenclosed or enclosed in a globe or lantern, or a gas light lantern, but not a flame contained in a furnace or other similar approved device, equipment or system. Torches operated in accordance with Chapter 26 and lighted smoking paraphernalia shall not be considered an open flame.

OPEN-FLAME DEVICE. Any device utilizing an open flame.

PORTABLE FUELED EQUIPMENT. Any portable device, equipment or system, whether or not flue-connected, that utilizes a flammable or combustible liquid or flammable gas as a fuel, except an open-flame device.

PORTABLE SPACE HEATER. Any portable equipment designed or used for space heating that utilizes a combustible liquid or flammable gas as a fuel, whether or not flue-connected.

POWERED INDUSTRIAL TRUCK. A forklift, tractor, platform lift truck or motorized hand truck powered by an electrical motor or internal combustion engine. Powered industrial trucks do not include farm vehicles or automotive vehicles for highway use.



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SECTION FC 303: TAR KETTLES

NYC Administrative Code § 29-FC 303

303.1 Transporting.

Tar kettles shall not be transported or otherwise moved when the heat source for the kettle is operating.

Exception: Tar kettles in the process of patching road surfaces.

303.2Location.Tar kettles shall not be located within 20 feet (6096 mm) of any combustible material, combustible building surface or any building opening and within a controlled area identified by the use of traffic cones, barriers or other approved means. Tar kettles and pots shall not be utilized inside or on the roof of a building or structure. Roofing kettles and operating tar kettles shall not block means of egress, gates, roadways or entrances.

303.3Location of fuel containers.Fuel containers shall be located at least 10 feet (3048 mm) from the burner.

Exception: Containers properly insulated from heat or flame are allowed to be within 2 feet (610 mm) of the burner.

303.4Supervision.An operating tar kettle requiring a permit shall be under the personal supervision of a person holding a certificate of fitness. The certificate of fitness holder shall be within 100 feet (30 480 mm) of the kettle, have the kettle within sight and have unobstructed access to the kettle. Ladders and other obstacles shall not form a part of the route between the certificate of fitness holder and the kettle. The certificate of fitness holder shall not have to climb or descend a ladder or circumvent any obstacle to gain access to the kettle.

303.5Portable fire extinguishers.There shall be at least one portable fire extinguisher complying with the requirements of Section 906 and with a minimum 3-A:40-B:C rating within 25 feet (7620 mm) of each tar kettle during the period such kettle is being utilized, and one additional portable fire extinguisher with a minimum 3-A:40-B:C rating on the roof being covered.

303.6Lids.Tar kettles shall be equipped with tight-fitting lids.

303.7Hi-boys.Hi-boys shall be constructed of noncombustible materials. Hi- boys shall be limited to a capacity of 55 gallons (208 L). Fuel sources or heating elements shall not be allowed as part of a hi-boy.

303.8Kettle construction.Any kettle used as a tar kettle shall be constructed of noncombustible materials.

303.9Fuel containers under air pressure.It shall be unlawful to store, handle or use fuel containers that operate under air pressure.

303.10Flammable liquid fuel.It shall be unlawful to store, handle or use tar kettles that utilize flammable liquid as a fuel.

303.11Roofing operations.Roofing operations, including repairs, using open-flame devices shall comply with the requirements of Section 1417 and Chapters 26 and 35.



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Chapter 3: GENERAL PRECAUTIONS AGAINST FIRE
SECTION FC 304: STORAGE AND ACCUMULATION OF RUBBISH AND OTHER COMBUSTIBLE WASTE

NYC Administrative Code § 29-FC 304

304.1 Accumulation of combustible waste.

It shall be unlawful to cause or allow rubbish and other combustible waste to accumulate in a building or structure or upon a premises.

304.1.1 Maintenance. Roofs, courts, yards, vacant lots, alleys, parking lots, open spaces, and the space beneath a grandstand, bleacher, pier, wharf, or other similar structure, shall be regularly cleaned so as to prevent the accumulation of any rubbish, vegetation or other combustible waste.

304.1.2 Vegetation. Weeds, grass, vines, brush or other vegetation that is capable of being ignited shall be regularly pruned, or cleared and removed for a distance of 10 feet (3048 mm) from any building or structure by the owner.

304.2 Unsafe storage of combustible waste prohibited. It shall be unlawful to store rubbish or other combustible waste in a manner that creates a fire hazard or public nuisance.

304.3 Containers. Rubbish and other combustible waste stored pending removal in a building or structure or upon a premises shall be stored in accordance with this section, and any other applicable law, rule or regulation.

304.3.1 Spontaneous ignition. Rubbish and other combustible waste susceptible to spontaneous ignition, such as oily rags, shall be stored in a listed disposal container. Contents of such containers shall be removed and disposed of daily.

304.3.2 Capacity exceeding 5.33 cubic feet. Containers with a capacity exceeding 5.33 cubic feet (40 gallons) (0.15 m³) shall be provided with lids. Containers and lids shall be constructed of noncombustible materials or approved combustible materials.

304.3.3 Capacity exceeding 1.5 cubic yards. Dumpsters and containers with an individual capacity of 1.5 cubic yards (40.5 cubic feet) (1.15 m³) or more shall not be stored in buildings or placed within 5 feet (1524 mm) of combustible walls, openings or combustible roof eave lines.

Exceptions:

1. Dumpsters or containers in areas protected throughout by a sprinkler system.

2. Storage shall not be prohibited in a structure of Type I or Type IIA construction or other construction with an equivalent fire rating, where such storage is located not less than 10 feet (3048 mm) from other buildings or structures and used exclusively for dumpster or other container storage.

304.4 Outdoor storage. Outdoor storage of combustible materials shall not be located within 10 feet (3048 mm) of a property line or within 50 feet (15240 mm) of the nearest wall of a building occupied as a Group A occupancy, Group E (educational) occupancy or Group R-2 occupancy.

304.4.1 Height. Storage shall not exceed 20 feet (6096 mm) in height.

304.4.2 Reduced separation distance. The separation distances required by Section 304.4 may be reduced when approved and when in compliance with the requirements of Sections 304.4.2.1 through 304.4.2.3.

304.4.2.1 Fencing. The storage shall be enclosed by an approved well-constructed and maintained fence between 10 and 18 feet (3048 and 5486 mm) in height above the street level. If any building having an unpierced fire wall adjoins the enclosure, no fence shall be required on that side.

304.4.2.2 Separation from building openings. The storage shall be completely separated from any window or door openings of any wall of an adjoining building by a well-constructed and maintained fence of noncombustible material of an approved height, erected at least 6 feet (1829 mm) from such opening and extending at least 6 feet (1829 mm) on each side thereof and continued to the sides of the enclosure or carried to the walls of the building.

304.4.2.3 Pile height. The storage at any point shall not be piled higher than 2 feet (610 mm) below the top of the fence required by Section 304.4.2.1.

304.4.3 Portable fire extinguishers. At least one portable fire extinguisher with a rating of at least 4-A shall be provided for every 2,500 square feet (232.3 m²) of storage area, or portion thereof, or in lieu thereof, a hose of at least 1 inch (25.4 mm) in diameter, equipped with a nozzle of at least 1/2 inch (12.7 mm) in diameter, sufficient in length to reach all parts of the enclosure, and connected to an adequate water supply may be provided.



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SECTION FC 305: IGNITION SOURCES

NYC Administrative Code § 29-FC 305

305.1 Clearance from ignition sources.

Clearance between ignition sources, such as light fixtures, heaters and open-flame devices, and combustible materials shall be maintained in an approved manner.

305.2 Hot ashes and spontaneous ignition sources. Hot ashes, cinders, smoldering coals or greasy or oily materials subject to spontaneous ignition shall not be deposited in a combustible container, within 10 feet (3048 mm) of other combustible material, including combustible walls and partitions and combustible waste, or within 2 feet (610 mm) of openings to buildings or structures.

Exception: The minimum required separation distance to other combustible materials shall be 2 feet (610 mm) where the material is deposited in a covered, noncombustible receptacle placed on a noncombustible floor, ground surface or stand.

305.3 Open-flame warning devices. It shall be unlawful to use an open-flame device on roadways as a warning signal or for any other purposes.

Exception: The use of fusees at the scene of an emergency or as required by standard railroad operating procedures.

305.4 Deliberate or negligent burning. It shall be unlawful to deliberately or through negligence set fire to or cause the burning of combustible material or combustible waste in such a manner as to endanger the safety of persons or property.



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SECTION FC 306: MOTION PICTURE FILM AND SCREENS

NYC Administrative Code § 29-FC 306

306.1 Motion picture projection rooms.

Electric arc, xenon or other light source projection equipment which develops hazardous gases, dust or radiation and the projection of ribbon-type cellulose nitrate film, regardless of the light source used in projection, shall be operated within a motion picture projection room complying with the requirements of Section 409 of the Building Code.

306.2 Cellulose nitrate film storage, handling and use. Cellulose nitrate film shall be stored, handled and used in accordance with NFPA 40 and subject to the approval of the commissioner.

306.2.1 Supervision. The handling and use of cellulose nitrate film, including motion picture projection, shall be under the personal supervision of a person holding a certificate of fitness. The storage of cellulose nitrate film shall be under the general supervision of a person holding a certificate of fitness.

306.3 Motion picture screens. The screens upon which motion pictures are projected shall be of noncombustible construction as set forth in Chapter 6 of the Building Code, or shall be treated to be flame resistant in accordance with NFPA 701, or shall comply with the requirements for a Class A interior finish in accordance with Section 803 of the Building Code. Screens installed prior to the effective date of this code shall comply with the applicable Building Code requirements. The construction supporting such motion picture screens shall be of noncombustible construction as set forth in Chapter 6 of the Building Code, and shall comply with the load bearing requirements of the Building Code.



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SECTION FC 307: OPEN FIRES

NYC Administrative Code § 29-FC 307

307.1 General.

Kindling, building, maintaining or using an open fire is prohibited.

Exceptions:

1. Outdoor barbecues on residential property as authorized by Section 307.5.
2. Outdoor noncommercial barbecue fires in equipment provided by and located in city parks where such open fires are permitted by the Department of Parks and Recreation.
3. In connection with training of fire brigades or similar purposes by persons or entities where such training is required by law, rule or regulation.
4. Approved open fires used for special effects in connection with television, motion picture, theatrical and other entertainment productions.

307.2Reserved.

307.2.1Authorization. Open fires allowed pursuant to Section 307.1 may only be kindled, built, maintained or used with the prior written authorization of the agencies with regulatory jurisdiction, property owner and other required approvals, and only when such open fires are maintained in compliance with all conditions of such authorization or approval. The commissioner may prohibit the kindling, building, maintaining or use of open fire or order the extinguishment of any open fire allowed by this section, upon a determination that such open fire will create an undue hazard because of conditions in the surrounding environment.

307.3Reserved.

307.4Attendance. Open fires shall be constantly attended until the fire is extinguished. A minimum of one portable fire extinguisher complying with the requirements of Section 906 with a minimum 4-A rating or other approved on-site fire-extinguishing equipment, such as dirt, sand, water barrel, garden hose or water truck, shall be available for immediate use.

307.5Barbecues on residential premises. Outdoor barbecues on residential premises shall be installed, operated and maintained in accordance with Sections 307.5.1 through 307.5.3.

307.5.1Charcoal and electric barbecues. Outdoor barbecues designed to use charcoal or electricity with a total grate area not exceeding 10 square feet (0.929 m²) may be installed, operated and maintained on any residential premises, provided that such barbecues are not installed or operated within 10 feet (3048 mm) of any combustible waste, or combustible material, including combustible building surfaces, balconies and decks, and a garden type hose attached to a water supply or a minimum of one portable fire extinguisher complying with the requirements of Section 906 with a minimum 4-A rating is readily available for use.

307.5.2Piped natural gas-fired barbecues. Outdoor barbecues designed to use piped natural gas shall be installed, operated and maintained in accordance with Section 307.5.1. The natural gas piping shall comply with the requirements of the construction codes, including the Plumbing Code.

307.5.3LPG-fired barbecues. Outdoor barbecues designed to use LPG from portable containers shall be installed, operated and maintained on the premises of a Group R-3 occupancy in accordance with Section 307.5.1 and the following requirements:

1. Not more than 2 containers may be stored and/or used.
2. Each container shall have a maximum capacity of 20 pounds (9.08 kg) LPG, except that on balconies, each container shall have a maximum capacity of 16.4 ounces (0.465 kg) LPG.



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SECTION FC 308: OPEN FLAMES

NYC Administrative Code § 29-FC 308

308.1 General.

This section governs the use of open flames in all buildings, structures and premises.

308.2 Prohibitions. It shall be unlawful to:

1. Cause or allow an open flame to be lit or maintained in any room or other area of a building, structure, premises, marine vessel, watercraft or other place in which a hazardous material is stored, handled or used, or where conditions exist that could cause ignition of flammable vapors or combustible material.
2. Use or maintain in any area in which smoking is prohibited, as set forth in Section 310 or elsewhere in this code, a lighted match or other flame which has not been approved for use by the commissioner in such areas.
3. Place or discard, or cause to be placed or discarded, an open flame, lighted match or other flaming substance or object on any surface or article where it can cause the ignition of combustible material or combustible waste, or otherwise cause an unwanted fire.

308.3 Use of open flames. Open flames may only be lighted, maintained and used in Group A occupancy and public gathering places in accordance with this section.

308.3.1 Reserved.

308.3.2 Open-flame decorative devices. Open-flame decorative devices, including wallmounted candles, torch sconces, insect-repellant candles in glass jars or metal cans, tabletop candles and oil lamps, free standing torch holders and candelabras, shall comply with the following requirements:

1. Class I and Class II liquids and LPG shall not be used.

2. Liquid- or solid-fueled lighting devices containing more than 8 ounces (237 ml) of fuel must self-extinguish and not leak fuel at a rate of more than 0.25 teaspoon per minute (1.26 ml per minute) if tipped over.

3. The device or holder shall be constructed to prevent the spillage of liquid fuel or wax at the rate of more than 0.25teaspoon per minute (1.26 ml per minute) when the device or holder is not in an upright position.

4. The device or holder shall be designed so that it will return to the upright position after being tilted to an angle of 45 degrees from vertical.

Exception: Devices that self-extinguish if tipped over and do not spill fuel or wax at the rate of more than 0.25 teaspoon per minute (1.26 ml per minute) if tipped over.

5. The flame shall be enclosed except where openings on the side are not more than 0.375 inch (9.5mm) diameter or where openings are on the top and the distance to the top is such that a piece of tissue paper placed on the top will not ignite in 10 seconds.

6. Enclosures shall be made of noncombustible materials and securely attached to the open-flame device.

Exception: An enclosure is not required to be attached to any open-flame device that will self-extinguish if the device is tipped over.

7. Fuel canisters shall be safely sealed for storage.

8. Storage and handling of combustible liquids shall be in accordance with Chapter 34.

9. Shades, where used, shall be made of noncombustible materials and securely attached to the open-flame device holder or enclosure.

10. Candelabras with flame-lighted candles shall be securely fastened in place to prevent overturning, and shall be located away from occupants using the area and away from possible contact with drapes, curtains or other combustibles.

11. Open-flame decorative devices in Group A occupancies and other buildings, structures and premises used for a public gathering shall additionally comply with the requirements of applicable rules promulgated by the commissioner designed to ensure the safe use of such devices.

308.3.3Separation from combustibles.Open flames shall be kept at a safe distance from decorations, decorative vegetation or other combustible materials.

308.3.4Aisles and exits.Lighted candles shall be prohibited in areas where occupants stand, or in an aisle or exit.

308.3.5Reserved.

308.3.6Theatrical performances.Where use is approved in conjunction with theatrical performances, open flames shall be used in accordance with Chapter 33 and NFPA 160.

308.3.7Prohibition.It shall be unlawful to light, maintain or use an open flame in a Group A occupancy or other building or structure used for a public gathering.

Exceptions:

1. Open flames may be used in the following locations and circumstances, provided that precautions are taken to prevent ignition of combustible material and otherwise ensure the safety of occupants, in accordance with this code, the rules and the permit:

1.1 Where necessary for ceremonial or religious purposes.

1.2. On stages and platforms as a necessary part of a performance in accordance with Section 308.3.6.

1.3. Where candles on tables are securely supported on substantial noncombustible bases and the candle flames are protected.

1.4 The preparation of flaming foods or beverages in accordance with Section 308.6.

1.5. Open-flame devices using LPG for demonstrations in exhibitions or trade shows.

1.6. Open-flame device for food warming.

2. Nonportable heat-producing equipment installed in compliance with the requirements of Chapter 6 and the Mechanical Code.

3. Natural gas light fixtures installed in compliance with the requirements of the Building Code and the Plumbing Code, and approved precautions are taken to prevent ignition of combustible materials.

308.4Torches for removing paint.It shall be unlawful to remove paint in or on buildings, structures or premises with a torch or any other flame-producing device. Suchpaint removal may be performed using heat-producing devices other than open-flame devices. The person using such heat-producing device to remove the paint shall remain at the location where the heating operation was performed to maintain a fire watch for not less than one hour after using such device.

308.5Reserved.

308.5.1Signals and markers.Open-flame devices, such as lanterns or kerosene road flares, shall not be operated or used as a signal or marker in or on any building, structure or premises.

Exception: The proper use of fusees at the scene of an emergency or as required by standard railroad operating procedures.

308.5.2Portable fueled open-flame devices.Portable open-flame devices fueled by flammable gases or combustible liquids shall be enclosed or used in such a manner as to prevent the flame from contacting or igniting combustible material or combustible waste.

308.6Flaming food and beverage preparation.The preparation of flaming foods or beverages in Group A occupancies and public gathering places shall be in accordance with Section 308.6.1 through 308.6.5.

308.6.1Dispensing.Flammable or combustible liquids used in the preparation of flaming foods or beverages shall be dispensed from one of the following:

1. A 1-ounce (29.6 ml) container; or

2. A container not exceeding 1-quart (946.5 ml) capacity with a controlled-pouring device that will limit the flow to a 1-ounce (29.6 ml) serving.

308.6.2Containers not in use.Containers shall be secured to prevent spillage when not in use.

308.6.3Serving of flaming food.The serving of flaming foods or beverages shall be done in a safe manner and shall not create flames higher than 6 inches (152.4 mm). The pouring, ladling or spooning of liquids is restricted to a maximum height of 8 inches (203 mm) above the receiving receptacle.

308.6.3.1Ignition.The flaming food or beverage shall be ignited on serving tables. Such tables shall have

noncombustible tops or, if the top is combustible, it shall be protected by a noncombustible mat. The mat, when used, shall cover the entire top of the table. Flames shall be extinguished before serving.

308.6.4Location. Flaming foods or beverages shall be prepared only in the immediate vicinity of the table being served. Flaming foods and beverages shall not be transported or carried while burning.

308.6.5Fire protection. The person preparing the flaming foods or beverages shall have a wet cloth towel immediately available for use in smothering the flames in the event of an emergency and, in addition to portable fire extinguishers required by Section 906, a carbon dioxide extinguisher with at least a 5-B rating shall be kept within 25 feet (7620 mm) of the flaming food or beverage preparation area and at the doorway between the kitchen and the dining area.



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Chapter 3: GENERAL PRECAUTIONS AGAINST FIRE
SECTION FC 309: POWERED INDUSTRIAL TRUCKS

NYC Administrative Code § 29-FC 309

309.1 General.

Powered industrial trucks shall be operated and maintained in accordance with this section.

309.1.1Hazardous locations.Powered industrial trucks used in areas designated as hazardous (classified) locations in accordance with the Electrical Code shall be listed and labeled for use in such environments in accordance with NFPA 505. Entry by non-classified equipment may be allowed for the purpose of maintenance where the owner has established an entry authorization procedure and has verified that the entry area is clear of hazardous environment and will remain so for the duration of the entry.

309.1.2Powered industrial trucks using flammable gas fuel.Powered industrial trucks that use LPG or other flammable gas as fuel shall be limited to one fuel container with a capacity not greater than 40 pounds (18.16 kg) or 340 SCF (9.63 m³), whichever is less. Liquefied gas containers installed in a horizontal position shall be of such a design that the pressure relief valve will discharge vapor properly. Such powered industrial trucks shall not be parked near open flames or other heat or ignition sources, or near open pits, underground entrances, elevator shafts, or similar areas. Such powered industrial trucks shall be stored and used in locations with adequate ventilation. It shall be unlawful to store or use such powered industrial trucks in below grade areas, including in a basement or cellar.

309.2Battery chargers.Battery chargers shall be of an approved type. Combustible storage shall be kept a minimum of 3 feet (915 mm) from battery chargers. Battery charging shall not be conducted in areas accessible to the public.

309.3Ventilation.Ventilation shall be provided in an approved manner in battery-charging areas to prevent the accumulation of flammable gas.

309.4Portable fire extinguishers.Powered industrial trucks shall be equipped with one 2-B:C rated portable fire extinguisher. Battery-charging areas shall be provided with a portable fire extinguisher complying with the requirements of Section 906 having a minimum 4-A:20-B:C rating within 20 feet (6096 mm) of the battery charger.

309.5Storage and handling of fuel.Powered industrial trucks using a liquid or gas fuel shall be refueled or have their cylinders replaced outdoors or in areas specifically approved for that purpose and in accordance with this code and the rules. All connecting and disconnecting of fuel gas containers shall be performed outdoors away from open pits, underground entrances, or similar below grade areas, and away from all open flames or other heat or ignition sources.

309.6Repairs.Repairs to fuel systems, electrical systems and repairs utilizing open flame or welding shall be done in approved locations outside of buildings or in areas specifically approved for that purpose.

309.7Storage.When not in use, powered industrial trucks that use a liquid and/or a gas fuel shall be stored in approved designated storage areas. Each storage area shall be provided with a portable fire extinguisher complying with the requirements of Section 906 having a minimum 4-A:20-B:C rating.



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SECTION FC 310: SMOKING

NYC Administrative Code § 29-FC 310

310.1 General.

Smoking, including the carrying of a lighted pipe, cigar, cigarette or any other type of smoking paraphernalia or material, shall be conducted in accordance with this section.

310.2 Prohibitions. It shall be unlawful to:

1. Smoke in any area in which smoking is prohibited, as set forth in this section or elsewhere in this code.
2. Place or discard, or cause to be placed or discarded, any lighted pipe, cigar, cigarette or other type of smoking paraphernalia or material where it can cause the ignition of combustible material or combustible waste, or otherwise cause an unwanted fire.
3. Smoke in any building, structure, premises or part thereof where flammable or combustible materials or explosives are manufactured, stored, handled, used or transported.
4. Smoke in the following occupancies and spaces:
 - 4.1. Cellars and basements, except in R-3 occupancies.
 - 4.2. Group A occupancies and public gathering places.
 - 4.3. Group M occupancies.
 - 4.4. Hospitals, nursing homes, sanatorias, convalescent homes, homes for the aged or chronic patients, except within designated smoking rooms when in compliance with the requirements of the Title 17 of the Administrative Code, the New York City Health Code and rules promulgated by the commissioner.

4.5. On any bulkhead, dock, drydock, shipyard, pier, wharf, warehouse or shed on the waterfront.

4.6. On board any ship, barge, ferry, lighter, carfloat, scow, and all other similar floating watercraft or equipment whether berthed or moored at a dock, wharf, pier, or to a marine vessel made fast thereto or in a shipyard.

4.7. Factories as set forth in Section 283 of the New York State Labor Law.

4.8. As otherwise prohibited by this code or the rules.

310.3 "No Smoking" signs. When smoking is prohibited by this code or the rules, durable "No Smoking" signs shall be conspicuously posted at approved locations throughout the facility or other location in accordance with Section 310, or as otherwise specifically provided in this code. The content, lettering, size and color of required "No Smoking" signs shall be in accordance with the rules, or as otherwise approved by the commissioner.

310.4 Removal of signs prohibited. A posted "No Smoking" sign shall not be removed, obscured or rendered illegible.

310.5 Compliance with "No Smoking" signs. It shall be unlawful to smoke, or discard or deposit any burning substance, in any building, structure or premises or part thereof, in which "No Smoking" signs are posted pursuant to this code or the rules or otherwise for fire safety purposes.

310.6 Ash trays. Where smoking is permitted, suitable noncombustible ash trays or receptacles shall be provided at appropriate locations.

310.7 Reserved.

310.8 Hazardous environmental conditions. The commissioner may prohibit lighted matches, cigarettes, cigars or other burning substances in any location upon a determination that such activity creates an undue fire hazard because of conditions in the surrounding environment.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 31: CORROSIVE MATERIALS
SECTION FC 3101: GENERAL

NYC Administrative Code § 29-FC 3101

3101.1 Scope.

This chapter shall govern the storage, handling and use of corrosive materials.

Exceptions:

1. Display and storage in Group M and storage in Group S occupancies complying with the requirements of Section 2703.11.
2. Stationary lead-acid battery systems in accordance with Section 608.
3. This chapter shall not apply to ammonia (R-717) when used as a refrigerant in a refrigerating system in accordance with Section 606.

3101.2 Permits. Permits shall be required as set forth in Section 105.6.

3101.3 General. Corrosive materials shall be stored, handled and used in accordance with this chapter. Corrosive materials that are compressed gases shall additionally comply with the requirements of Chapter 30.

3101.4 Supervision. The handling and use of corrosive materials in quantities exceeding 550 gallons (2082 L) of liquid or 1,000 pounds (454 kg) of solid shall be under the personal supervision of a certificate of fitness holder. The storage of corrosive materials in quantities exceeding 550 gallons (2082 L) of liquid or 1,000 pounds (454 kg) of solid shall be under the general supervision of a certificate of fitness holder.



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Chapter 31: CORROSIVE MATERIALS
SECTION FC 3102: DEFINITIONS

NYC Administrative Code § 29-FC 3102

3102.1 Definition.

The following term shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

CORROSIVE MATERIAL. A material that causes full thickness destruction of human skin at the site of contact within a specified period of time when tested by methods set forth in DOTn regulations 49 CFR Sections 173.136 and 173.137, or a liquid that has a severe corrosion rate on steel or aluminum based on the criteria set forth in DOTn regulations 49 CFR Section 173.137(c)(2).



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SECTION FC 3103: GENERAL REQUIREMENTS

NYC Administrative Code § 29-FC 3103

3103.1 Quantities not exceeding the maximum allowable quantity per control area.

The storage, handling and use of corrosive materials in amounts not exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Sections 2701, 2703 and 3101.

3103.2 Quantities exceeding the maximum allowable quantity per control area. The storage, handling and use of corrosive materials in amounts exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with this chapter and Chapter 27.



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SECTION FC 3104: STORAGE

NYC Administrative Code § 29-FC 3104

3104.1 Indoor storage.

Indoor storage of corrosive materials in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(2), shall be in accordance with Sections 2701, 2703, 2704 and this chapter.

3104.1.1 Liquid-tight floor. In addition to the provisions of Section 2704.12, floors in storage areas for corrosive liquids shall be of liquid-tight construction.

3104.2 Outdoor storage. Outdoor storage of corrosive materials in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(4) shall be in accordance with Sections 2701, 2703, 2704 and this chapter.

3104.2.1 Aboveground outdoor storage tanks. Aboveground outdoor storage tanks exceeding an aggregate quantity of 1,000 gallons (3785 L) of corrosive liquids shall be provided with secondary containment in accordance with Section 2704.2.2.

3104.2.2 Distance from storage to exposures. Outdoor storage of corrosive materials shall not be within 20 feet (6096 mm) of buildings not associated with the manufacturing or distribution of such materials, lot lines, public streets, private roads or means of egress. A 2-hour fire barrier wall without openings or penetrations, and extending not less than 30 inches (762 mm) above and to the sides of the storage area, is allowed in lieu of such distance. The wall shall either be an independent structure, or the exterior wall of the building adjacent to the storage area.



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SECTION FC 3105: HANDLING AND USE

NYC Administrative Code § 29-FC 3105

3105.1 Indoor use.

The indoor handling and use of corrosive materials in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(2) shall be in accordance with Sections 2701, 2703, 2705 and this chapter.

3105.1.1 Liquid transfer. Corrosive liquids shall be transferred in accordance with Section 2705.1.10.

3105.1.2 Ventilation. When corrosive materials are dispensed or used, mechanical exhaust ventilation in accordance with Section 2705.2.1.1 shall be provided.

3105.2 Outdoor use. The outdoor handling and use of corrosive materials in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(4) shall be in accordance with Sections 2701, 2703, 2705 and this chapter.

3105.2.1 Distance from use to exposures. Outdoor handling and use of corrosive materials shall be located in accordance with Section 3104.2.2.



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SECTION FC 311: VACANT AND TEMPORARILY UNOCCUPIED PREMISES

NYC Administrative Code § 29-FC 311

311.1 Vacant buildings.

Any vacant building, structure or premises, or part thereof, that is deemed unsafe pursuant to Article 216 of Title 28 of the Administrative Code, shall be safeguarded and maintained in compliance with the requirements of this section, the Department of Buildings and/or the Department of Housing, Preservation and Development, as applicable. Any vacant building, structure or premises, or part thereof, not deemed unsafe pursuant to such provisions shall be deemed to constitute a temporarily unoccupied building, and shall comply with the requirements of this section applicable thereto.

311.2Temporarily unoccupied buildings.Temporarily unoccupied buildings, structures, premises or parts thereof, including tenant spaces, shall be secured and protected in accordance with this section.

311.2.1Security.Exterior openings and interior openings accessible to unauthorized persons, including tenants, shall be locked or otherwise protected to prevent entry by unauthorized persons.

311.2.2Fire protection.Fire alarm, sprinkler and standpipe systems shall be maintained in an operable condition at all times, except as authorized by the commissioner.

311.2.3Fire separation.Fire-resistance-rated partitions, fire barriers, and fire walls, including those separating temporarily unoccupied tenant spaces from the remainder of the building shall be maintained. Openings, joints, and penetrations in fire-resistance-rated assemblies shall be protected in accordance with Chapter 7 of the Building Code.

311.3Removal of combustible waste.The owner of any building, structure or premises, or part thereof, that is deemed unsafe, and any temporarily unoccupied building, structure or premises, or part thereof, shall remove therefrom and prevent accumulations of rubbish and other combustible waste by regular cleaning of the premises.

Exception: Temporarily unoccupied buildings, structures, premises or parts thereof undergoing construction or repair in accordance with the Building Code, where rubbish and other combustible waste is controlled and removed in

accordance with Section 304.

311.4Removal of hazardous materials.The owner of any vacant building, structure or premises, or part thereof, that contains hazardous materials and that is deemed unsafe pursuant to Article 216 of Title 28 of the Administrative Code shall comply forthwith with the facility closure requirements of Section 2701.6. The owner of a temporarily unoccupied building, structure or premises, or part thereof, that contains hazardous materials regulated by Chapter 27 shall comply with the facility closure requirements of Section 2701.6. Vacant and temporarily unoccupied buildings, structures or premises, and all parts thereof, shall thereafter be maintained free of hazardous materials, including hazardous waste material, except as approved by the commissioner.



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SECTION FC 312: VEHICLE IMPACT PROTECTION

NYC Administrative Code § 29-FC 312

312.1 General.

Vehicle impact protection required by this code shall be provided by posts that comply with the requirements of Section 312.2 or by other approved physical barriers that comply with the requirements of Section 312.3.

312.2 Posts. Guard posts shall comply with the following requirements:

1. Constructed of steel not less than 4 inches (102 mm) in diameter and concrete filled.
2. Spaced not more than 4 feet (1219 mm) between posts on center.
3. Set not less than 3 feet (914 mm) deep in a concrete footing of not less than a 15-inch (381 mm) diameter.
4. Set with the top of the posts not less than 3 feet (914 mm) above ground.
5. Located not less than 3 feet (914 mm) from the protected object.

312.3 Other barriers. Physical barriers shall be a minimum of 36 inches (914 mm) in height and shall resist a force of 12,000 pounds (53 375 N) applied 36 inches (914 mm) above the adjacent ground surface.



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SECTION FC 313: PORTABLE FUELED EQUIPMENT

NYC Administrative Code § 29-FC 313

313.1 Scope.

The storage, handling and use of portable fueled equipment shall be governed by this section and the rules.

313.2 General. Portable fueled equipment shall be stored, handled and used in accordance with this section.

313.3 Prohibitions. It shall be unlawful to:

1. Store, handle or use indoors portable fueled equipment, including lawn-care equipment and kerosene and other portable space heaters. The owner of a building, structure or premises shall not provide, or cause to be provided, any such equipment, including equipment designed for space heating.

Exceptions:

1. Storage, handling and/or use of portable fueled equipment, other than portable fueled space heaters, in buildings or structures constructed for such purposes in accordance with this code and the Building Code. Portable fueled equipment may be stored and handled, and motor vehicles may be stored, handled and used, in garages or garage spaces if such garage or garage spaces are separated from the dwelling spaces or other occupancies in accordance with the construction codes, including the Building Code.

2. The storage, handling and use of portable fueled equipment where authorized by this code, including this section, Sections 308 and 314, and Chapter 14.

2. Store, handle or use for space heating, other than storage for sale, any portable fueled equipment that utilizes a flammable liquid as a fuel, or, except as authorized by Section 313.5, that utilizes a combustible liquid as a fuel. Any such portable fueled equipment that shows evidence of having been used shall be deemed to be in use.

3. Use any portable fueled equipment that utilizes waste oil as a fuel. Any such portable fueled equipment that shows evidence of having been used shall be deemed to be in use.

313.4 Removal. The commissioner may confiscate or order the removal of portable fueled equipment from locations where the storage, handling and/or use of such equipment is determined by the commissioner to be hazardous.

313.5 Portable fueled space heaters. Portable fueled equipment used for space heating shall additionally be stored, handled and used in accordance with Sections 313.5.1 through 313.5.2.

313.5.1 Listing and labeling of space heaters. Portable fueled space heaters and other portable fueled equipment used for space heating shall be listed and labeled.

313.5.2 Authorized uses. Portable fueled equipment may be used for space heating as set forth in Sections 313.5.2.1 through 313.5.2.6.

313.5.2.1 Portable natural gas heaters. Portable space heaters fueled by natural gas supplied from a public utility may be stored, handled and used for outdoor use when designed, installed, operated and maintained in accordance with this code, the rules and the construction codes, including the Building Code.

313.5.2.2 Construction sites. Portable fueled space heaters may be stored, handled and used at construction sites in accordance with Chapter 14 and the rules.

313.5.2.3 Business storage and handling. Portable fueled space heaters may be stored, handled and used for indoor or outdoor use when they are lawfully used in the business of manufacturing, storing, handling, selling, repairing or transporting such heaters, provided that such heaters are not stored, handled or used for the purpose of space heating.

313.5.2.4 Local emergency. In the event of failure during severe cold weather of a central heating unit in any building or structure other than a private dwelling, multiple dwelling or Group A occupancy, portable fueled space heaters approved for such indoor use may be used for a period not to exceed two weeks when such use has been approved.

313.5.2.5 Public emergencies. In the event of a public emergency which disrupts, interferes with or impairs the operation or use of equipment, supplies or utilities normally utilized for heating, use of portable fueled space heaters for indoor or outdoor use may be authorized by the commissioner upon a declaration of emergency by the mayor.

313.5.2.6 Supervision. The handling and use of portable fueled space heaters shall be under the personal supervision of a certificate of fitness holder. The storage of portable fueled space heaters, and the fuel therefor, shall be under the general supervision of a certificate of fitness holder.

Exception: Group R-3 occupancies.



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SECTION FC 314: INDOOR DISPLAYS

NYC Administrative Code § 29-FC 314

314.1 General.

Indoor displays in any occupancy shall be designed and installed in accordance with Sections 314.2 through 314.4.

314.2 Fixtures and displays. Fixtures and displays of goods for sale to the public shall be arranged so as to maintain free, immediate and unobstructed access to exits as required by Chapter 10 and the construction codes, including the Building Code.

314.3 Highly combustible goods. It shall be unlawful to display highly combustible goods, including flammable or combustible liquids, liquefied flammable gases, oxidizing materials, pyroxylin plastics and agricultural goods, in main exit access aisles, corridors, covered malls, or within 5 feet (1524 mm) of entrances to exits and exterior exit doors.

314.4 Vehicles and watercraft. Watercraft and fueled vehicles, including motor vehicles, motorcycles and mopeds, that are displayed indoors shall comply with the following requirements:

1. Batteries shall be disconnected.
2. Fuel in fuel tanks shall not exceed one-quarter tank or 5 gallons (19 L) (whichever is least).
3. Fuel tanks and fill openings shall be closed and sealed to prevent tampering.
4. Fueling or defueling shall not be conducted indoors.

5. Such additional requirements as the commissioner may promulgate governing the display of such vehicles and watercraft in Group A occupancies, and buildings, structures or premises used for public gatherings.

314.5 Required clearance from fire safety systems. Sprinklers and fire alarm systems shall not be obstructed by indoor displays.

314.5.1 Sprinkler systems. A sprinkler system shall be installed in or under covered kiosks, displays, booths, or concession stands that exceed 4 feet (1219 mm) in width. The clearance between any sprinkler head deflector installed above the top of the kiosks, displays, booths, or concession stands shall not be less than 18 inches (457 mm).

Exception: Open-grid and drop-out ceilings complying with the requirements of NFPA 13 may be installed beneath sprinklers.

314.5.2 Fire alarm systems. Sufficient clearance shall be provided between kiosks, displays, booths, or concession stands and fire alarm and carbon monoxide systems equipment and devices including detectors and strobes, so as not to interfere with their operation.



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SECTION FC 315: COMBUSTIBLE MATERIALS STORAGE

NYC Administrative Code § 29-FC 315

315.1 General.

Combustible materials shall be stored, handled and used in accordance with this section.

Exception: Storage of materials during construction and demolition operations shall comply with the requirements of Chapter 14.

315.2Storage in buildings.Storage of combustible materials in buildings shall be orderly. Storage area shall be separated from heaters or heating devices by distance or shielding so that ignition cannot occur.

315.2.1Ceiling clearance.Storage shall be maintained 2 feet (610 mm) or more below the ceiling in areas of buildings not protected by a sprinkler system, or a minimum of 18 inches (457 mm) below sprinkler head deflectors in areas protected by a sprinkler system.

315.2.2Means of egress.Combustible materials shall not be stored in a manner that obstructs egress from any building, structure or premises.

315.2.3Equipment rooms.Combustible material shall not be stored in boilerrooms, mechanical rooms or electrical equipment rooms.

315.2.4Attic, under-floor and concealed spaces.Attic, under-floor and concealed spaces used for storage of combustible materials shall be protected on the storage side as required for 1-hour fire-resistance-rated construction. Openings shall be protected by assemblies that are self-closing and are of noncombustible construction or solid wood core not less than 1.75 inches (44.5 mm) in thickness. Storage shall not be placed on exposed joists.

Exceptions:

1. Areas protected throughout by sprinkler systems.

2. Group R-3 and Group U occupancies.

315.3 Outdoor storage. Outdoor storage of combustible materials shall not be located within 10 feet (3048 mm) of a property line or within 50 feet (15 240 mm) of the nearest wall of a building occupied as a Group A occupancy, Group E educational occupancy, Group I-2 occupancy, or any building, structure or premises used for a public gathering.

315.3.1 Storage beneath overhead projections from buildings. Combustible materials stored or displayed outdoors at locations adjoining buildings or structures that are protected throughout by a sprinkler system shall not be stored or displayed under eaves, canopies or other projections or overhangs that are not protected by a sprinkler system.

315.3.2 Height. Storage in the open shall not exceed 20 feet (6096 mm) in height.

315.3.3 Reduced separation distance. The separation distances required by Section 315.3 may be reduced when approved and when in compliance with the requirements of Sections 315.3.3.1 through 315.3.3.3.

315.3.3.1 Fencing. The outdoor storage area shall be enclosed by an approved well constructed and maintained fence between 10 and 18 feet (3048 and 5486 mm) in height above the street level. If any building having an unpierced fire wall adjoins the enclosure, no fence shall be required on that side.

315.3.3.2 Separation from building openings. The outdoor storage area shall be completely separated from any window or door openings of any wall of an adjoining building by a well-constructed and maintained fence of non combustible material of an approved height, erected at least 6 feet (1829 mm) from such opening and extending at least 6 feet (1829 mm) on each side thereof and continued to the sides of the enclosure or carried to the walls of the building.

315.3.3.3 Pile height. The outdoor storage at any point shall not be piled higher than 2 feet (610 mm) below the top of the fence required by Section 315.3.3.1.

315.3.4 Portable fire extinguishers. At least one portable fire extinguisher with a rating of at least 4-A shall be provided for every 2,500 square feet (232.3 m²) of storage area, or portion thereof, or in lieu thereof, a hose of at least 1 inch (25.4 mm) in diameter, equipped with a nozzle of at least 1/2 inch (12.7 mm) in diameter, sufficient in length to reach all parts of the enclosure, and connected to an adequate water supply may be provided.

315.4 Space underneath grandstands and bleachers. Except where enclosed in not less than 1-hour fire-resistance-rated construction in accordance with the Building Code, spaces underneath grandstand and bleacher seating shall not be occupied or utilized for purposes other than means of egress.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 3: GENERAL PRECAUTIONS AGAINST FIRE
SECTION FC 316: AUTOMOTIVE SALVAGE AND WRECKING FACILITIES

NYC Administrative Code § 29-FC 316

316.1 General.

Automotive salvage and wrecking facilities shall be designed, installed, operated and maintained in accordance with this section.

316.2 Prohibitions. It shall be unlawful to:

1. Dispose of any fuel or flammable or combustible liquid waste by discharging or otherwise disposing of such fuel or liquid waste in any drain or sewer, upon any premises, or in any river, stream or other body of water.
2. Light or maintain an open fire for the burning, dismantling, salvaging, scrapping wrecking of motor vehicles or parts thereof.

316.3 Supervision. The de-fueling of motor vehicle fuel tanks and the transfer of fuel from the de-fueling equipment shall be under the personal supervision of a certificate of fitness holder.

316.4 Facility requirements. Automotive salvage and wrecking facilities shall be in accordance Sections 316.4.1 through 316.4.3.

316.4.1 Licensing. Department permits and other approvals shall be issued to an automotive salvage and wrecking facility only if such facility is licensed and maintained in accordance with requirements of the New York State Department of Motor Vehicles and the New York City Department of Consumer Affairs.

316.4.2 Lawful occupancy. Department permits and other approvals shall be issued to automotive salvage and wrecking facilities only if use of the premises for such facility is authorized by the certificate of occupancy or otherwise constitutes a lawful use of the premises.

316.4.3 Design requirements. Automotive salvage and wrecking facilities shall be designed in accordance with

Sections 316.4.3.1 and 316.4.3.3.

316.4.3.1 Facility enclosure. The facility shall be enclosed on all sides by a solid, opaque fence or wall at least 8 feet (2438 mm) in height in accordance with the Building Code and the Zoning Resolution.

316.4.3.2 Fire apparatus roads. The facility shall be accessible from fire apparatus roads with a minimum unobstructed width of 20 feet (6096 mm). An outdoor area of the facility shall be accessible by fire apparatus roads on all four sides with a distance between such roads of not greater than 50 feet (15 240 mm) by 100 feet (30 480 mm).

316.4.3.3 De-fueling area. The de-fueling of motor vehicle fuel tanks shall be conducted at an approved location that is protected throughout by a fire extinguishing system.

316.5 Operation and maintenance. Automotive salvage and wrecking facilities shall be operated and maintained in accordance with Sections 316.5.1 through 316.5.4.

316.5.1 Fire apparatus access roads. Fire apparatus access roads shall be maintained unobstructed to provide access for department apparatus.

316.5.2 Torch operations. Torch operations shall be conducted in accordance with Chapter 26 and in compliance with the following requirements:

1. Torch operations shall be conducted at least 25 feet (7620 mm) from combustible waste, other motor vehicles, stacks of motor vehicles or other combustible material, unless protection in the form of non-combustible shields or covers are provided to restrict the scattering of sparks and molten metal.

2. Torch operations shall not be conducted in any location where hazardous gases or vapors may be present. Fuel tanks of motor vehicles shall be emptied of fuel and purged of all flammable vapors before any torch operations are commenced.

3. Compressed gas containers, when in use, shall be properly supported and placed a safe distance from torch operations.

4. Compressed gas containers, when not in use, and reserve containers, shall be properly supported and stored in a location remote from torch operations. The valves of such containers shall be closed and protected from mechanical damage by the placement of protective caps. Empty containers shall be treated as full.

5. Torch operation areas shall be protected by a charged hose line, at least 1 inch (25.4 mm) in diameter, connected to an approved source of water. In lieu of such hose line, at least 4 portable fire extinguishers with a minimum 2-A rating each may be provided.

6. The torch operator or a person designated as a fire watch shall search the torch operation area immediately after operations to determine that no sparks or molten metal remain in the area. Additionally, a second such search shall be conducted one-half hour thereafter. A record of such searches shall be maintained in a log book at the premises and made available for inspection by any representative of the department.

316.5.3 Draining of motor vehicle fluids. The draining of fluids from motor vehicles shall be in accordance with Sections 316.5.3.1 and 316.5.3.2.

316.5.3.1 Draining of motor vehicle fuel tanks. As soon as practicable after arrival, the fuel tank of motor vehicles received at salvage and wrecking facilities shall be de-fueled through the vehicle's fuel connection, or other approved procedure. De-fueling equipment shall be listed for such purpose as a complete assembly and shall have a container capacity not exceeding 65 gallons (246 L). The fuel recovered by the defueler shall be transferred to a storage tank complying with the requirements of Chapter 22 or 34, as applicable. De-fueling equipment shall not be used to fuel

motor vehicles.

316.5.3.2Draining of other motor vehicle fluids.Crankcase oil and other flammable or combustible liquid waste shall be removed from motor vehicles and stored outdoors, in tanks complying with the requirements of Chapter 34, or, when approved, portable containers.

316.5.4Emergency operations.In automotive salvage and wrecking facilities provided with cranes for the purpose of moving or stacking motor vehicles, procedures shall be developed by the owner such that a crane operator would be made available in a reasonable period of time in the event that crane operation is required during a fire or other emergency.

316.6Excessive fires.The occurrence of more than two fires in an automotive salvage and wrecking facility during any 12-month period shall give rise to a rebuttable presumption that the owner has failed to properly maintain the facility in compliance with the requirements of this section, and shall be grounds for revocation of department permits and other approvals, or other appropriate enforcement action.



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TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 32: CRYOGENIC FLUIDS
SECTION FC 3201: GENERAL

NYC Administrative Code § 29-FC 3201

3201.1 Scope.

This chapter shall govern the storage, handling and use of cryogenic fluids.

Exception: Fluids used as refrigerants in refrigerating systems (see Section 606).

3201.2Permits.Permits shall be required as set forth in Section 105.6.

3201.3General.Cryogenic fluids shall be stored, handled and used in accordance with this chapter, except that liquefied natural gas (LNG) shall comply with the requirements of Section 3206 only.

3201.3.1Oxidizing cryogenic fluids.Oxidizing cryogenic fluids, including oxygen, shall additionally comply with the requirements of NFPA 50.

3201.3.2Flammable cryogenic fluids.Flammable cryogenic fluids, including hydrogen, methane and carbon monoxide, shall additionally comply with the requirements of NFPA 50B.

3201.3.3Inert cryogenic fluids.Inert cryogenic fluids, including argon, helium and nitrogen, shall additionally comply with the requirements of CGA P-18.

3201.4Supervision.The storage, handling and use of cryogenic fluids shall be supervised as set forth in Sections 3201.4.1 through 3201.4.3.

3201.4.1Handling and use.Handling and use of cryogenic fluid in quantities requiring a permit shall be performed under the personal supervision of a person holding a certificate of fitness.

3201.4.2Installation and maintenance.The installation and maintenance of cryogenic containers and of systems containing cryogenic fluids, including the repair of such systems, shall be conducted under the personal supervision of a

person holding a certificate of fitness.

3201.4.3Storage.Storage of cryogenic fluids in quantities requiring a permit shall be under the general supervision of a person holding a certificate of fitness.

3201.5Partially full containers.Partially full cryogenic containers containing residual gases shall be treated as full.



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TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 32: CRYOGENIC FLUIDS
SECTION FC 3202: DEFINITIONS

NYC Administrative Code § 29-FC 3202

3202.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

CRYOGENIC CONTAINER. A pressure container, low-pressure container or atmospheric container of any size designed or used for the transportation, handling or storage of a cryogenic fluid, and which utilizes venting, insulation, refrigeration or a combination thereof to maintain the pressure within design parameters for such container and to keep the contents in a liquid state.

CRYOGENIC FLUID. A fluid having a boiling point lower than ;ms130(degrees)F (;ms89.9(degrees)C) at 14.7 pounds per square inch absolute (psia) (an absolute pressure of 101.3 kPa).

FLAMMABLE CRYOGENIC FLUID. A cryogenic fluid that is flammable in its vapor state.

LOW-PRESSURE CONTAINER. A storage container designed to withstand an internal pressure greater than 0.5 pounds per square inch gauge (psig) (3.4 kPag) but not greater than 15 psig (103.4 kPag).

MAXIMUM ALLOWABLE WORKING PRESSURE (MAWP). The maximum pressure permissible at the top of a container in its operating position for a designated temperature, as established by the container manufacturer.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 32: CRYOGENIC FLUIDS
SECTION FC 3203: GENERAL REQUIREMENTS

NYC Administrative Code § 29-FC 3203

3203.1 Cryogenic container.

Cryogenic containers shall comply with the requirements of Sections 3203.1.1 through 3203.1.3.3 and Chapter 27.

3203.1.1Cryogenic container standards.Cryogenic containers shall be designed, constructed, operated and maintained in accordance with the ASME Boiler and Pressure Vessel Code or United States Department of Transportation regulations, or as otherwise approved.

3203.1.1.1Pressure gauges.Cryogenic containers shall be provided with pressure gauges. The maximum face reading for dial-type gauges shall not be less than 133 percent nor more than 250 percent of the MAWP of the cryogenic container.

3203.1.1.2Liquid level indicating devices.Cryogenic containers shall be provided with a liquid level indicating device. It shall be unlawful to use cryogenic containers with glass liquid level gauges in direct contact with the contents of such containers.

3203.1.2Reserved.

3203.1.3Foundations and supports.Cryogenic containers shall be installed upon substantial concrete or masonry foundations or structural steel supports on firm concrete or masonry foundations. Cryogenic containers shall be supported to prevent the concentration of excessive loads on the supporting portion of the shell. Foundations for horizontal cryogenic containers shall be constructed to accommodate expansion and contraction of the cryogenic container. Foundations shall be provided to support the weight of vaporizers and heat exchangers.

3203.1.3.1Temperature effects.When cryogenic container foundations or supports are subject to exposure to temperatures below ;ms130(degrees)F (;ms89.9(degrees)C), the foundations or supports shall be constructed of materials to withstand the low-temperature effects of cryogenic fluid spillage.

3203.1.3.2Corrosion protection.Portions of cryogenic containers in contact with foundations or saddles shall be painted to protect against corrosion. Precautions shall be taken to avoid or minimize corrosion due to galvanic action.

3203.1.3.3Fill connection supports.Fill connection supports shall be designed and maintained to withstand the repeated application of force required to connect and disconnect hoses of cargo tanks.

3203.2Pressure relief devices.Pressure relief devices shall be provided in accordance with Sections 3203.2.1 through 3203.2.6 to protect cryogenic containers and systems containing cryogenic fluids from rupture in the event of overpressure. Pressure relief devices shall be designed in accordance with CGA S-1.1, CGA S-1.2 and CGA S-1.3.

3203.2.1Cryogenic containers.Cryogenic containers shall be provided with pressure relief devices. Precautions shall be taken to prevent overpressurization of atmospheric tanks. Such pressure relief devices shall communicate with the vapor space of the container, not the cryogenic fluid.

3203.2.2Equipment other than cryogenic containers.Heat exchangers, vaporizers, insulation casings surrounding cryogenic containers, and sections of coaxial or single wall piping systems in which liquefied cryogenic fluids could be trapped because of leakage from cryogenic containers or isolation by valves shall be provided with pressure relief devices.

3203.2.3Sizing.Pressure relief devices shall be sized in accordance with the specifications to which the cryogenic container was fabricated. The relief devices shall have sufficient capacity to prevent the MAWP of the cryogenic container or system from being exceeded. It shall be unlawful to use pressure relief devices that are not clearly marked by the manufacturer with their set pressure.

3203.2.4Accessibility.Pressure relief devices shall be located such that they are readily accessible for inspection and repair.

3203.2.5Arrangement.Pressure relief devices shall be arranged to discharge unobstructed, at rated capacity, to the outdoors in such a manner as to prevent escaping gas from impinging on personnel, cryogenic containers, equipment and adjacent structures or from entering enclosed spaces.

Exception: United States Department of Transportation specification cryogenic containers with an internal volume of 2 cubic feet (0.057 m³) or less.

3203.2.6Shutoffs between pressure relief devices and cryogenic containers.Shutoff valves shall not be installed between pressure relief devices and cryogenic containers.

Exception: A shutoff valve is allowed on cryogenic containers equipped with multiple pressure-relief device installations where the design and arrangement of the valves provide sufficient relief capacity for the pressure relief devices to prevent the MAWP of the cryogenic container or system from being exceeded at all times.

3203.3Pressure-relief vent piping.Pressure-relief vent-piping systems shall be constructed and arranged so as to remain functional and direct the flow of gas to a safe location in accordance with Sections 3203.3.1 and 3203.3.2.

3203.3.1Sizing.Pressure-relief-device vent piping shall have a cross-sectional area not less than that of the pressure-relief-device vent opening and shall be arranged so as not to restrict the flow of escaping gas.

3203.3.2Arrangement.Pressure-relief-device vent piping and drains in vent lines shall be arranged so that escaping gas will discharge unobstructed to the outdoors and not impinge on personnel, containers, equipment, foundations and adjacent structures or enter enclosed spaces. Pressure-relief-device vent lines shall be installed in such a manner to exclude or remove moisture and condensation and prevent malfunction of the pressure relief device because of freezing or ice accumulation or other types of obstruction.

3203.4Marking.Cryogenic containers and systems shall be marked in accordance with Sections 3203.4.1 through 3203.4.6.

3203.4.1Identification signs.Visible hazard identification signs in accordance with NFPA 704 shall be provided at entrances to areas in which cryogenic fluids are stored, handled or used.

3203.4.2Identification of contents.Stationary and portable cryogenic containers shall be clearly marked with the name of the cryogenic fluid contained therein. Stationary aboveground cryogenic containers shall be placarded in accordance with Sections 2703.5 and 2703.6. Portable cryogenic containers shall be identified in accordance with CGA C-7.

3203.4.3Identification of cryogenic containers.Stationary cryogenic containers shall be identified with a permanent nameplate indicating the manufacturing specification and MAWP. The nameplate shall be installed on the cryogenic container in an accessible location. The nameplate shall be marked in accordance with the ASME Boiler and Pressure Vessel Code or DOTn regulations as set forth in 49 CFR Part 178.

3203.4.4Identification of cryogenic container connections.Cryogenic container inlet and outlet connections, liquid level indicating devices, liquid level limit controls, valves, pressure gauges, regulators, and safety devices shall be marked with a permanent tag or label identifying their function or identified by a schematic drawing designating their function and whether they are connected to the vapor or liquid space of the cryogenic container. Where a schematic drawing is provided, it shall be permanently attached to the cryogenic container and maintained in a legible condition.

3203.4.5Identification of piping systems.Piping systems shall be identified in accordance with Section 3003.2.3.

3203.4.6Identification of emergency shutoff valves.Emergency shutoff valves shall be identified by posting a durable sign at a conspicuous location at or near the valve.

3203.5Container protection.Cryogenic containers and systems shall be secured and protected against physical damage and tampering in accordance with Sections 2703.9.2 and 3203.5.2 through 3203.5.4.

3203.5.1Reserved.

3203.5.2Securing of cryogenic containers.Stationary containers shall be secured to foundations in accordance with the Building Code. Portable cryogenic containers shall be secured to prevent movement from contact, vibration or seismic activity. Nesting shall be an acceptable means of securing cryogenic containers. Cryogenic containers shall not be secured to plumbing pipes or electrical conduits.

3203.5.3Securing of vaporizers.Vaporizers, heat exchangers and similar equipment shall be anchored to a suitable foundation. Connecting piping shall be sufficiently flexible to provide for the effects of expansion and contraction due to temperature changes.

3203.5.4Physical protection.Cryogenic containers, piping, valves, pressure relief devices, regulating equipment and other appurtenances which could be exposed to physical damage and tampering shall be protected by posts or other approved means.

3203.6Separation from hazardous conditions.Cryogenic containers and systems in storage or use shall be separated from materials and conditions which pose exposure hazards to or from each other in accordance with Sections 3203.6.1 through 3203.6.2.1.

3203.6.1Stationary cryogenic containers.Stationary cryogenic containers shall be separated from exposure hazards in accordance with the provisions applicable to the type of cryogenic fluid contained and the minimum separation distances indicated in Table 3203.6.1.Table 3203.6.1 Separation of Stationary Cryogenic Containers from Exposure

Hazards Exposure Minimum Distance (feet) Buildings, regardless of construction type1, or minimum required for service access Building exit10 Building openings other than building exits1 Air intakes10 Lot lines5 Group A occupancies and other publicgathering places50 Nonambulatory patient areas50 Combustible waste or vegetation15 Other hazardous materialsIn accordance with Chapter 27 For SI: 1 foot = 304.8 mm.

3203.6.1.1Point-of-fill connections.Fill connections for stationary cryogenic containers shall not be positioned closer to exposures than the minimum distances required for stationary cryogenic containers. Fill connections for stationary cryogenic containers shall be located and maintained to afford cargo tank operator access to valves and indicators on the cryogenic containers and cargo tank.

3203.6.1.2Surfaces beneath cryogenic containers.The surface of the area on which stationary cryogenic containers are placed, including the surface of the area located below thepoint where connections are made for the purpose of filling such cryogenic containers, shall be compatible with the cryogenic fluid in the cryogenic container. The surface shall be capable of withstanding temperatures of cryogenic fluid that may be released during normal filling operations, without cracking, shifting or other impact upon the stability of the installation.

3203.6.1.3Prohibited locations.It shall be unlawful to install stationary cryogenic containers on the roof of any building or structure.

3203.6.2Portable cryogenic containers.Portable cryogenic containers shall be separated from exposure hazards in accordance with Table 3203.6.2.Table 3203.6.2 Separation of Portable Cryogenic Containers from Exposure Hazards Exposure Minimum Distance (feet) Building exits10 Building openings other than building exits1 Air intakes10 Lot lines5 Room or area exits3a Combustible waste or vegetation15 Other hazardous materialsIn accordance with Chapter 27 For SI: 1 foot = 304.8 mm.

3203.6.2.1Surfaces beneath cryogenic containers.Cryogenic containers shall be placed on surfaces that are compatible with the cryogenic fluid in the cryogenic container.

3203.6.2.2Pressure relief valve discharge.Cryogenic containers shall be positioned such that the pressure relief valve discharge is directed away from any building exit.

3203.7Electrical wiring and equipment.Electrical wiring and equipment shall comply with the requirements of the Electrical Code and Sections 3203.7.1 and 3203.7.2.

3203.7.1Location.Cryogenic containers and systems shall not be located where they could become part of an electrical circuit.

3203.7.2Electrical grounding and bonding.Cryogenic containers and systems shall not be used for electrical grounding. When electrical grounding and bonding is required, the grounding and bonding system shall comply with the requirements of the Electrical Code. The grounding system shall be protected against corrosion, including corrosion caused by stray electric currents or galvanic action.

3203.8Service and repair.Service, repair, modification or removal of valves, pressure relief devices or other cryogenic container appurtenances, shall comply with the requirements of Sections 3203.8.1 and 3203.8.2 and the ASME Boiler and Pressure Vessel Code, Section VIII or United States Department of Transportation regulations as set forth in 49 CFR Part 178.

3203.8.1Cryogenic containers.Cryogenic containers that have been removed from service shall be repaired or disposed of lawfully.

3203.8.2System inspection.Cryogenic containers and systems shall be inspected by competent personnel at least once a month.

3203.9Unauthorized use.Cryogenic containers shall not be used for any purpose other than as a container for the product that it is designed to contain.

3203.10Leaks, damage and corrosion.Leaking, damaged or corroded cryogenic containers shall be immediately removed from service. Leaking, damaged or corroded systems shall be replaced, repaired or disposed of lawfully in accordance with Section 3203.8.

3203.11Lighting.Lighting shall be provided for equipment such as control valves, gauges, regulators, vaporizers and heat exchangers and operating facilities such as walkways and gates ancillary to stationary cryogenic container installations.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 32: CRYOGENIC FLUIDS
SECTION FC 3204: STORAGE

NYC Administrative Code § 29-FC 3204

3204.1 General.

Storage of cryogenic containers shall be in accordance with this section.

3204.2Indoor storage.Indoor storage of cryogenic containers shall be in accordance with Sections 3204.2.1 through 3204.2.1.3.

3204.2.1Cryogenic containers.Cryogenic containers shall be installed in accordance with the provisions applicable to the type of cryogenic fluid stored and this section.

3204.2.1.1Cryogenic containers.Cryogenic containers shall be in accordance with Section 3203.1.

3204.2.1.2Construction of indoor areas.Cryogenic containers stored indoors shall be located in buildings, rooms or areas constructed in accordance with the Building Code.

3204.2.1.3Ventilation.Storage areas for cryogenic containers shall be ventilated in accordance with the Mechanical Code.

3204.3Outdoor cryogenic storage.Outdoor storage of cryogenic containers shall be in accordance with Sections 3204.3.1 and 3204.3.2.

3204.3.1Stationary cryogenic containers.The outdoor storage of stationary cryogenic containers shall be in accordance with Section 3203 and this section.

3204.3.1.1Location.Stationary cryogenic containers shall be located in accordance with Section 3203.6. Cryogenic containers shall not be located within diked areas containing other hazardous materials.

3204.3.1.2Areas subject to flooding.Stationary cryogenic containers, vaporizers, heat exchangers and connecting

pipings located in areas subject to flooding shall be securely anchored or elevated to prevent separation of the cryogenic containers and related equipment from foundations or supports.

3204.3.1.3Drainage.The area surrounding stationary cryogenic containers shall be provided with a means to prevent accidental discharge of cryogenic fluid from endangering personnel, cryogenic containers, equipment and adjacent structures or to enter enclosed spaces. The stationary cryogenic container shall not be placed where spilled or discharged fluid will be retained around the cryogenic container.

Exception: These drainage requirements shall not apply when it is determined by the commissioner that the cryogenic container does not constitute a hazard, upon consideration of special features such as crushed rock utilized as a heat sink, topographical conditions, nature of occupancy, proximity to structures on the same or adjacent property, and the capacity and construction of cryogenic containers and character of cryogenic fluid to be stored.

3204.3.2Portable cryogenic containers.Outdoor storage of portable cryogenic containers shall comply with the requirements of Section 3203 and this section.

3204.3.2.1Location.Portable cryogenic containers shall be located in accordance with Section 3203.6.

3204.3.2.2Drainage.The area surrounding portable cryogenic containers shall be provided with a means to prevent accidental discharge of fluids from endangering adjacent containers, buildings, equipment or adjoining property.

Exception: These requirements shall not apply when it is determined by the commissioner that the cryogenic container does not constitute a hazard.

3204.3.2.3Areas subject to flooding.Portable cryogenic containers located in areas subject to flooding shall be properly secured to prevent movement.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 32: CRYOGENIC FLUIDS
SECTION FC 3205: HANDLING AND USE

NYC Administrative Code § 29-FC 3205

3205.1 Applicability.

Handling and use of cryogenic containers and systems shall be in accordance with this section.

3205.1.1Cryogenic fluid systems.Cryogenic systems shall be suitable for the use intended and designed by persons competent in such design. Equipment and processes shall be listed or approved.

3205.1.2Piping systems.Piping, tubing, valves, joints and fittings used in cryogenic systems shall be designed and installed in accordance with the material-specific provisions of Sections 3201.3.1, 3201.3.2, 3201.3.3 and 3205.1.2.1 through 3205.1.2.6.

3205.1.2.1Design and construction.Piping systems shall be suitable for the use intended through the full range of pressure and temperature to which they will be subjected. Piping systems shall be designed and constructed to provide adequate allowance for expansion, contraction, vibration, settlement and fire exposure.

3205.1.2.2Joints.Joints on cryogenic container piping and tubing shall be threaded, welded, silver brazed or flanged.

3205.1.2.3Valves and piping components.Valves and piping components shall be suitable for the intended use at the temperatures of the application and shall be designed and constructed to withstand the maximum pressure at the minimum temperature to which they will be subjected. Valves shall be oriented so that the stem is above the horizontal plane and discharge is directed away from supporting elements.

3205.1.2.3.1Shutoff valves on cryogenic containers.Shutoff valves shall be provided on all cryogenic container connections except for pressure relief devices. Shutoff valves shall be readily accessible and located as close as practical to the cryogenic container. Manually-operated shutoff valves shall be designed and installed to minimize accidental opening and closing.

Exception: Valves before pressure relief devices shall be installed in accordance with Section 3203.2.6.

3205.1.2.3.2 Shutoff valves on piping. Shutoff valves shall be installed in piping containing cryogenic fluids where needed to limit the volume of liquid discharged in the event of piping or equipment failure. Pressure relief valves shall be installed on all sections of piping systems where liquid is capable of being trapped (see Section 3203.2). Shutoff valves shall be installed so that piping components can be isolated for maintenance. Check valves shall be installed on discharge lines where pumps or other pressure increasing equipment operate in parallel.

3205.1.2.4 Physical protection and support. Aboveground piping systems shall be supported and protected from physical damage. Piping passing through floors or walls shall be protected from damage caused by movement of the floors or walls.

3205.1.2.5 Corrosion protection. Aboveground piping that is subject to corrosion because of exposure to corrosive atmospheres, shall be constructed of materials to resist the corrosive environment or otherwise protected against corrosion. Underground piping shall be protected against corrosion.

3205.1.2.6 Testing. Piping systems shall be tested and proven free of leaks after installation as required by the standards to which they were designed and constructed. Test pressures shall not be less than 150 percent of the MAWP when hydraulic testing is conducted or 110 percent when testing is conducted pneumatically.

3205.2 Indoor use. Indoor use of cryogenic fluids shall comply with the material-specific requirements of Sections 3201.3.1 through 3201.3.3.

3205.3 Outdoor use. Outdoor use of cryogenic fluids shall comply with the material specific requirements of Sections 3201.3.1, 3201.3.2, 3201.3.3, 3205.3.1 and 3205.3.2.

3205.3.1 Separation. Distances from property lines, buildings and exposure hazards shall comply with the requirements of Section 3203.6 and the material specific requirements of Sections 3201.3.1 through 3201.3.3.

3205.3.2 Emergency shutoff valves. Readily accessible shutoff valves shall be provided to shut off the cryogenic fluid supply in case of emergency. A shutoff valve shall be located at the source of supply and at the point where the system enters the building.

3205.4 Filling and dispensing. Filling and dispensing of cryogenic fluids shall comply with the requirements of Sections 3205.4.1 through 3205.4.4.

3205.4.1 Dispensing areas. Dispensing of cryogenic fluids shall be conducted in approved locations. Dispensing indoors shall be conducted in areas constructed in accordance with the construction codes, including the Building Code.

3205.4.1.1 Ventilation. Indoor areas where cryogenic fluids are dispensed shall be ventilated in accordance with the Mechanical Code in a manner that captures any vapor at the point of generation.

3205.4.1.1.1 Alarms. Oxygen sensors equipped with an audible alarm shall be provided in dispensing areas to continuously monitor the level of oxygen in the area. The alarm shall actuate when oxygen concentration drops below 19.5 percent.

3205.4.1.2 Piping systems. Piping systems utilized for filling or dispensing of cryogenic fluids shall be designed and constructed in accordance with Section 3205.1.2.

3205.4.2 Vehicle loading and unloading areas. Loading or unloading areas shall be designed and maintained in accordance with the standards referenced in Sections 3201.3.1 through 3201.3.3. Loading and unloading areas shall additionally comply with the requirements of Sections 3203.6.1 and 3203.6.2 and shall be capable of withstanding the weight of the fully loaded cargo tank.

3205.4.2.1 Vehicle loading and unloading operations. Vehicle loading and unloading operations shall be conducted in an approved manner in accordance with the standards referenced in Sections 3201.3.1 through 3201.3.3.

3205.4.3 Limit procedures. Limit procedures shall be established to prevent overfilling of stationary cryogenic containers during filling operations.

3205.4.4 Prohibited filling of flammable cryogenic fluid. It shall be unlawful to fill cryogenic containers with flammable cryogenic fluid.

3205.5 Handling. Handling of cryogenic containers shall be in accordance with this section.

3205.5.1 Carts and trucks. Cryogenic containers shall be moved using an approved method. Where cryogenic containers are moved by hand cart, hand truck or other mobile device, such carts, trucks or devices shall be designed for the secure movement of containers, including a means of restraining the containers.

3205.5.2 Closed cryogenic containers. Pressurized portable cryogenic containers shall be moved with all operable valves in a closed position. Cryogenic containers designed for use at atmospheric conditions shall be moved with appropriate loose fitting covers in place to prevent spillage.

3205.5.3 Stationary cryogenic containers. Stationary cryogenic containers shall not be moved while containing cryogenic fluid. Handling of cryogenic containers shall be in accordance with the manufacturer's instructions.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 32: CRYOGENIC FLUIDS
SECTION FC 3206: LNG INSTALLATIONS AND FACILITIES

NYC Administrative Code § 29-FC 3206

3206.1 New LNG installations and facilities.

It shall be unlawful to construct any new LNG installation or facility. It shall be unlawful to operate any LNG installation or facility that was not lawfully existing on the effective date of this code.

3206.2 Existing LNG installations and facilities. LNG installations and facilities lawfully existing on the effective date of this code shall be designed, installed, operated and maintained in accordance with this code, the rules and the regulations of the United States Department of Transportation, as set forth in 49 CFR Part 193, except as otherwise provided in Section 102.3.

3206.2.1 Out-of-service LNG storage tanks. Notwithstanding any other provision of law, rule or regulation, any storage tank erected prior to the effective date of this code which has not been used for the storage of liquefied natural gas for a period in excess of two years from the date of completion of the construction of the tank structure shall be recertified by the various city agencies in the same manner as if filing design and installation documents of a new tank before a certificate of occupancy be issued if the tank is to be placed in service.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 33: EXPLOSIVES, FIREWORKS AND SPECIAL EFFECTS
SECTION FC 3301: GENERAL

NYC Administrative Code § 29-FC 3301

3301.1 Scope.

This chapter shall govern the possession, manufacture, storage, handling, use, transportation and sale of explosives, fireworks, materials used to create a special effect, including pyrotechnic materials, and model and high-power rockets.

Exceptions:

1. Manufacture, storage, handling, use, transportation and sale of such materials by the Armed Forces of the United States, Coast Guard or National Guard.
2. Explosives in forms prescribed by the official United States Pharmacopoeia.
3. Reserved.
4. Reserved.
5. The use of explosives by federal and state, law enforcement and public safety agencies acting in their official capacity.
6. Special industrial explosive devices which individually contain a quantity of explosives of not more than 0.056 ounces (1.6 grams) net explosive weight and which the aggregate do not exceed 1 pound (0.454 kg) net explosive weight.
7. The storage, handling, use, transportation and sale of blank industrial-power load cartridges when packaged in accordance with United States Department of Transportation packaging regulations.

3301.2Permits.Permits shall be required as set forth in Section 105.6.

3301.2.1Reserved.

3301.2.2Reserved.

3301.2.3Permit restrictions.The commissioner, as a condition to the granting of a permit, may impose further restrictions on the storage, handling, use, transportation or sale of an explosive, fireworks display or special effects that the commissioner deems necessary or appropriate in the interest of public safety, including further restricting the quantity of materials, and designating the locations, days and times of days allowed for the permitted activity.

3301.2.4Financial responsibility.Applicants for a permit shall submit proof satisfactory to the commissioner that the applicant has obtained and will maintain for the duration of the permit period a liability and casualty insurance policy, or equivalent surety bond, covering the permit holder, its officers, employees and agents, for personal injuries and property damage resulting from the permitted activity or the failure of the permit holder, its officers, employees and agents, to comply with any requirement of this chapter, any rule promulgated hereunder or the terms and conditions of the permit. Such insurance policy or surety bond shall name the city of New York as an additional insured and shall provide for notice to the commissioner at least ten days prior to any material change, cancellation or termination thereof. Such insurance policy or surety bond shall be in the following amounts, as applicable.

1. High explosives. The insurance policy or surety bond for the storage or use of high explosive, including any blasting operation, shall be in an amount to be determined by the commissioner but not less than five million dollars.

2. Low explosives. The insurance policy or surety bond for the storage of low explosives, small arms ammunition, primers, black powder or smokeless propellants shall be in an amount to be determined by the commissioner but not less than one hundred thousand dollars.

3. Fireworks. The insurance policy or surety bond for the discharge of fireworks, including any fireworks display, shall be in an amount to be determined by the commissioner but not less than two million dollars.

4. Special effects. The insurance policy or surety bond for the conduct of any special effects, including any special effects involving the storage or use of a pyrotechnic material, article or device, shall be in an amount to be determined by the commissioner but not less than one million dollars.

3301.3Prohibited materials, operations and facilities.

3301.3.1Explosives.It shall be unlawful to:

1. Manufacture any explosive, including small arms ammunition, primers, black powder and smokeless propellants.
2. Store for sale or display for sale any explosive in an area that is not secured from unauthorized access, including any unsecured display in an area accessible to the public.
3. Store, handle or use any explosive for any purpose other than one authorized by this chapter or other federal, state or city law, rule or regulation.
4. Store, handle or use any explosive in a residential building, or within 100 feet (30 480 mm) thereof, except for approved blasting operations and lawful storage of small arms ammunition for personal use and not for resale in accordance with Section 3306.
5. Store, handle or use any explosive without the permit, certificate of fitness and/or other approval required by this section.
6. Store, handle, use or sell the following explosives:

6.1. Liquid nitroglycerin.

6.2. Dynamite containing more than 60 percent liquid explosive ingredient.

Exception. Gelatin dynamite used for building implosions approved by the commissioner.

6.3. Dynamite without an approved absorbent, or in packaging that permits leakage of a liquid explosive ingredient under any conditions liable to exist during storage.

6.4. Nitrocellulose in a dry and uncompressed condition in a quantity greater than 10 pounds (4.54 kg) of net weight in one package.

6.5. Fulminate of mercury in a dry condition and fulminate of all other metals in any condition except as a component of manufactured articles not hereinafter forbidden.

6.6. Explosive compositions that ignite spontaneously or undergo marked decomposition, rendering the products of their use more hazardous, when subjected to a temperature of 167(degrees)F (75(degrees)C) for a continuous period of 48 hours or less.

6.7. Explosives containing an ammonium salt and a chlorate.

6.8. Explosives that have not been approved or have been forbidden in accordance with the regulations of the United States Department of Transportation, as set forth in 49 CFR Sections 173.51 and/or 173.54.

6.9. Explosives that have not been packaged or marked in accordance with the regulations of the United States Department of Transportation, as set forth in 49 CFR Parts 100-178, and the requirements of Sections 3303 and 3306.

7. Use any high explosive that has not been approved by the commissioner.

8. Operate or maintain safe havens and interchange lots for vehicles transporting explosives as set forth in NFPA 498.

3301.3.2 Fireworks. It shall be unlawful to:

1. Manufacture fireworks.

2. Sell fireworks, or offer or display fireworks for sale.

3. Store, handle, use or possess fireworks for any purpose other than conducting a fireworks display approved in accordance with this chapter.

4. Store fireworks, except temporary storage incidental to a fireworks display.

5. Conduct a fireworks display inside a building.

6. Conduct a fireworks display without the fireworks contractor certificate and certificates of fitness required by this chapter.

7. Manually discharge a fireworks display, or conduct a fireworks display without an electrical control panel.

8. Store, handle, use or sell fireworks that have not been approved or have been forbidden in accordance with the regulations of the United States Department of Transportation, as set forth in 49 CFR Sections 173.51 and/or 173.54.

9. Store, handle, use or sell fireworks that have not been packaged or marked in accordance with the regulations of

the United States Department of Transportation, as set forth in CFR 49 Parts 100-178, and Sections 3303 and 3306.

3301.3.3Pyrotechnic material.It shall be unlawful to:

1. Manufacture any pyrotechnic material, article or device.
2. Store for sale or display for sale any pyrotechnic material, article or device in an area that is not secured from unauthorized access, including any unsecured display in an area accessible to the public.
3. Store, handle or use any pyrotechnic material, article or device in any residential building or within 100 feet (30 480 mm) thereof.
4. Sell any pyrotechnic material, article or device designed to create a special effect without the pyrotechnic supplier certificate required by this chapter.
5. Conduct any special effects using a pyrotechnic material, article or device without the certificate of fitness required by this chapter.
6. Store, handle, use or sell pyrotechnic material that has not been approved or have been forbidden in accordance with the regulations of the United States Department of Transportation, as set forth in 49 CFR Sections 173.51 and/or 173.54.
7. Store, handle, use or sell pyrotechnic material that has not been packed or marked in accordance with the regulations of the United States Department of Transportation, as set forth in 49 CFR Parts 100-178, and this chapter.

3301.3.4Rocketry.It shall be unlawful to manufacture, store, handle or use model rocketry or high-power rocketry, as defined in NFPA 1122 and NFPA 1127.

3301.3.5Smoking prohibited.It shall be unlawful to smoke, light or maintain an open flame, or conduct hot work operations within 100 feet (3050 mm) of any location:

1. Where explosives or fireworks are stored, handled, used or otherwise discharged.
2. Where any material, article or device of an explosive, flammable or combustible nature, including pyrotechnic materials, articles and devices and fireworks, 1.4G, used to create a special effect are stored, handled, used or otherwise discharged.

3301.3.6Sobriety.It shall be unlawful to be under the influence of intoxicating beverages, narcotics, controlled substances, and prescription or nonprescription drugs that can impair judgment as follows:

1. When supervising storage, or handling, or otherwise discharging or using explosives or fireworks.
2. When supervising storage, or handling, or otherwise discharging or using materials, articles or devices of an explosive, flammable or combustible nature, including pyrotechnic materials, articles and devices and fireworks, 1.4G, used to create a special effect.

3301.4Reserved.

3301.5Supervision.The storage, handling, use and transportation of explosives, fireworks and pyrotechnic materials, articles and devices designed to create a special effect, including the discharge thereof, and special effects operations, shall be supervised in accordance with Sections 3301.5.1 through 3301.5.3.

3301.5.1Explosives.Any blasting operations shall be conducted by a company holding a blasting contractor

certificate and by persons holding a certificate of fitness in accordance with Sections 3301.5.1.1 through 3301.5.1.5.

3301.5.1.1Blasting contractor certificate.The storage, handling, discharge or other use and transportation of explosives for blasting operations shall be conducted by a blasting contractor holding a blasting contractor certificate issued pursuant to this section. Such a certificate shall be issued only to a company whose owners, principals and officers demonstrate to the satisfaction of the commissioner that they possess the requisite character and fitness, education, experience, licenses, facilities, equipment and qualified staff to safely conduct blasting operations. The commissioner may adopt rules prescribing the requisite qualifications and other requirements for the issuance of such a certificate. The blaster shall be responsible for all blasting operations, and ensuring compliance with all applicable laws, rules and regulations.

3301.5.1.2Storage of high explosives.The storage of high explosives shall be under the personal supervision of a magazine keeper holding a certificate of fitness for explosive storage. Such person shall have no duties other than safeguarding, operating and maintaining the magazine and its contents, including opening and closing the magazine and locking and otherwise securing the magazine from unauthorized entry and its contents from unauthorized access; receiving and dispensing or returning explosives; maintaining complete and accurate records of the explosives received, dispensed and returned; and visually inspecting and verifying the quantity and condition of the explosives in the magazine at the beginning and end of each work shift, and documenting same at the end of each work shift by signing an inventory slip in the presence of the succeeding magazine keeper. The unloading and loading of vehicles delivering explosives to the magazine or removing explosives therefrom shall be under the personal supervision of the certificate of fitness holder supervising the magazine.

3301.5.1.3Handling of high explosives.All handling of high explosives, including handling in connection with blasting operations or other use, and handling incidental to transportation (other than transportation set forth in Section 2707.4), shall be performed by a blaster holding a certificate of fitness for blasting operations, an assistant blaster holding a certificate of fitness for blasting assistant, a magazine keeper holding a certificate of fitness for explosives storage, or an explosives handler holding a certificate of fitness for explosives handling.

3301.5.1.4Use of high explosives.Blasting operations or other use of high explosives shall be conducted under the personal supervision of a blaster holding of a certificate of fitness for blasting operations. The blaster shall be in charge of and responsible for all blasting operations. The blaster shall ensure compliance with all applicable laws, rules, regulations, permit conditions and blasting procedures, and ensure that the blasting crew is trained and knowledgeable in the use of explosives. The blaster shall prescribe the blast area and danger zone and check that all persons, including the blasting crew, other job site personnel, pedestrians and traffic, are outside the danger zone before firing a blast. The duties of the blaster, except giving the direction to initiate the blast, may be delegated to an assistant blaster holding a certificate of fitness for blasting assistant.

3301.5.1.5Other job site personnel.Other persons whose work causes them to be present within 100 feet (30 480 mm) of the storage, handling or use of high explosives shall hold a certificate of fitness for blasting job site personnel.

3301.5.2Fireworks.Fireworks displays shall be conducted by a company holding a fireworks contractor certificate and persons holding a certificate of fitness for fireworks display in accordance with Sections 3301.5.2.1 through 3301.5.2.3.

3301.5.2.1Fireworks contractor certificate.Each display or other event involving the discharge or other use of fireworks shall be conducted by a fireworks contractor holding a fireworks contractor certificate issued pursuant to this section. Such a certificate shall be issued only to a company whose owners, principals and officers demonstrate to the satisfaction of the commissioner that they possess the requisite character and fitness, education, experience, licenses, facilities, equipment and qualified staff to safely conduct fireworks displays or other events involving the discharge or other use of fireworks. The commissioner may adopt rules prescribing the requisite qualifications and other requirements for the issuance of such a certificate. The fireworks contractor shall be responsible for the safe conduct of

the display or other event, in the manner prescribed by the commissioner, including:

1. Arranging for the preparation and submission of the fireworks display permit application, including the fireworks display plan, and obtaining the fireworks display permit.
2. Obtaining any necessary permit or authorization, including but not limited to any permit or authorization required by the United States Coast Guard, the New York City Department of Parks and Recreation, the Port Authority of New York and New Jersey, and the United States Federal Aviation Administration.
3. Ensuring compliance with all federal, state and local laws, rules and regulations governing the transportation of explosives.
4. Ensuring adequate facilities, fire protection, and staffing by qualified personnel, including the certificate of fitness holders required by this section.
5. Ensuring compliance with the directions of the department representatives.
6. In conjunction with the sponsor, ensuring maintenance of viewing areas at a safe distance from the location of the fireworks discharge, and other appropriate safety and crowd control measures, as prescribed by the commissioner.
7. Obtaining a liability and casualty insurance policy as set forth in Section 3301.2.4.
8. Conducting an inspection of the display site not more than 48 hours nor less than 24 hours prior to the scheduled display to determine whether there have been any changes in conditions at the display site or other area encompassed by the fireworks display plan (such as the presence of any new combustible or flammable material) that could render the area unsafe for a fireworks display. The fireworks display contractor shall notify the department of any such conditions and arrange for them to be removed.
9. Ensuring that the site of the display or other event is left in a safe condition.

3301.5.2.2Storage and handling of fireworks.All handling of fireworks, including unloading from vehicles, and loading and placement of mortars and fusing of shells, and all temporary storage of fireworks incidental to a fireworks display shall be conducted under the personal supervision of a holder of a certificate of fitness for fireworks display.

3301.5.2.3Use of fireworks.The use of fireworks for a fireworks display, including the discharge of fireworks during the display, shall be conducted by a person holding a certificate of fitness for fireworks display. Each fireworks display or other discharge of fireworks shall be under the personal supervision of at least two persons holding a certificate of fitness for fireworks display. The certificate of fitness holders conducting a fireworks display or other event shall be responsible for the safe handling, installation and discharge of fireworks and post-display site safety measures, in compliance with the requirements of this section, any rules promulgated hereunder, the terms and conditions of the fireworks display permit, and all other applicable laws, rules and regulations.

3301.5.3Special effects.The storage, handling, discharge or other use and transportation of any material, article or device of an explosive, flammable or combustible nature, including fireworks, 1.4G, for special effects, and any sale or offering for sale of a pyrotechnic material, article or device, shall be conducted by persons holding a certificate of fitness or a pyrotechnic supplier certificate in accordance with Sections 3301.5.3.1 through 3301.5.3.4.

3301.5.3.1Special effects or other use of pyrotechnic materials, articles and devices.Special effects displays or other events involving the conduct of a special effect, including the discharge or other use of any pyrotechnic material, article or device and fireworks, 1.4G, shall be conducted by a person holding a certificate of fitness for special effects issued pursuant to this section. Each discharge or other use of materials, articles or devices used for a special effect shall be performed by, or, if authorized by a special effects permit, under the personal supervision of, such certificate of fitness

holder. The certificate of fitness holder conducting a special effect shall be responsible for the safe handling, installation and discharge of the special effect and post-discharge site safety measures in compliance with the requirements of this section, any rules promulgated hereunder, the terms and conditions of the special effects permit, and all other applicable laws, rules and regulations. A certificate of fitness for special effects shall be issued only to a person who demonstrates to the satisfaction of the commissioner that he or she possesses such education, training or experience in the manufacture, storage, use and display of pyrotechnic materials, articles and devices and other special effects as to qualify him or her to safely conduct one or more special effects. The commissioner may adopt rules prescribing the requisite qualifications and other requirements for the issuance of such certificate.

3301.5.3.2Storage and handling of pyrotechnic materials, articles or devices.The storage of pyrotechnic materials, articles and devices in connection with a special effects display shall be under the general supervision of a certificate of fitness holder for pyrotechnic special effects materials. The handling of such materials, articles and devices shall be performed under the personal supervision of a certificate of fitness holder for special effects operations or a certificate of fitness for pyrotechnic materials.

3301.5.3.3Storage and handling of non-pyrotechnic materials, articles and devices used for special effects.The storage of materials, articles and devices of a flammable or combustible nature in connection with a special effects display shall be under the general supervision of a certificate of fitness holder for non-pyrotechnic special effects materials. The handling of such materials, articles and devices shall be performed under the personal supervision of a certificate of fitness holder for special effects operations or a certificate of fitness for non-pyrotechnic materials.

3301.5.3.4Pyrotechnic supplier certificate.The sale or offering for sale of any pyrotechnic material, article or device to create a special effect shall be conducted by a company holding a pyrotechnic supplier certificate issued pursuant to this section. A pyrotechnic supplier certificate shall be issued only to a company whose owners, principals or officers demonstrate to the satisfaction of the commissioner that they possess the requisite character and fitness, education, experience, licenses, facilities, equipment and qualified staff to safely store, handle and transport pyrotechnic materials, articles or devices, and to ensure the lawful sale of such materials, articles and devices. The commissioner may adopt rules prescribing the requisite qualifications and other requirements for the issuance of such certificate. The holder of a pyrotechnic supplier certificate shall store, handle, transport, offer for sale, and sell pyrotechnic materials, articles and devices in compliance with the requirements of this section, the rules of the commissioner and all applicable federal and state laws, rules and regulations, including those restricting the selling or offering for sale of such materials, articles and devices only to a person holding a certificate of fitness for pyrotechnic special effects or a company holding a production company special effects permit.

3301.6Reserved.

3301.7Reserved.

3301.8Reserved.

3301.9Transportation.Explosives and fireworks shall be transported in accordance with Section 2707.

3301.10Monitoring by department.Any material, operation or facility subject to the permit requirements of this chapter, including blasting operations, fireworks displays and special effects operations, may be monitored by representatives of the department to ensure compliance with the requirements of this chapter, the rules, and the terms and conditions of the permit. Such department representatives may order the immediate discontinuance of any storage, handling or use of explosives, fireworks or special effect materials, articles or devices in the interest of public safety.

3301.11Reporting of personal injury or property damage.The owner and the certificate of fitness holder responsible for the material, operation or facility shall immediately report to the department any accident involving the storage, handling or use of explosives, fireworks or special effects materials, articles or devices, that results in personal injury or property damage.

3301.12Photography. The department may restrict the taking of photographs at locations at which high explosives are being stored, handled and used.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 33: EXPLOSIVES, FIREWORKS AND SPECIAL EFFECTS
SECTION FC 3302: DEFINITIONS

NYC Administrative Code § 29-FC 3302

3302.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

AIRBLAST. The airborne shock wave or acoustic transient generated by an explosion.

AMMONIUM NITRATE. A chemical compound represented by the formula NH_4NO_3 .

ASSISTANT BLASTER. A person holding a certificate of fitness for blasting assistant who is qualified to supervise explosives storage and handling and blasting operations, sometimes referred to as a powder carrier, and who assists the blaster in performing such duties.

BARRICADE. A structure or other artificial or natural barrier constructed in connection with the storage, handling and use of explosives that is designed to withstand the rapid release of energy in an explosion and provides a shield from the impact of the explosion. A straight line from the top of any sidewall of a building containing explosives to the eave line of any magazine or other building or to a point 12 feet (3658 mm) above the center of a railway or highway shall pass through such barrier.

Artificial barricade. An artificial mound or revetment, including a barrier constructed of sandbags, with a minimum thickness of 3 feet (914 mm).

Natural barricade. Terrain or other natural features of the ground.

BARRICADED. Protected by a barricade.

BLAST AREA. The blast site and surrounding area within the influence of flying rock, missiles and concussion.

BLAST SITE. The area in which explosives are being or have been loaded and which includes all holes loaded or to be loaded for the same blast and a distance of 50 feet (15 240 mm) in all directions.

BLASTER. A person holding a certificate of fitness for blasting operations, who is in charge of and responsible for a blasting operation.

BLASTING AGENT. A mixture consisting of fuel and an oxidizer that is used for blasting and classified by United States Department of Transportation regulations as Division 1.5, provided that the finished product, as mixed for use or shipment, cannot be detonated by means of a No. 8 test detonator when unconfined.

BLASTING CONTRACTOR CERTIFICATE. A written statement issued by the commissioner to a company authorizing such company to conduct blasting operations, and to be responsible for all storage, handling, use and transportation of explosives in connection therewith.

BLASTING CREW. Members of a work force trained and knowledgeable in the safe storage, handling and use of explosives, including assistant blasters, loaders and the magazine keepers.

BLASTING OPERATION. The use of explosives in conjunction with construction or demolition projects or other lawful purposes approved by the commissioner.

BULLET RESISTANT. Constructed so as to resist penetration of a bullet of 150-grain M2 ball ammunition having a nominal muzzle velocity of 2,700 feet per second (fps) (824 mps) when fired from a 30-caliber rifle at a distance of 100 feet (30 480 mm), measured perpendicular to the target.

DANGER ZONE. The area established by the blaster, including the blast area, to be cleared of all persons prior to discharging explosives.

DETONATING CORD. A flexible cord containing a center core of high explosive designed to initiate other explosives when activated.

DETONATION. An exothermic reaction with explosive effect that utilizes shock compression as the principal heating mechanism and generates a shock wave in the material that establishes and maintains a reaction that progresses through the material at a rate greater than the velocity of sound.

DETONATOR. A device containing any initiating or primary explosive used for initiating detonation that contains no more than 154.32 grains (10 grams) of total explosives by weight, excluding ignition or delay charges. The term includes electric blasting caps of instantaneous and delay types, blasting caps for use with safety fuses, detonating cord delay connectors, and noninstantaneous and delay blasting caps which use detonating cord, shock tube or any other replacement for electric leg wires.

DISCHARGE SITE. The immediate area surrounding the mortars or other devices discharging fireworks for purposes of an outdoor fireworks display.

DISPLAY SITE. The area in which an outdoor fireworks display is conducted, including the discharge site, the fallout area, and the required separation distance from the discharge site to spectator viewing areas, but excluding spectator viewing areas.

EXPLOSIVE. A chemical compound, mixture or device, the primary or common purpose of which is to function by explosion. The term includes, but is not limited to, dynamite, black powder, pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord and igniters. The term "explosive" includes any material determined to be within the scope of Chapter 40 of Title 18 of the United States Codes, and any material classified as an explosive by the hazardous materials regulations of the United States Department of Transportation, as set forth in 49

CFR Section 173.52, except fireworks. Explosives are classified in accordance with the following United States Department of Transportation classification and other terms in common usage:

United States Department of Transportation Class 1 explosives.

Division 1.1. Explosives that present a mass explosion hazard.

Division 1.2. Explosives that present a projection hazard but not a mass explosion hazard.

Division 1.3. Explosives that present a fire hazard and either a minor blast hazard or a minor projection hazard, or both, but not a mass explosion hazard.

Division 1.4. Explosives that present a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. Such explosives are not subject to mass explosion when exposed to fire.

Division 1.5. Explosives that present a mass explosion hazard but which are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport.

Division 1.6. Explosives consisting of extremely insensitive articles that do not present a mass explosion hazard, and present a negligible probability of accidental initiation or propagation.

High explosive. Explosives, including dynamite, that, when detonated, are characterized by a high rate of reaction, high pressure development, and the presence of a detonation wave, and that can be caused to detonate by means of a No. 8 test blasting cap, when unconfined.

Low explosive. Explosives that will burn or deflagrate when ignited, and which are characterized by a rate of reaction that is less than the speed of sound, and low pressure development. Examples of low explosives include black powder, igniter cords, igniters, safety fuses, small arms ammunition and primers, and propellants, 1.3C.

Mass-detonating explosives. Division 1.1, 1.2 and 1.5 explosives that, whether individually or in combination, or loaded into ammunition or containers, explode virtually instantaneously when a small portion is subjected to fire, concussion, impact, the impulse of an initiating agent, or the effect of a considerable discharge of energy from without, with severe explosive effect, including the potential for structural damage to adjacent objects, and explosive propagation to other explosives stored in proximity, such that two or more quantities in proximity must be considered as one for quantity-distance purposes.

FALLOUT AREA. The area over which aerial shells or other aerial fireworks are fired and intended to combust, deflagrate or detonate, including the area into which debris and unexploded aerial fireworks are expected to fall given the direction and strength of the wind, and the angle or placement of the mortars or other devices discharging fireworks.

FIREWORKS. An article or device that does not present a mass explosion hazard, that is manufactured or used to produce a visible or an audible effect for entertainment or other display purposes by combustion, deflagration or detonation, and that meets the definition of 1.4G fireworks or 1.3G fireworks as set forth herein.

Fireworks, 1.4G. Small fireworks devices, classified as UN 0336 by United States Department of Transportation regulations, containing restricted amounts of pyrotechnic materials designed primarily to produce visible or audible effects by combustion.

Fireworks, 1.3G. Large fireworks devices classified as UN0335 by the United States Department of Transportation regulations, intended for use in fireworks displays and designed to produce audible or visible effects by combustion, deflagration or detonation, including firecrackers containing more than 130 milligrams (2 grains) of explosive composition, aerial shells containing more than 40 grams of pyrotechnic material, and other display pieces which

exceed the limits for classification as 1.4G fireworks.

FIREWORKS CONTRACTOR CERTIFICATE. A written statement issued by the commissioner to a company authorizing such company to conduct a fireworks display and to be responsible for all storage, handling, use and transportation of fireworks in connection therewith.

FIREWORKS DISPLAY. The discharge of fireworks for an outdoors public display.

FUME CLASS 1. A classification established by the Institute of Makers of Explosives. Explosives meeting the requirements of this classification will provide less than 0.16 cubic feet (0.00453 m³) of poisonous gases upon detonation of 0.44 pounds (200 grams) of explosive.

HIGHWAY. A public street.

INHABITED BUILDING. A building regularly occupied in whole or in part as a habitation for human beings, or any house of worship, school building, railroad station, store or other structure where people are accustomed to assemble.

JOB SITE. The construction site at which blasting operations are being conducted, including the blast site and blast area.

LOADER. A person holding a certificate of fitness for explosives handling, who handles explosives and performs explosives loading operations.

MAGAZINE. A building, structure or container approved for storage of explosives.

Indoor. A portable structure, such as a box, bin or other container, constructed as required for Type 2, 4 or 5 magazines in accordance with NFPA 495, NFPA 1124 or the regulations of the Bureau of Alcohol, Tobacco, Firearms and Explosives of the United States Department of Justice, as set forth in 27 CFR Part 555, so as to be fire resistant and theft resistant.

Type 1. A permanent structure, such as a building or other permanent structure constructed in accordance with the requirements of NFPA 495, NFPA 1124, or the regulations of the Bureau of Alcohol, Tobacco, Firearms and Explosives of the United States Department of Justice, as set forth in 27 CFR Part 555, that is bullet-resistant, fire-resistant, theft-resistant, weather-resistant and ventilated.

Type 2. A portable or mobile structure, such as a box, skid-magazine, trailer or semitrailer, constructed in accordance with NFPA 495, NFPA 1124 or the regulations of the Bureau of Alcohol, Tobacco, Firearms and Explosives of the United States Department of Justice, as set forth in 27 CFR Part 555, that is fire resistant, theft resistant, weather resistant and ventilated, and if used outdoors, bullet resistant.

Type 3. A portable structure for the temporary storage of explosives, such as a "day box", constructed in accordance with NFPA 495, NFPA 1124, or the regulations of the Bureau of Alcohol, Tobacco, Firearms and Explosives of the United States Department of Justice, as set forth in 27 CFR Part 555, that is fire-resistant, theft-resistant and weather-resistant.

Type 4. A permanent, portable or mobile structure such as a building, box, semitrailer or other mobile container constructed in accordance with NFPA 495, NFPA 1124, or the regulations of the Bureau of Alcohol, Tobacco, Firearms and Explosives of the United States Department of Justice, as set forth in 27 CFR Part 555, that is fire-resistant, theft-resistant and weather-resistant.

Type 5. A permanent, portable or mobile structure such as a building, box, bin, tank, semitrailer, bulk trailer, tank trailer, bulk truck, tank truck or other mobile container constructed in accordance with NFPA 495, NFPA 1124, or the

regulations of the Bureau of Alcohol, Tobacco, Firearms and Explosives of the United States Department of Justice, as set forth in 27 CFR Part 555, that is theft resistant.

MAGAZINE KEEPER. A person holding a certificate of fitness for explosives storage who is in charge of and responsible for the storage and handling of explosives in an explosives magazine.

MINIMUM SECURED RADIUS. A minimum separation distance based on the size of the largest fireworks shell to be used in the display.

MORTAR. A tube or similar device in which fireworks, shells or other aerial fireworks are directed and discharged into the air.

MUCKING. The removal, usually by heavy machinery, of debris or other broken material resulting from a blast.

NET EXPLOSIVE WEIGHT (net weight). The weight of an explosive expressed in pounds, representing the aggregate amount of explosives contained within a building or structure, including a magazine, used to establish quantity-distance relationships.

PRIMER. A unit, package or cartridge of explosives, including a detonator or detonator/detonating cord combination, that is used to initiate a main charge of explosives or blasting agents.

PROTECTED EXPOSURE. Any premises, building, structure, facility, installation, street, railway, natural feature or other thing or place determined by the department to require protection from a fireworks display by reason of its proximity to the discharge site and the fallout area and the risk of resulting harm from aerial or other fireworks.

PROXIMATE AUDIENCE. An audience closer to pyrotechnic devices than permitted by NFPA 1123.

PYROTECHNIC ARTICLE OR DEVICE. Any article or device containing a pyrotechnic material.

PYROTECHNIC MATERIAL. A chemical mixture consisting predominantly of solids that, upon ignition, are capable of producing a controlled, self-sustaining, and self-contained exothermic reaction, that functions without external oxygen, resulting in a visible or audible effect by combustion, deflagration, or detonation.

PYROTECHNIC SUPPLIER CERTIFICATE. A written statement issued by the commissioner to a company authorizing such company to engage in the business of selling any pyrotechnic material, article or device designed for the purpose of creating a special effect.

RAILWAY. A subway, railroad, railway or other similar means of transportation.

READY BOX. A container with a self-closing cover that is of a material and construction sufficient to protect fireworks from burning debris and from precipitation or other weather conditions. A tarpaulin structure shall not be deemed sufficient for use as a ready box.

SEPARATION DISTANCE. The distance that is to be maintained during the fireworks display from the outer perimeter of the discharge area to each viewing area or protected area. The separation distance represents the distance determined by the department to be necessary and sufficient to secure viewing areas and protected areas from hazards associated with a fireworks display, including but not limited to blast, fire, fallout and noise hazards.

SMALL ARMS AMMUNITION. A shotgun, rifle or pistol cartridge, and any cartridge for propellant-actuated devices, excluding ammunition containing bursting charges or incendiary, trace, spotting or pyrotechnic projectiles.

SMALL ARMS AMMUNITION PRIMERS. Small percussion-sensitive explosive charges, encased in a cap, used to ignite propellant powder.

SMOKELESS PROPELLANTS. Solid propellants, commonly referred to as smokeless powders, used in small arms ammunition, cannons, rockets, propellant-actuated devices and similar articles.

SPECIAL EFFECT. A visible or audible effect used for entertainment or other display purposes, created by any material, article or device of an explosive, flammable or combustible nature, including pyrotechnic materials, articles and devices and fireworks, 1.4G, but excluding fireworks, 1.3G.

SPECIAL INDUSTRIAL EXPLOSIVE DEVICE. An explosive power pack containing an explosive charge in the form of a cartridge or construction device, including, but not limited to, explosive rivets, explosive bolts, explosive charges for driving pins or studs, cartridges for explosive-actuated power tools and charges of explosives used in automotive air bag inflators, jet tapping of open hearth furnaces and jet perforation of oil well casings.

SPONSOR. The person that has retained a fireworks contractor to conduct a fireworks display, and to whom the fireworks display permit is issued.

TNT EQUIVALENT. A measurement of the quantity of an explosive calculated by reference to the quantity of trinitrotoluene that contains the equivalent explosive energy.

THEFT RESISTANT. Construction designed to deter unauthorized entry into magazines or other explosives storage facilities, so as to prevent unauthorized access to stored explosives.

VENDOR. Any person engaged in the transportation and storage of explosives in connection with the sale of such explosives for blasting operations.

VIEWING AREA. Areas designated for viewing a fireworks display, to which spectators are restricted.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 33: EXPLOSIVES, FIREWORKS AND SPECIAL EFFECTS
SECTION FC 3303: EXPLOSIVES RECORDKEEPING AND REPORTING

NYC Administrative Code § 29-FC 3303

3303.1 General.

Records shall be maintained of the storage, handling and use of high explosives, detonators, blasting agents, emulsion explosives, including the receipt and disposal of such explosives and the reporting of accidents, loss or theft of explosives, or unauthorized activities in accordance with this section.

3303.2 Transaction record. Vendors of high explosives and blasting contractors shall maintain, on forms prescribed by the commissioner, a record of all transactions involving the receipt, removal, use or disposal of high explosives, including the date and time, name and certificate of fitness number of the magazine keeper, type of high explosives, total amounts deposited and withdrawn, and department serial numbers. These records shall be signed by the blaster, assistant blaster and magazine keeper. Such records shall be maintained for a period of 5 years, and submitted to the department in accordance with department procedures.

3303.2.1 Records of vendors. Vendors of high explosives shall maintain the following records:

1. A weekly record of high explosives delivered from outside New York City to any vendor facility located within New York City.

2. A daily record of high explosives removed from a vendor's facility, delivered to and/or returned from a job site.

3. A daily record of high explosives delivered in and removed from an explosives vehicle at each job site.

3303.2.2 Records of blasting contractors. Blasting contractors shall maintain the following records:

1. A daily record of high explosives, including the department's serial number codes, delivered by a vendor to each job site.

2. A daily record of high explosives, including the department's serial number codes, received at and removed from

each job site magazine.

3. A daily shot record indicating the amount of high explosives received from job site magazines, the date and time of each blast, the amount of high explosives used and the disposition of any unused high explosives.

3303.2.3Submission to the department.The following records shall be submitted to the department on a daily basis:

1. A magazine inventory slip with an entry for each shift indicating the quantity and condition of the high explosives stored therein.

2. A daily shot record.

3. Central station company documentation of each entry into a Class I magazine, when such monitoring is required by this chapter.

3303.3Loss, theft or unauthorized removal.The loss, theft or unauthorized removal of blasting agents, detonators, emulsion explosives or high explosives from a magazine or permitted facility shall be reported to the department, and all other law enforcement authorities requiring such reporting, including the United States Federal Bureau of Investigation and Bureau of Alcohol, Tobacco, Firearms and Explosives, immediately upon discovery of such loss, theft or unauthorized removal.

3303.4Reserved.

3303.5Misfires.The blaster shall keep a record of all charges that fail to detonate.

3303.6Hazard communication.Vendors shall maintain records of chemicals, chemical compounds and mixtures required by the United States Department of Labor regulations as set forth in 29 CFR Section 1910.1200.

3303.7Safety rules.Safety rules covering the operation of magazines, as described in Section 3304.7, shall be posted on the interior of the magazine in a visible location.

3303.8Marking of explosives for blasting.Explosives to be stored, handled, used, transported or sold for blasting purposes shall be marked in accordance with Sections 3308.1 through 3308.4.

3303.8.1High explosives.High explosives packaging shall be conspicuously marked with:

1. The manufacturer's name, brand name, date shift code, and classification code.

2. The words "HIGH EXPLOSIVES-DANGEROUS-HANDLE CAREFULLY" on the top.

3. The actual number of cartridges within the package, cartridge dimensions, the case weight and any storage instructions.

4. The department's ten-digit serial number code.

3303.8.2High explosives cartridges.High explosive cartridges, sticks, tubes, wrappers, bags, casts, or other forms of packaged high explosives shall be of vermilion in color, unless otherwise approved, and marked with:

1. The manufacturer's name, date shift code and brand of explosive.

2. The words "HIGH EXPLOSIVES-DANGEROUS-HANDLE CAREFULLY".

3. The department's ten-digit serial number code on both ends of the cartridge.

3303.8.3 Detonator packaging. Detonator packaging shall be marked with:

1. The manufacturer's name, brand name and date shift code.
2. The words "DETONATORS-DANGEROUS-HANDLE CAREFULLY" on two sides.
3. The actual number of detonators in the package, or the number of packages and detonators per package.
4. The department's two-letter, three-digit serial numbers for each detonator or package of detonators contained therein. The first package shall be designated as AA 001 and each subsequent package numbered consecutively as AA 002 through AA 999. The second sequence shall begin with AB 001 and shall continue in the same alpha-numeric fashion for subsequent packages.
5. For tunnel blasting, the contractor's name and the job site location, or an approved abbreviation, shall be used.

3303.8.4 Individual detonators. Individual detonators shall be marked with:

1. A shell, band or tag with the manufacturer's name and brand name.
2. The words "EXPLOSIVES-DANGEROUS-DETONATOR" or "EXPLOSIVES-DANGEROUS-BLASTING CAP", as applicable, on the shell, band or tag.
3. A tag or sticker bearing the department's two-letter/three-digit serial number, the delay period, and date shift code.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
 TITLE 29: NEW YORK CITY FIRE CODE
 CHAPTER 2 NEW YORK CITY FIRE CODE
 Chapter 33: EXPLOSIVES, FIREWORKS AND SPECIAL EFFECTS
 SECTION FC 3304: EXPLOSIVES STORAGE AND HANDLING

NYC Administrative Code § 29-FC 3304

3304.1 General.

All explosives, including black powder, propellant-actuated cartridges, small arms ammunition and primers, and smokeless propellants, shall be stored, handled, used and sold in accordance with this chapter and NFPA 495. Unclassified detonable organic peroxide, detonable pyrophoric materials, detonable unstable (reactive) materials and detonable water-reactive materials shall additionally comply with the requirements of other chapters of this code applicable to such materials.

3304.1.1 Calculation of quantity of explosives. The quantity of explosives stored at any location and the distance from such storage to protected exposures shall be in accordance with the quantity-distance Tables in Section 3304.5. The net explosive weight of the explosives shall be determined in accordance with Sections 3304.1.1.1 through 3304.1.1.6.

3304.1.1.1 Mass explosion hazard explosives. For Division 1.1, 1.2 or 1.5 explosives, the total net explosive weight of all such explosives, or the TNT equivalent, shall be used for purposes of quantity-distance requirements in accordance with Table 3304.5.2(2).

3304.1.1.2 Non-mass explosion hazard explosives, except Division 1.4.

1. For Division 1.3 propellants, the total weight of the propellants alone shall be the net explosive weight for purposes of quantity-distance requirements in accordance with Table 3304.5.2(3).

2. The sum of the net weights of metal powders and pyrotechnic materials shall be the net explosive weight for purposes of quantity-distance requirements in accordance with Table 3304.5.2(3).

3304.1.1.3 Combination of mass explosion hazard and non-mass explosion hazard explosives, except Division 1.4.1. When Division 1.1 and 1.2 explosives are located in the same site, determine the distance for the total quantity

considered first as if the total quantity were in Division 1.1 and then as if the total quantity were in Division 1.2. The required distance is the greater of the two. When the Division 1.1 requirements are controlling and the TNT equivalent of the Division 1.2 explosive is known, the TNT equivalent weight of the Division 1.2 explosives shall be added to the total explosive weight of Division 1.1 explosives to determine the net explosive weight for the Division 1.1 distance determination, for purposes of quantity-distance requirements in accordance with Table 3304.5.2(2).

2. When Division 1.1 and 1.3 explosives are located in the same site, determine the distances for the total quantity considered first as if the total quantity were in Division 1.1 and then as if the total quantity were in Division 1.3. The required distance is the greater of the two. When the Division 1.1 requirements are controlling and the TNT equivalent of the Division 1.3 explosives is known, the TNT equivalent weight of the Division 1.3 explosives shall be added to the total explosive weight of Division 1.1 explosives to determine the net explosive weight for the Division 1.1 distance determination, for purposes of quantity-distance requirements in accordance with Table 3304.5.2(2) or 3304.5.2 (3), as appropriate.

3. When Division 1.1, 1.2 and 1.3 explosives are located in the same site, determine the distances for the total quantity considered first as if the total quantity were in Division 1.1, next as if the total quantity were in Division 1.2 and finally as if the total quantity were in Division 1.3. The required distance is the greatest of the three. When the Division 1.1 requirements are controlling and the TNT equivalent of the Division 1.2 and Division 1.3 explosives are known, the TNT equivalent weight of the Division 1.2 and Division 1.3 explosives shall be added to the total explosive weight of Division 1.1 explosives to determine the net explosive weight for the Division 1.1 distance determination, for purposes of quantity-distance requirements in accordance with Table 3304.5.2(2).

4. For any composite pyrotechnic material and Division 1.1 or Division 1.3 explosives, the sum of the net weights of the pyrotechnic material and the explosives shall be used for the distance determination, for purposes of quantity-distance requirements in accordance with Tables 3304.5.2 (2) and 3304.5.2 (3).

3304.1.1.4 Division 1.4 explosives. For Division 1.4 explosives, the total weight of the explosive alone is the net weight for the distance determination, for purposes of quantity-distance requirements in accordance with Table 3304.5.2 (4).

3304.1.1.5 Detonating cord. Detonating cord of 50 grains per foot shall be calculated as equivalent to 8 pounds (4 kg) of high explosives per 1,000 feet (305 m), for purposes of quantity-distance requirements. Heavier or lighter core loads shall be rated proportionally.

3304.1.1.6 Detonators. All types of detonators in strengths through No. 8 cap shall be rated at 1.5 pounds (0.68 kg) of explosives per 1,000 caps, for purposes of quantity-distance requirements. Detonators in strengths higher than No. 8 cap shall be rated as prescribed by the manufacturer.

3304.2 Storage facility locations. High explosives may only be stored for use in blasting operations conducted in New York City, and only in a magazine or other approved storage facility at a vendor's facility or job site. High explosives to be used in New York City shall first be delivered to a vendor's facility located within New York City. Thereafter, high explosives may be transported from such vendor's facility to approved storage facilities at job sites located in New York City. No explosives shall be delivered to any job site without the prior authorization of the Department. The commissioner shall promulgate rules governing the delivery and removal of explosives to and from the job site.

3304.3 Magazines. The storage of explosives in magazines shall comply with the requirements of Section 3304.3.1 through 3304.3.4.1 and Table 3304.3. Explosives shall be stored in magazines constructed, installed, operated and maintained in accordance with the requirements of this Section, NFPA 495, NFPA 1124 and, except for portable or mobile magazines not exceeding 120 square feet (11 m²) in area, the construction codes including the Building Code.

3304.3.1 High explosives. Explosives classified as Division 1.1 or 1.2 shall be stored in Type 1, 2 or 3 magazines.

Exceptions:

1. Black powder shall be stored in a Type 1, 2, 3 or 4 magazine.
2. Cap-sensitive explosives that are demonstrated not to be bullet sensitive shall be stored in a Type 1, 2, 3, 4 or 5 magazine.

3304.3.1.1Barricades.All magazines storing high explosives shall be barricaded in an approved manner.

3304.3.1.2Classes of high explosives magazines.Magazines for high explosives shall be classified based upon the maximum quantity of high explosives stored as follows:

1. First class magazines. High explosives magazines containing not more than 1,000 pounds (454 kg) of explosives.
2. Second class magazines. High explosives magazines containing not more than 500 pounds (227 kg) of explosives.
3. Third class magazines. High explosives magazines containing not more than 250 pounds (113.5 kg) of explosives.

3304.3.1.3Detonator magazines.No more than 20,000 detonators may be stored in a single magazine. Only first class magazines may be used for storage of 1,000 detonators or more.

3304.3.2Low explosives.Explosives that are not cap sensitive shall be stored in a Type 1, 2, 3, 4 or 5 magazine.

3304.3.3Reserved.

3304.3.4Access.The owner or operator of a magazine shall restrict access to the magazine and only allow entry by the blaster and magazine keeper and other blasting contractor personnel or vendor personnel whose responsibilities in connection with the storage, handling, use or transportation of explosives require that they enter the magazine. Access to the keys to the magazine shall be restricted to the blaster and the magazine keeper. The department may restrict the personnel authorized to enter the magazine for purposes of ensuring compliance with the requirements of this section. This provision shall not be construed to restrict department access to magazines.

3304.4Prohibited storage.Detonators shall be stored in a separate magazine that does not contain other explosives. Black powder, blasting powder, and smokeless propellant shall be stored in a separate magazine that does not contain detonators or other explosives.

3304.5Location.Magazines for storage of explosives shall be maintained and operated in accordance with Sections 3304.5.1 through 3304.5.3.3.

3304.5.1Indoor magazines.It shall be unlawful to maintain or operate a magazine indoors for the storage of Division 1.1 explosives. Indoor magazines may be maintained and operated for the storage of explosives, other than those classified as Division 1.1, in accordance with this section.

3304.5.1.1Occupancies.Indoor magazines for storage of explosives shall be maintained and operated only in Group F, H, M or S occupancies, when approved. It shall be unlawful to maintain or operate an indoor magazine in any building containing a Group R occupancy.

3304.5.1.2Construction.Indoor magazines shall be designed and installed in compliance with the following requirements:

1. The magazine shall be fire resistant and theftresistant.

2. The exterior of the magazine shall be painted red.

3. The base of the magazine shall be fitted with wheels, casters or rollers to facilitate removal from the building in an emergency.

4. The lid or door of the magazine shall be marked with conspicuous white lettering not less than 3 inches (76 mm) high and minimum 0.5 inch (12.7 mm) stroke, reading EXPLOSIVES-KEEP FIRE AWAY-NO SMOKING.

5. The least horizontal dimension of the magazine shall not exceed the clear width of the entrance door.

3304.5.1.3Quantity limit. Not more than 50 pounds (23 kg) of explosives shall be stored in an indoor magazine.

3304.5.1.4Reserved.

3304.5.1.5Location. Indoor magazines shall be located within 10 feet (3048 mm) of a means of egress and only on floors at or having ramp access to the outdoors at grade level.

3304.5.1.6Limitation on number. Only one indoor magazine shall be maintained or operated in a single building or structure.

3304.5.2Outdoor magazines. Outdoor magazines shall be maintained and operated in accordance with this section.

3304.5.2.1Location. All outdoor magazines, other than Type 3 magazines, shall be located so as to be in accordance with Table 3304.5.2(2), Table 3304.5.2(3) or Table 3304.5.2(4) as set forth in Table 3304.5.2(1).

3304.5.2.2Detonator storage. Magazines storing detonators shall be located 100 feet (30.5 m) from magazines storing high explosives, except that where the magazine is barricaded, the distance between magazines may be reduced as set forth in Table 3304.5.2(2).

3304.5.2.3Tunnel or under-decking. When a suitable aboveground storage site is unavailable, barricaded magazines, located in the excavation below decking in compliance with the distance requirements as set forth in Table 3304.5.2(2), may be approved. The blasting contractor for the job site shall submit to the department a plan detailing the load carrying capacity of the decking above the magazine location. For deep underground excavations, the use of a gated coyote hole with overnight storage may be approved for a magazine that is constructed to first class magazine requirements.

3304.5.3Additional requirements for Type 3 magazines. Type 3 magazines shall comply with the requirements of Sections 3304.5.3.1 through 3304.5.3.3.

3304.5.3.1Location. Wherever practicable, Type 3 magazines shall be located away from neighboring inhabited buildings, railways, public streets, and other magazines in accordance with Table 3304.5.2(2), 3304.5.2(3) or 3304.5.2(4) as applicable.

3304.5.3.1.1Detonator storage. Upon a determination by the commissioner that the interest of public safety warrants such measures, magazines storing detonators shall be located 100 feet (30.5 m) from other magazines storing high explosives, except that if the magazines are separated by a barricade, the distance between magazines may be reduced as set forth in Table 3304.5.2(2).

3304.5.3.1.2Drill boats. Upon a determination by the commissioner that the interest of public safety warrants such measures, detonator magazines on drill boats shall be located 100 feet (30.5 m) from other magazines storing high explosives.

3304.5.3.2Storage of explosives. Explosives shall be removed from Type 3 magazines to appropriate storage

magazines at the end of the work day.

3304.5.3.3 Limitation on number. Not more than two Type 3 magazines shall be located at the same blast site. Where two Type 3 magazines are located at the same blast site, one magazine shall be used solely for the storage of detonators. Table 3304.5.2(3) Table of Distances for Outdoor Magazines or Buildings Containing Explosives-Division 1.3-Mass-Fire Hazard a, b, c Quantity of Division 1.3 Explosives Pounds Over Pounds Not Over Distances In Feet Inhabited Buildings, Railways and Public Highways Magazines 0 1,000 75 50 For SI: 1 foot = 304.8 mm, 1 pound = 0.454 kg. a. Black powder, when stored in magazines, is defined as low explosive by the Bureau of Alcohol, Tobacco and Firearms (BATF). b. For quantities less than 1,000 pounds, the required distances are those specified for 1,000 pounds. The commissioner may authorize storage of such explosives in quantities less than 1000 pounds at lesser distances from protected exposures. c. No more than 50 pounds of explosives may be stored in a building. Table 3304.5.2(4) Table of Distances for Outdoor Magazines or Buildings Containing Explosives-Division 1.4 c, d Quantity of Division 1.4 Explosives Pounds Over Pounds Not Over Distances In Feet From Inhabited Building From Public Railroad and Highway From Aboveground Magazine and Operating Buildings a, b 50 1000 100 100 50 For SI: 1 foot = 304.8 mm, 1 pound = 0.454 kg. a. A separation distance of 100 feet is required for buildings of other than Type I or Type II construction as defined in the Building Code. b. For earth-covered magazines, no specified separation is required. b. (1) Earth cover material used for magazines shall be relatively cohesive. Solid or wet clay and similar types of soil are to cohesive and shall not be used. Soil shall be free from unsanitary organic matter, trash, debris and stones heavier than 10 pounds or larger than 6 inches in diameter. Compaction and surface preparation shall be provided, as necessary, to maintain structural integrity and avoid erosion. Where cohesive material cannot be used, as in sandy soil, the earth cover over magazines shall be finished with a suitable material to ensure structural integrity. b. (2) The earth fill or earth cover between earth-covered magazines shall be either solid or sloped, in accordance with the requirements of other construction features, but a minimum of 2 feet of earth cover shall be maintained over the top of each magazines. To reduce erosion and facilitate maintenance operations, the cover shall have a slope of 2 horizontal to 1 vertical. c. Restricted to articles, including articles packaged for shipment, that are not regulated as an explosive under Bureau of Alcohol, Tobacco and Firearms regulations, or unpacked articles used in process operations that do not propagate a detonation or deflagration between articles. d. No more than 50 pounds of explosives may be stored in a building.

3304.6 Installation. Magazines shall be designed and installed in accordance with Sections 3304.6.1 through 3304.6.8.

3304.6.1 Drainage. The ground around a magazine shall be graded so that water drains away from the magazine.

3304.6.2 Heating. Magazines requiring heat shall be heated as prescribed in NFPA 495 by either hot water radiant heating within the magazine or by indirect warm air heating.

3304.6.3 Lighting. All electric lights, electric safety flashlights or electric safety lanterns used in a magazine shall be listed as intrinsically safe or otherwise suitable for use in hazardous locations and shall comply with the requirements of NFPA 495.

3304.6.4 Nonsparking materials. It shall be unlawful to maintain or operate a magazine, other than a Type 5 magazine, with exposed ferrous metal on any interior surface.

3304.6.5 Warning signs. Any premises upon which explosives are stored in magazines shall have signs posted in accordance with Sections 3304.6.5.1 and 3304.6.5.2. Signs shall be durable, weather resistant and of contrasting colors with a minimum letter height of 3 inches (76 mm) with a minimum brush stroke of 0.5 inch (12.7 mm).

3304.6.5.1 Job sites. The owner shall conspicuously post on the exterior of the construction fence or other exterior wall of the premises the following sign at approved locations: DANGER! NEVER FIGHT EXPLOSIVES FIRES-CALL 911. EXPLOSIVES ARE STORED ON THIS SITE

3304.6.5.2 Vendor facilities. Signs complying with the requirements of Section 3304.6.5.1 shall be conspicuously posted at approved locations at vendor facilities.

3304.6.5.3 Placards. Type 5 magazines containing Division 1.5 blasting agents shall be prominently placarded as required during transportation by the regulations of the United States Department of Transportation, as set forth in 49 CFR Part 172 and the regulations of the Bureau of Alcohol, Tobacco, Firearms and Explosives of the United States Department of Justice, as set forth in 27 CFR Part 555.

3304.6.6 Security for magazines at vendor facilities. Vendor magazines shall be provided with the following security measures:

1. A magazine keeper shall be present on the premises and continuously monitor the magazine at all times.
2. A suitable shelter for the magazine keeper shall be provided.
3. The magazine and surrounding area shall be illuminated at night.
4. A dedicated, non-coin-operated telephone shall be provided inside the shelter for the use of the magazine keeper.
5. A door alarm and holdup alarm, monitored by an approved central station company, shall be provided. The central station company shall not have the capability to shut off the alarms. The central station shall:
 - 5.1. Record all openings and closings of the magazine doors.
 - 5.2. Notify the department of any unusual occurrences and outages.
 - 5.3. Provide written procedures concerning the opening and closing of magazine doors.
6. An audible and visible alarm system shall be provided that is activated by opening the magazine door, and that is continuously monitored at an approved location on the premises.
7. A local perimeter intrusion alarm shall be provided that is capable of being deactivated during normal delivery hours.
8. First class magazines shall additionally comply with the following installation requirements:
 - 8.1. Circuits used for the doors and holdup alarm shall be dedicated and use fire alarm wiring and wiring methods as set forth in the construction codes, including the Building Code and the Electrical Code. The door and holdup alarm shall use an approved transmitter, operate on alternating current, be provided with battery backup, and be monitored by an approved central station company. There shall be no control on the premises for shutting down the alarm transmission to the central station company other than disconnecting all power to the alarm system.
 - 8.2. Electrical wiring on the premises from the magazine doors to the central station company and the magazine keeper's shelter shall be protected by rigid conduit. Overhead wiring shall use a weatherhead fitting and have a minimum 15 feet (4572 mm) clearance from the ground. Underground wiring shall be protected in galvanized conduit, buried at a minimum depth of 18 inches (457.2mm) or 12 inches (304.8 mm) deep with 6 inches (152.4 mm) concrete cover.
 - 8.3. Overhead telephone lines feeding the magazine keeper's shelter shall be protected for a distance of 15 feet (4572 mm) in height by a conduit service pipe suitably braced for strain. Underground telephone lines shall be protected in galvanized conduit, buried 18 inches (457.2 mm) minimum or 12 inches (304.8 mm) deep with 6 inches (152.4 mm) concrete cover.

3304.6.7Security for magazines.All first class magazines at job sites and all other magazines storing high explosives overnight shall comply with the requirements of Section 3304.6.6.

3304.6.8Magazine cars.Approved magazine cars shall be used to transport explosives through tunnels to working headings.

3304.7Operation.Magazines shall be operated in accordance with Sections 3304.7.1 through 3304.7.9.

3304.7.1Security.Magazines shall be kept locked and otherwise secured in the manner prescribed in NFPA 495 at all times except during delivery or removal of explosives or during inspection.

3304.7.2Open flames and lights.Smoking, matches, hot work, flame-producing devices, open flames, firearms and firearms cartridges shall not be permitted inside of or within 100 feet (30 480 mm) of portable or permanent magazines in which explosives are stored.

3304.7.2.1Capping and primers.no cartridge shall be capped or primer readied within 100 feet (30 480 mm) of a magazine.

3304.7.3Vegetation and combustible waste.The area located around a magazine shall be kept clear of brush, grass, vines, weeds, rubbish and other combustible waste for a distance of 25 feet (7620 mm).

3304.7.4Combustible material storage.Combustible materials shall not be stored within 100 feet (30 480 mm) of magazines.

3304.7.5Unpacking and repacking explosives.Containers of explosives, except fiberboard containers, and packages of damaged or deteriorated explosives shall not be unpacked or repacked inside or within 50 feet (15 240 mm) of a magazine or in close proximity to other explosives.

3304.7.5.1Storage of opened packages.Packages of explosives that have been opened shall be closed before being placed in a magazine.

3304.7.5.2Nonsparking tools.Tools used for the opening and closing of packages of explosives, other than metal slitters for opening paper, plastic or fiberboard containers, shall be made of nonsparking materials.

3304.7.5.3Disposal of packaging.Empty containers and paper and fiber packaging materials that previously contained explosives shall be disposed of or reused in a approved manner.

3304.7.6Tools and equipment.Metal tools, other than nonferrous transfer conveyors and ferrous metal conveyor stands protected by a coat of paint, shall not be stored or used in a magazine containing explosives.

3304.7.7Contents.Magazines shall be used exclusively for the storage of explosives.

3304.7.8Compatibility.Corresponding grades and brands of explosives shall be stored together and in such a manner that the grade and brand marks are visible. The inventory of explosives shall be stored in a manner that allows ready access for counting and checking its condition. Packages of explosives shall be stacked in a stable manner not exceeding 8 feet (2438 mm) in height.

3304.7.9Stock rotation.When explosives are removed from a magazine for use, the oldest usable stock shall be removed first.

3304.8Maintenance.Maintenance of magazines shall comply with the requirements of Sections 3304.8.1 through 3304.8.3.

3304.8.1Housekeeping.Magazine floors shall be regularly swept and be kept clean, dry and free of grit, paper, empty packages and rubbish. Brooms and other cleaning utensils shall not have any spark-producing metal parts. Sweepings from magazine floors shall be removed from the premises and disposed of lawfully.

3304.8.2Repairs.Explosives shall be removed from the magazine before repairs are made to the interior of a magazine. Explosives shall be removed from the magazine before repairs are made to the exterior of the magazine when there is a possibility of causing a fire. Explosives removed from a magazine under repair shall either be placed in another magazine or placed a safe distance from the magazine, where they shall be properly guarded and protected until repairs have been completed. Upon completion of repairs, the explosives shall be promptly returned to the magazine. Floors shall be cleaned before and after repairs. Under no circumstances shall explosives be stored outside the magazine overnight.

3304.8.3Floors.Magazine floors stained with liquid from explosives shall be cleaned or replaced in accordance with the explosives manufacturer instructions.

3304.9Inspection.Magazines storing explosives shall be opened and inspected daily. The magazine keeper shall lock and otherwise secure the magazine from unauthorized entry and its contents from unauthorized access; receive and dispense explosives; and maintain complete and accurate records of the explosives received and dispensed. At the beginning and end of each work shift, the magazine keeper shall visually inspect and verify the quantity and condition of the explosives in the magazine, determine whether there has been an unauthorized or attempted entry into the magazine or an unauthorized removal, and document same at the end of each work shift by signing an inventory slip in the presence of the succeeding magazine keeper. The magazine keeper shall personally supervise the unloading and loading of vehicles delivering explosives to the magazine or removing explosives therefrom.

3304.10Disposal of explosives.Explosives shall be disposed of in accordance with Sections 3304.10.1 through 3304.10.5.

3304.10.1Notification.The department shall be notified immediately when explosives are determined to be deteriorated or leaking or otherwise unstable or in need of disposal.

3304.10.2Deteriorated explosives.When an explosive has deteriorated to an extent that it is in an unstable or dangerous condition, or when a liquid has leaked from an explosive, the person in possession of such explosives shall immediately contact the manufacturer to obtain handling and disposal instructions.

3304.10.3Destruction of explosives.Unused explosives may be destroyed at the job site only when approved. When approved, such destruction of explosives shall be conducted by a qualified person at an approved location under the supervision of department representatives. It shall be unlawful to dispose of explosives by burning.

3304.10.4Storage of misfires.Explosives that fail to detonate during blasting operations shall be handled in accordance with Section 3307.15 and other approved procedures until the blaster has determined the proper method for disposal in consultation with the department.

3304.10.5Unused high explosives.High explosives in storage at a job site at the completion of blasting operations, or which are not otherwise to be used at the job site, shall be removed from the job site and transported to a vendor's facility. The vendor may store and supply for use unopened cases of high explosives. The vendor may not supply open cases of high explosives for use unless the explosives are packaged in an approved manner, and their condition certified in writing in an approved manner by the magazine keeper previously responsible for their storage.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 33: EXPLOSIVES, FIREWORKS AND SPECIAL EFFECTS
SECTION FC 3306: STORAGE OF SMALL ARMS AMMUNITION AND PRIMERS, BLACK POWDER AND
SMOKELESS PROPELLANTS

NYC Administrative Code § 29-FC 3306

3306.1 General.

Indoor storage and display of small arms ammunition, black powder and smokeless propellants shall comply with the requirements of this section and NFPA 495.

3306.2Storage. The storage and display of small arms ammunition and primers, black powder and smokeless propellants shall be as set forth in Sections 3306.2.1 through 3306.7.

3306.2.1Occupancy restrictions. It shall be unlawful to store small arms ammunition and primers, black powder and smokeless propellants in any premises, building, structure or facility, except as authorized by this section.

3306.2.2Quantity restrictions. It shall be unlawful to store small arms ammunition and primers, black powder or smokeless propellants in quantities exceeding the following:

1. 300,000 loaded shells containing shot for shotguns not exceeding No. 8 gauge;
2. 2,500,000 cartridges for pistols;
3. 500,000 cartridges for rifles of a caliber not larger than 0.45 inch (137.2 mm);
4. 10,000 cartridges for rifles of a caliber not larger than 0.5 inch (152.4 mm);
5. 5,000 cartridges for rifles of a caliber between 0.5 inch (152.4) and 0.58 inch (176.8 mm);
6. 5,000 blank cartridges of a caliber not larger than 0.45 inch (137.2 mm);
7. 3,000,000 primers for central fire ammunition;

8. 6,000,000 percussion caps, or primers, without anvils;
9. 250 pounds (113.5 kg) aggregate of black powder or smokeless propellant;
10. Any storage in excess of the amounts authorized by permit.

3306.2.3 Flammable and combustible liquid. It shall be unlawful to store small arms ammunition and primers, black powder and smokeless propellant in any premises, building or structure wherein flammable or combustible liquids, flammable solids, oxidizing materials, or other flammable materials are manufactured, stored, handled or used.

3306.2.4 Small arms ammunition and primers. It shall be unlawful to store small arms ammunition and primers with Division 1.1, Division 1.2 or Division 1.3 explosives, unless approved.

3306.3 Packaging and repackaging. It shall be unlawful to package or repackage small arms ammunition and primers, black powder and smokeless propellants, except as approved by the commissioner.

3306.4 Storage in Group R-3 occupancies. Where small arms ammunition and primers are stored together in Group R-3 occupancies, it shall be unlawful to store a combined quantity of more than 200, counting each round of ammunition and each primer separately.

3306.5 Storage and display in Group M occupancies. The storage and display of small arms ammunition and primers, black powder and smokeless propellants in Group M occupancies shall be in accordance with Sections 3305.1 and 3306.5.2 and this section.

3306.5.1 Display. The display of small arms ammunition and primers, black powder or smokeless propellants in Group M occupancies shall comply with the requirements of Sections 3306.5.1.1 through 3306.5.1.3.

3306.5.1.1 Smokeless propellant. It shall be unlawful to display smokeless propellant.

3306.5.1.2 Black powder. It shall be unlawful to display black powder.

3306.5.1.3 Small arms ammunition and primers. Where small arms ammunition and primers are displayed together in areas accessible to the public, a combined quantity of not more than 10,000 may be displayed, counting each round of ammunition and each primer separately. Such ammunition and primers shall be secured from direct access from the public.

3306.5.2 Storage. The storage of small arms ammunition and primers, black powder and smokeless propellant shall comply with the requirements of Sections 3306.5.2.1 through 3306.5.2.3.

3306.5.2.1 Smokeless propellant. It shall be unlawful to store smokeless propellants in quantities exceeding 250 pounds. Smokeless propellants in smaller amounts may be stored only if approved. Such storage shall be as follows:

1. Smokeless propellant in quantities not exceeding 100 pounds (45 kg), shall be stored in a Type 2 or Type 4 magazine.
2. Smokeless propellant in quantities exceeding 100 pounds (45 kg), shall be stored in a Type 1 magazine.
3. Storage of any quantity in a building shall be in areas not accessible to the public.

3306.5.2.2 Black powder. It shall be unlawful to store black powder in quantities exceeding 250 pounds. Black powder may be stored in smaller amounts only if approved. Black powder in quantities less than 50 pounds (23 kg), when such storage is approved, shall be stored in a Type 2 or Type 4 indoor or outdoor magazine. Black powder in quantities of 50 pounds (23 kg) or greater, when such storage is approved, shall be stored in an outdoor Type 1

magazine. When black powder is stored with smokeless propellants in the same magazine, the total quantity shall not exceed that permitted for black powder.

3306.5.2.3 Small arms ammunition and primers. Small arms ammunition and primers shall be stored as follows.

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2. Where small arms ammunition and primers are stored in a building, a combined quantity of not more than 100,000 may be stored, counting each round of ammunition and each primer separately. Such storage shall be in compliance with the following requirements.

2.1. The storage shall be in areas not accessible to the public.

2.2. Small arms ammunition and primers shall be stored in nonportable storage cabinets having walls at least 1 inch (25.4 mm) nominal thickness.

2.3. Shelves in cabinets shall have vertical separation of at least 2 feet (610 mm).

2.4. Cabinets shall be located against a building exterior wall with not less than 40 feet (12 192 mm) between cabinets.

2.5. The minimum required separation between cabinets may be reduced to 20 feet (6096 mm) provided that barricades twice the height of the cabinets are attached to the wall, midway between each cabinet. The barricades shall be firmly attached to the wall, and shall be constructed of steel not less than 0.25 inch thick (6.4 mm), 2-inch (51 mm) nominal thickness wood, brick, or concrete block.

3306.6 Blanks for salute cannon. Blank shells or cartridges may be stored for use in salute cannons only as approved.

3306.7 Sprinkler protection. Any building or structure in which small arms ammunition and primers, black powder or smokeless propellant are stored in quantities requiring a permit shall be protected throughout by a sprinkler system.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 33: EXPLOSIVES, FIREWORKS AND SPECIAL EFFECTS
SECTION FC 3307: BLASTING OPERATIONS

NYC Administrative Code § 29-FC 3307

3307.1 General.

Blasting operations shall be conducted in accordance with this chapter, including this section, and NFPA 495.

3307.1.1Supervision.The storage, handling and use of explosives at a job site shall be supervised as set forth in Section 3301.5.

3307.1.2Blasting related-construction.All construction work necessary and appropriate to ensure a safe blasting operation, including shoring and underpinning of affected buildings, structures and infrastructure shall be performed in accordance with the Building Code.

3307.1.3Permits.A permit issued pursuant to Section 105.6 for the use of explosives for blasting operations, including excavation and demolition work, shall be issued for a period of up to nine months. Such permit may be renewed for additional periods of up to nine months, provided that the owner and blasting contractor have complied with the requirements of this chapter.

3307.2Manufacturer's instructions and training.Blasting operations shall be performed in accordance with the instructions of the manufacturer of the explosives being used. Prior to conducting a blasting operation using explosives with which the blasting crew is unfamiliar, the blasting contractor shall ensure that the manufacturer of such explosives conducts an on-site training session for such crew. A record of attendance shall be kept of such training session and upon completion, the manufacturer and the blasting contractor shall certify that the blasting crew is qualified to use the explosives.

3307.3Blasting safety.Blasting operations shall be conducted in accordance with Sections 3307.3.1 through 3307.3.4.

3307.3.1Safety precautions.The following safety precautions and procedures shall be observed at a blast site:

1. Only explosives approved by the commissioner may be used for blasting operations. Ammonium nitrate shall not be used as a blasting agent, except when approved for a specific blasting operation.

2. The quantity of explosives used in a blast shall be no more than necessary to accomplish the task and shall be approved by the department.

3. Blasting and job site personnel shall not fight fires in close proximity to explosives. all persons shall be removed to a safe area, the area affected by the fire shall be secured from entry, and the department shall be notified immediately.

4. Primers shall be made only at the blast site, as needed. they shall be kept separate from all other explosives at all times until placed into the boreholes.

5. Loading operations shall not take place on a cut or heading within 25 feet (7620 mm) of drilling or mucking operations.

6. When tunnel blasting is to be performed:

6.1. Advance or probe drilling shall be used to determine the nature of face ahead. Face shall be removed by the blaster using the smallest quantity of explosive necessary to achieve the desired blast.

6.2. Only the blasters, assistant blasters and loaders may transport explosives from the magazine to the blast site.

6.3. When blasting under compressed air is to be performed, detonators and high explosives shall be taken separately through the air lock with no other equipment to the pressure working chamber and immediately loaded. Unused explosives shall be returned to magazines before engaging the blasting circuit.

6.4. Before firing an underground blast, the blaster shall have guards posted to all entrances to the danger zone, including any drift, raise, or other opening that may be expected to hole through.

6.5. Only high explosives of fume class 1 shall be used in shaft, tunnel or under decking blasting operations.

7. When demolition blasting is to be performed, the building to be demolished, as well as adjacent buildings within the blast area, shall be searched just prior to the blast to ensure that they are unoccupied.

8. When submarine (underwater) blasting is to be performed:

8.1. The drill boat shall be moored outside of navigation channels at night, equipped with a hose reel line capable of reaching any point on the deck for protection against fires, and durable "NO SMOKING" signs conspicuously posted at approved locations on the boat. A red flag shall be flown during the day and approved United States Coast Guard warning lights shall be lit at night to indicate explosives storage aboard the drill boat.

8.2. Warning buoys shall be positioned to indicate areas blasting operations are being conducted.

8.3. Blasting operations shall cease while any marine traffic or divers are within a 1,500 ft. (457 200 mm) radius of the drill boat.

9. Prior to the commencement of excavation blasting at a job site, and at such other time as the department may require, the blaster shall review with a department representative the blasting patterns to be utilized in connection with such blasting operations.

3307.3.2Blasting in congested areas. When blasting is conducted in a congested area or in close proximity to buildings, structures or infrastructure that may be damaged, or whose use and occupancy may be seriously affected by blasting operations, the blaster shall schedule the timing of each blast and take appropriate precautions in its loading,

confinement and initiation, so as to minimize the effect of the blast upon surrounding uses and occupancies, and to control the ground vibrations and airblast effects. Shoring or other means approved by the commissioner of buildings shall be used to reinforce buildings, retaining walls and other structures and infrastructure that are susceptible to damage from vibration and airblast effects, and weak rock shall be manually removed by gads, picks or crowbars, without the use of explosives. When blasting is unavoidable in the vicinity of such buildings, structures and infrastructure, only light face blasts with short lines of resistance and small charges shall be used.

3307.3.3 Weather conditions. The blasting contractor shall monitor weather conditions to alert the blaster at the job site of approaching electrical storms. The commissioner may require that the blasting contractor use an approved device for such purpose.

3307.3.3.1 Electrical storms. During an electrical storm, the handling and use of explosives, including loading, shall cease and the following procedures shall be observed:

1. All unused explosives at the blast site shall be immediately returned to their proper magazines.
2. Electrical blasting cap leg wires and lead lines shall be shunted.
3. The danger zone shall be cleared of all persons until the storm has passed.

3307.3.4 Unsafe conditions and complaints. The blasting contractor shall immediately suspend blasting operations and immediately notify the department should any condition arise from blasting operations that involves the structural integrity of a building, structure or infrastructure or that otherwise threatens the safety of the general public. The blasting contractor shall also immediately notify the Department of Buildings of any condition that involves the structural integrity of a building, structure or infrastructure. Blasting operations shall not resume until authorized by the department. The blasting contractor shall notify the department within 24 hours of all other complaints, including complaints of noise and minor damage.

3307.4 Hours of operation. Blasting operations shall be conducted between the hours of 7:00 am (0700 hours) and 7:00 pm (1900 hours), Monday through Saturday. The written authorization of the commissioner shall be required in order to conduct blasting operations at any other times, or on Sunday, and may be granted or revoked by the commissioner in the interest of public safety.

3307.5 Notifications and permit survey meeting. Prior to the issuance of any permit for the use of explosives for blasting operations, a permit survey meeting shall be arranged by the owner or the owner's blasting contractor and conducted at the job site at which blasting operations are to occur, for the purpose of reviewing the measures that the blasting contractor will be required to undertake to safeguard affected buildings, structures and infrastructure. Such permit survey meeting shall be attended by representatives of the department, general contractor, and blasting contractor. The owner or the owner's blasting contractor shall invite the participation of owners of affected buildings, structures and infrastructure as determined by the department to be appropriate, and shall in addition notify the Department of Buildings of the meeting. The commissioner may also require notification of and coordination with other federal, state and city officials and agencies, including the Department of Environmental Protection, Office of Emergency Management, Metropolitan Transportation Authority, United States Coast Guard and United States Army Corps of Engineers, as appropriate.

3307.5.1 Utility coordination and notification. Owners of electrical, natural gas, water and other utility infrastructure shall provide information to the department and the blasting contractor, including the location, depth, size, construction, condition and age of such infrastructure, including location of isolation valves, and any other information that the department may require to determine the measures that the blasting contractor will be required to undertake to safeguard such infrastructure during blasting operations. Such information shall be readily available for the duration of blasting operations.

3307.5.1.1Blasting operations near or adjacent to natural gas utility infrastructure.For blasting operations near or adjacent to a natural gas utility infrastructure, the utility company may require access to the job site so that a leak survey may be conducted prior and subsequent to blasting operations. The blasting contractor shall provide the utility company with access to the job site for such purpose.

3307.5.1.2Demolition blasting.For demolition blasting, the blasting contractor shall coordinate with and provide access to the utility company to disconnect all power lines within 100 feet (30 408 mm) of the structure to be demolished, and sever physically from the main street lines, and cap as close to the main as possible, all services extending into the structure. Blasting shall not be conducted unless existing utility service street lines are cut and capped.

3307.5.1.3Submarine (underwater) blasting.For submarine (underwater) blasting, the utility companies shall provide the department and blasting contractor with the locations of any and all underwater infrastructure within 1 mile (1.6 km) of the blast site.

3307.5.2Affected uses and occupancies coordination and notification.The blasting contractor shall conduct blasting operations in a manner that minimizes the impact of such blasting operation on public safety. Good faith measures shall be made to schedule blasting at those times when students in affected schools are not arriving, departing or outdoors, and when services are not being held at houses of worship, and to otherwise coordinate the timing of blasting operations to minimize the impact on affected uses and occupancies. Appropriate procedures for coordination and notification shall be established at the permit survey meeting.

3307.5.3Notice of permit issuance.Within five days of issuance of a permit for the use of explosives for demolition or excavation work, the owner or the owner's blasting contractor shall provide written notice to each council member and community board whose respective district includes the job site or property within 100 feet (30 480 mm) thereof, and the local fire company. Such notice shall contain the effective and expiration dates of the permit. Proof of the delivery or mailing of such notice shall be filed with the department.

3307.5.4Notice of the commencement of blasting operations.Not less than two days nor more than five days prior to the commencement of blasting operations, the owner or the owner's blasting contractor shall provide written notice of same to each council member and community board whose respective districts include the job site or property within 100 feet (30 480 mm) thereof, and the local fire company. Such notice shall contain the date or dates on which blasting operations are anticipated to take place and telephone numbers for the blasting contractor and the department to which complaints and inquiries about the blasting operations may be made. The owner or the owner's blasting contractor shall in addition forward a copy of the written notice to the owners of all buildings within 100 feet (30 480 mm) of the job site. Owners of such buildings shall post such notice at a conspicuous location within each such building in a manner prescribed by the department to ensure adequate visibility. If blasting operations continue for a period of more than one month, additional notice shall be given to owners of such buildings and posted by such owners on a monthly basis for any month in which blasting operations are to be conducted.

3307.5.5Fire company notification.The blasting contractor shall provide advance notification of blasting operations to the fire company in whose administrative district the job site is located. On any job site where overnight storage of explosives is not approved, after the final blast has been fired for the day, the blasting contractor shall arrange with such fire company for an inspection of the job site to confirm removal of explosives as required by this chapter.

3307.5.6Demolition projects notification.If a demolition project is in proximity to blasting operations, the blasting contractor shall advise the demolition contractor of the blasting contractor's warning signals.

3307.6Detonator safety.Detonators shall be stored, handled and used in accordance with Sections 3307.6.1 through 3307.6.3.

3307.6.1Prohibited detonators.It shall be unlawful to fire explosives by means of a timer or a slow burning or safety

fuse.

3307.6.2 Approved detonators. Only approved electric and non-electric detonators shall be used.

3307.6.3 Safety precautions. Detonators shall be stored, handled and used in accordance with the following safety precautions:

1. Detonators used in a single blast shall be of the same manufacture, style and function to ensure compatibility.
2. Signs reading "DANGER-BLASTING AREA-NO RADIO TRANSMITTING" shall be conspicuously posted on the street side of the job site or on the drill boat.
3. Prior to loading explosives, the blast site shall be tested for any stray currents. Such currents shall be eliminated before loading explosives.
4. Care shall be taken in the selection of the blasting circuit and an adequate energy source for initiation, and in making electrical connections. Circuits shall be tested to ensure the current is 50 mA or less, and only with a blaster's galvanometer or blaster's multimeter.
5. Detonators shall be shunted or short circuited until wired into the blasting circuit. The lead line shall also be shunted, unless testing the blasting circuit or preparing to fire.
6. Precautions shall be taken to prevent accidental discharge of electric detonators from currents induced by radar and radio station transmitters, adjacent power lines, substations, third rails, dust, lightening and snow storms, or other stray electrical currents.
7. No radio transmission with any handie-talkies, CB radios, cell phones or other devices shall be allowed within 100 feet (30 480 mm) of electric detonators.
8. For tunnel blasting, only an approved type of loading light shall be used. All regular light and power circuits shall be disconnected and removed to a location at least 100 feet (30 480 mm) from where explosives are being loaded. The only circuit allowed within 100 feet (30 480 mm) of the blast site shall be the one being used to fire the charges.
9. Detonators and explosives shall not be transported together on the job site, except in magazine cars and carry boxes in which the detonators and explosives are kept in separate approved containers or compartments.
10. During compressed air operations, all metal pipes, rails, air-locks and steel tunnelling shall be electrically bonded and grounded at or near the portal or shaft, and shall be cross-bonded at 1,000 feet (304 800 mm) intervals throughout the length of the tunnel. In addition, each low air supply pipe shall be grounded at its delivery point.

3307.7 Reserved.

3307.8 Security. The blasting crew shall be trained in the safe storage, handling and use of explosives. During the time that holes are being loaded or are loaded with explosives, blasting agents or detonators, only authorized persons engaged in drilling and loading operations and department representatives shall be allowed at the blast site. The blaster may authorize other persons to enter the blast site but such persons shall remain under the personal supervision of the blaster at all times. When necessary to ensure that the danger zone is and remains clear, the blaster shall post blasting contractor personnel with red flags at the perimeter of the danger zone to prevent pedestrians and traffic from entering. The job site shall be barricaded and the assistance of law enforcement personnel requested, as necessary, to ensure compliance with these requirements. Job site security shall be maintained until the post-blast procedures have been completed.

3307.9 Drill holes. Holes drilled for the loading of explosive charges shall be of a diameter sufficient to insert

explosives to the bottom of the borehole without forcing or ramming. The following drilling precautions shall be observed:

1. Only poles made of wood or plastic that have no metal parts shall be used for loading or tamping explosives.
2. Explosives shall be set in place or pressed in place by steady, even pressure with the tamping pole, avoiding forceful blows.

3307.9.1 Protective covering. Blasting mats or other approved protective measures shall be used to prevent the ejection of projectiles in accordance with Sections 3307.9.1.1 through 3307.9.1.4.

3307.9.1.1 Open cut and under-decking blasting. Before firing explosives, blasting mats or other approved protective measures, made of woven matting rope, rubber tire, steel cable or other approved material, shall be placed as necessary to prevent the ejection of projectiles. The type, amount and manner of application of the protective covering is subject to approval.

3307.9.1.2 Tunnel blasting. Blasting mats or other approved protective measures may not be required when the heading to be blasted is situated more than 100 feet (30 480 mm) from the mouth or opening of a tunnel and is at least 10 feet (3048 mm) below the outer surface of the surrounding rock.

3307.9.1.3 Shaft blasting. When shaft blasting, approved shaft covers shall be used.

3307.9.1.4 Demolition blasting. The commissioner may waive the requirements of blasting mats or other approved covering in connection with demolition blasting upon a determination that the use of such mats would not provide protection from the blast. The blasting contractor shall take precautions to protect subsurface infrastructure from blast damage, including protecting manholes, transformers and sewer grades or covers with metal plates, timber and/or soil. The blasting contractor shall take such other precautions as the commissioner may prescribe in the interest of public safety.

3307.10 Removal of excess explosives. After loading for a blast is completed and before firing, excess explosives shall be removed from the area and returned to the proper storage facilities.

3307.11 Initiation. The initiation of blasts shall be by means conforming to the provisions of NFPA 495.

3307.12 Connections. The blaster shall supervise the connecting of the blastholes and the connection of the lead line to the power source or initiation point. Connections shall be made progressively from the blasthole back to the initiation point. Blasting machines and all other equipment used to fire blasts shall be under the personal supervision of the blaster. Blasting lead lines shall remain shunted or short circuited and shall not be connected to the blasting machine or other source of current until the blast is to be fired.

3307.13 Firing control. No blast shall be fired until the blaster has made certain that all excess explosives are in a safe location in accordance with Section 3307.10, all persons and equipment are at a safe distance or under sufficient cover, and that an adequate warning signal has been given. The blaster shall be the last person to leave the danger zone. The blaster shall fire each shot or designate the assistant blaster to do so, provided the assistant blaster is in a direct line of sight of the blaster and awaits the firing signal which only the blaster shall give.

3307.13.1 Blast warning signal system. A shot shall be fired as soon as possible after loading is complete. An audible warning signal made by an air whistle, air horn or other similar device shall sound before each shot is fired. All personnel working in or near the blast area shall be familiar with the warning signal system. Signs describing the warning signal system shall be posted at conspicuous locations at the job site, as approved by the department. The following audible warning signal system shall be used:

1. One long signal-Preparing to blast, clear the blast area and danger zone.
2. Two short signals-Ready to blast, after the blaster checks that the blast area and danger zone are clear.
3. Three short signals-All clear, after the blaster completes post-blast procedures.

3307.14 Post-blasting procedures. After the blast, the following procedures shall be observed:

1. Immediately after the blast has been fired, the firing line on electrically initiated shots shall be disconnected from the blasting machine. No person shall return to the blast area until allowed to do so by the blaster.

2. The blaster shall allow 20 minutes time for smoke and fumes to dissipate and for dust to settle before returning to or approaching the blast area.

3. The blaster shall inspect the entire blast area for misfires before allowing other personnel to return to the blast area. No mucking or drilling operations shall take place until all misfires are rendered safe in accordance with Section 3307.15. Once mucking commences, the blasting crew shall continuously check for undetonated cartridges, wrappers, caps and cap wires, which shall be removed from the muck pile prior to haulage to rock dumps, and handled in accordance with Section 3304.10.

4. In demolition blasting, the muck pile shall be wetted down and the blasting crew shall make a second search for undetonated explosives as set forth in Section 3307.14(3). The blasting contractor shall restore adjacent buildings and structures to their pre-existing condition by removing all dust, dirt and debris caused by blasting operations.

3307.15 Misfires. Where a misfire is suspected, all initiating circuits shall be traced and a search made for unexploded charges. Where a misfire is found, the blaster shall immediately implement safeguards in compliance with the following requirements:

1. Cordon off and otherwise secure the blast area from entry.
2. Report the misfire to the department.
3. No other work shall be performed except that necessary to remove the hazard of the misfire.

4. No attempt shall be made to extract explosives from any charged or misfired hole; a new primer shall be loaded and the hole reblasted, if such action does not present a hazard. If refiring of the misfired hole presents a hazard, the explosives may be removed by washing out with water or blown out with air.

5. No drilling, digging, or picking shall be allowed until all missed holes have been detonated or the blaster determines that work can proceed, but no drilling shall be conducted into a previously fired hole.

6. All misfires and the disposition of explosives involved shall be recorded on forms prescribed by the commissioner.

3307.16 Pre-blasting survey, post-blasting survey and blasting plan. The owner or the owner's blasting contractor shall retain the services of a professional engineer, licensed to practice in New York State, to conduct a pre-blasting survey and, where applicable, to prepare a blasting plan, and conduct a post-blasting survey, as set forth in Sections 3307.16.1 through 3307.16.3.

3307.16.1 Pre-blasting survey. Prior to commencement of blasting operations, such professional engineer shall conduct a structural survey of all buildings, structures, and infrastructure, including all landmarks and monuments, within 100 feet (30 480 mm) of the property line of the job site. The pre-blasting survey shall determine and document the existing structural condition of the interior and exterior of such buildings, structures and infrastructure, provided that

if, after reasonable good faith efforts, access to the interior of a building, structure or infrastructure cannot be gained, it shall be sufficient that such survey determine and document the condition of the exterior of such building, structure or infrastructure. The report of such pre-blasting survey shall include photographs and/or videotapes, documenting any pre-existing conditions that may be exacerbated by blasting operations, including cracks and structural defects, and their location, length, size, thickness, and type. Where demolition blasting is to be conducted, the pre-blasting survey report shall identify the location and elevation of vertical control points on such buildings, structures and infrastructure, and shall set forth the type and location of any monitoring devices to be used, including tell-tales. If application is made for renewal of the permit for excavation or demolition blasting at a job site, the owner or the owner's blasting contractor shall cause any pre-blasting survey to be updated as necessary to address any change in conditions in the area to be surveyed.

3307.16.2Blasting plan for demolition blasting.Applications for a permit for use of explosives in connection with demolition work shall include a blasting plan. The blasting plan shall include the following information:

1. The location and dimensions of the safety zone to be maintained during blasting, including clearance to the surrounding buildings, structures and infrastructure.
2. Construction plans detailing the location of the main bearing supports of the structure which will be utilized in the demolition.
3. The types of explosives to be used, quantities, charge weight per initiation, blast sequence and pattern, and number, depth and diameter of drill holes.

3307.16.3Post-blasting survey.A post-blasting survey shall be prepared when required by Sections 3307.16.3.1 and 3307.16.3.2.

3307.16.3.1Demolition blasting.Whenever demolition blasting is conducted, such professional engineer shall, upon the completion of the blasting operations at the job site, conduct a structural survey of all of the buildings, structures and infrastructure previously surveyed and submit to the department a report documenting the elevations of the vertical control points and the absence of any observable changes in the pre-existing condition of such buildings, structures and infrastructure, or identifying any changes and the conclusions to be drawn therefrom. Elevations of the control points shall again be measured by such professional engineer at intervals of one and six months after the completion of the demolition work, and a report containing this data, and conclusions to be drawn therefrom, shall be promptly submitted to the department as an addendum to the original post-blasting survey.

3307.16.3.2Excavation blasting.The commissioner may require the owner or the owner's blasting contractor to retain such a professional engineer to conduct a post-blasting survey at any time during or upon the completion of blasting operations upon a determination that such a survey is necessary or appropriate as a result of ground vibration levels exceeding the reporting level set by the department, or other good cause.

3307.16.4Recordkeeping.A copy of the pre-blasting survey, the blasting plan for demolition blasting, the blasting patterns utilized for excavation blasting operations, and the vibration and airblast measurements required by this section, shall be maintained at the job site until the completion of blasting operations, and, together with any post-blasting survey required by Section 3307.16.3, shall thereafter be kept by the owner or the owner's blasting contractor for a period of three years from the completion of blasting operations at the job site. Such records shall be made available for inspection by any representative of the department and the Department of Buildings.

3307.17Vibrations and airblast.The owner or the owner's blasting contractor shall retain a seismic services consultant to measure and record ground vibration and airblast overpressure levels at specified locations. Such measurements shall be taken every time explosives are detonated during blasting operations. A copy of such measurements shall be filed with the department on a schedule to be established by the department, but not less frequently than once per week. Throughout blasting operations, locations for the monitoring equipment shall be selected

by the blasting contractor and the seismic consultant in consultation with the department and subject to department approval. The commissioner may require monitoring of water shock when submarine blasting is conducted.

3307.17.1Limits. The limit for ground vibration peak particle velocity is 2.0 ips (50.8 mm/s) for frequencies from 40 Hz to 100 Hz. For frequencies below 40 Hz, vibration limits are 0.75 ips (19.1 mm/s) and 0.5 ips (12.7 mm/s), with graphical data transition lines equivalent to constant displacements. Airblast overpressure shall be limited to 134 dB. Vibration and noise shall not exceed the limits established by the Metropolitan Transit Authority, Department of Environmental Protection, Department of Transportation and Department of Buildings and other agencies responsible for ensuring the structural integrity of affected buildings, structures and infrastructure.

3307.17.2Report. The seismic consultant shall prepare a report of all required measurements and data, acceptance criteria and analysis. In the event that readings exceed the acceptance criteria, the department shall be immediately notified, and the blasting contractor shall propose revised drilling and blasting patterns, charge weight per initiation and other measures to reduce the ground vibration and/or airblast overpressure, as appropriate.

3307.18Inter-agency coordination. The department shall develop and establish a protocol with the Department of Buildings, and such other agencies as the department determines to be necessary and appropriate, by which notification of blasting operations and reporting of unsafe conditions and complaints is to be coordinated.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 33: EXPLOSIVES, FIREWORKS AND SPECIAL EFFECTS
SECTION FC 3308: FIREWORKS DISPLAYS

NYC Administrative Code § 29-FC 3308

3308.1 Scope.

The discharge or other use of fireworks shall comply with the requirements of the New York State Penal Law Article 405, this chapter, the rules, NFPA 1123, and all other applicable laws, rules and regulations.

3308.2Permits.Permits shall be required as set forth in Section 105.6.

3308.2.1Fireworks display sponsor.A fireworks display permit shall be obtained for each display or other event involving the discharge or other use of fireworks. The sponsor of such display or other event shall retain a company holding a fireworks contractor certificate issued pursuant to this chapter to apply for and obtain the fireworks display permit and to conduct the fireworks display or other event.

3308.2.2Fireworks display permit conditions.A fireworks display permit shall be issued in the name of the sponsor of the display or other event and shall specify the date, time and location of the display or other event, the amount and types of fireworks to be discharged, and such other terms and conditions as the commissioner may prescribe as necessary or appropriate for the safe conduct of the display or other event.

3308.2.3Permit applications.Applications for a fireworks display permit shall be submitted to the department at least 30 days prior to the requested date for the fireworks display permit. Applications shall be in the form specified by the department and shall be signed by the sponsor and the fireworks contractor conducting the fireworks display. The commissioner shall review each application for a fireworks display permit and shall grant such application only if the commissioner is satisfied that the display or other event can be safely conducted. Permit applications shall contain the following information, and such other information and documentation as the commissioner may prescribe:

1. The name, address, telephone number and fax number of the sponsor.
2. The name, address, telephone number and fax number of the fireworks display contractor.

3. The date, rain date, time, and exact location proposed for the fireworks display and its approximate duration.
4. The number and size of the fireworks to be discharged or otherwise used or stored for use for the display or other event.
5. The written authorization of the sponsor of the display or other event.
6. The name of all persons personally supervising the discharge or other use of fireworks and the number of each person's certificate of fitness. There shall be not less than two such persons for any fireworks display.
7. The number, size, type, and approval number of the fireworks to be discharged. The approval number shall be the EX-number issued by the United States Department of Transportation.
8. For onshore displays, a dimensional diagram of the display site containing the following information:
 - 8.1. The location where the fireworks are to be stored.
 - 8.2. The discharge site.
 - 8.3. The location of all buildings, structures, infrastructure, streets, piers, bridges, railways, parking lots, utility lines and bulk plants and terminals within 1500 feet (457 200 mm) of the discharge site, and, as determined by the department, other protected exposures within such distance, the occupancy thereof, the use, and the distance from the outer perimeter of the discharge site to such buildings, structures, infrastructure, streets, piers, bridges, railways, parking lots, utility lines, bulk plants and terminals or other protected exposures.
 - 8.4. The location of any trees and overhead obstructions within 1,000 feet (304 800 mm) of the discharge site, including the distance to such locations from the outer perimeter of the discharge site.
 - 8.5 The viewing areas to which all observers will be restricted, including the distance to such locations from the outer perimeter of the discharge site.
9. For offshore displays, a dimensional diagram of the display site containing the following information:
 - 9.1. The discharge site, by reference to the shorelines and nearby structures, indicating the distances thereto.
 - 9.2. The layout of the barge, including the discharge site and the location of the control panel, all safety barriers and structures, and fireworks storage.
 - 9.3. The location of all buildings, structures, infrastructure, streets, piers, bridges, railways, parking lots, utility lines and bulk plants and terminals within 1500 feet (457 200 mm) of the discharge site, and, as determined by the department, other protected exposures within such distance, the use or occupancy thereof, and the distance from the outer perimeter of the discharge site to such buildings, structures, infrastructure, streets, piers, bridges, railways, parking lots, utility lines, bulk plants and terminals or other protected exposures.
 - 9.4 All viewing areas at or near the shorelines, including the distance to such locations from the outer perimeter of the discharge site.

3308.2.4Site inspection. The department may conduct an inspection of the display site and its surroundings, including the command post, viewing areas, and protected exposures, prior to issuance of a permit and/or prior to the fireworks display. Representatives of the fireworks contractor and the sponsor shall attend any such site inspection and cooperate with the department in determining the suitability of the site for the proposed fireworks display, and appropriate separation distances and other safety measures. The fireworks contractor or the sponsor shall arrange for access by department representatives to the display site, command post and all other areas, for purposes of the site

inspection and during the fireworks display.

3308.2.5 Permit denial. An application for a fireworks display permit shall be denied if the department determines that the display cannot be safely conducted. The department may take into consideration the time and place of the display or event for which a permit is sought, other scheduled events, and the ability of the department to effectively monitor such display or event, in determining whether to grant or deny such application. The department may also deny an application if it is incomplete or for lack of cooperation by the fireworks contractor or the sponsor.

3308.2.6 Permit conditions. The fireworks display permit shall be issued to the sponsor. The permit shall specify the exact location of the display, the date and approximate time of commencement of the display, and such other conditions as the department may prescribe to ensure the safe conduct of the display. The fireworks display permit shall be deemed to incorporate the terms and conditions set forth on the fireworks display plan approved by the department, including the separation distances required by the department. Firework displays shall be scheduled to commence no later than 9:30 pm (2130 hours).

3308.2.7 Penalty for noncompliance. The fireworks display shall be conducted in accordance with the fireworks display permit and the directions of department representatives. Failure to conduct a display in accordance with the terms of the permit or such directions may result in denial of future applications for such permits, suspension or revocation of the fireworks contractor certificate, suspension or revocation of the certificate of fitness, and such other penalties as may be provided by law, rule or regulation.

3308.3 Approved fireworks. Fireworks displays shall be conducted using Division 1.3G, 1.4G, and 1.4S fireworks. The fireworks shall be arranged, located and discharged in a manner that will not endanger any person or damage any property.

3308.3.1 Shell size restrictions. Aerial shells or other aerial fireworks shall not exceed 12 inches (204.8 mm) in diameter and salute shells shall not exceed 3 inches (76.2 mm) in diameter or length unless authorized by the fireworks display permit. Such authorization shall only be granted if the applicant can demonstrate to the satisfaction of the department special circumstances warranting the use of such oversize shell and that such shell can safely be discharged within the confines of the display site. No such request shall be considered on the day of the fireworks display.

3308.4 Clearance requirements. Viewing areas, parking areas, and dwellings, buildings or structures shall not be located within the display site. The required distances shall be maintained from the display site to the viewing areas and all protected exposures, including the minimum secured radius as set forth in Tables 3308.4.1 and 3308.4.2, any additional distance necessary to accommodate the fallout area, as calculated by the fireworks contractor and approved by the department, and any protected exposures as set forth in Section 3308.4.3, or as determined by the department.

3308.4.1 Onshore displays. For an onshore display, the display site shall be of a size sufficient to allow the applicable minimum secured radius set forth in Table 3308.4.1. Table 3308.4.1 Onshore Displays Size of Largest Mortar (inches) Minimum Secured Radius (feet)

300	400	500	600	700	800	1000	1200

3308.4.2 Offshore displays. For an offshore display, the display site shall be of a size sufficient to allow the applicable minimum secured radius set forth in Table 3308.4.2. Table 3308.4.2 Onshore Displays Size of Largest Mortar (inches) Minimum Secured Radius (feet) Up to 10 1,000 12 1,200

3308.4.3 Protected exposure distance separation. The minimum secured radius to the property line of any bulk plant or terminal, or facility for combustible, flammable, explosive, or toxic materials, or any institutional occupancy, shall be twice the distance specified in Table 3308.4.1 or Table 3308.4.2, as applicable, but in no case less than 1,000 feet (304 800 mm). The commissioner may prescribe a clearance requirement for any other protected exposure.

3308.5 Incidental storage of fireworks at display site. The storage of fireworks at the display site shall comply with the requirements of this section and NFPA 1123. Fireworks may be delivered and stored at the display site not earlier

than 12 hours before the permitted display. Only fireworks to be used for the permitted display may be stored at the display site.

3308.5.1Supervision.Fireworks shall not be left unattended at the display site, but shall be under the personal supervision of a certificate of fitness holder for fireworks display.

3308.5.2Weather protection.Fireworks shall be stored in weatherproof containers, under a waterproof cover or otherwise kept dry at the display site, prior to the fireworks display.

3308.5.3Inspection.Shells and other fireworks shall be inspected by the certificate of fitness holder for fireworks display at the display site.

3308.5.4Reserved.

3308.5.5Ready boxes.Any shells and other fireworks that are not to be used during a fireworks display, including fireworks that are defective or damaged, shall be temporarily stored during the fireworks display in ready boxes located upwind and at least 25 feet (7620mm) from the mortar placement.

3308.6Discharge of fireworks.Fireworks displays and any other discharge or use of fireworks shall be conducted outdoors, except that fireworks, 1.4G, may be discharged indoors in connection with the conduct of a special effect for which a special effects permit has been issued pursuant to Section 3309.

3308.6.1Mortar placement.Mortars shall be positioned and discharged as follows:

1. Mortars shall not be set up during night hours (between sunset and sunrise).
2. Mortars shall be of sufficient strength and shall be arranged and positioned so that the shells may be safely discharged.
3. Mortars shall be placed in as near a vertical position as possible. Mortars and other devices used to discharge fireworks shall be installed in accordance with NFPA 1123 and shall be positioned such that the shells are projected in a direction that ensures that they combust, deflagrate or detonate above the fallout area and all unexploded fireworks fall into the fallout area. Under no circumstances shall mortars be angled toward the viewing area.
4. Mortars shall be of sufficient length to cause aerial shells to be projected to safe heights.
5. Mortars shall be placed in sand-filled steel drums or heavy plastic drums no less than 32 gallons (121 L) in capacity. Wood racks or troughs filled with sand may also be used in lieu of drums for firing barrages or finales.
6. Except for mortars placed in wood racks, mortars shall be buried to a depth of between two-thirds to three-quarters of their length.
7. Except for mortars placed in wood racks and as may otherwise be provided in this section, mortars shall be separated from adjacent mortars by a distance of at least 2 inches (50.8 mm) or the diameter of the larger mortar, whichever is greater.
8. Except as otherwise provided in this section, there shall be a separation distance of at least 2 inches (50.8 mm) or one-half of the diameter of the mortar, whichever is greater, between the mortar and the wall of the drum or trough.
9. Prior to placement, mortars shall be inspected for defects, such as dents, bent ends, damaged interiors and damaged plugs. Defective mortars shall not be used. Any scale found on the inside surface of the mortars shall be removed prior to placement.

10. Wood racks. Wood racks used in conjunction with firework displays shall be designed and operated as follows:

10.1. Wood racks shall be of sufficient strength to prevent adjacent mortars from being repositioned in the event that a shell detonates in a mortar, causing the mortar to burst.

10.2. The use of wood racks shall be limited to single break shells not exceeding six inches in diameter.

10.3. Wood racks with chain fused mortars 3 inches (76.2 mm) or less in diameter shall be limited to a maximum of 15 mortars per unit. Racks containing mortars 4 inches (101.7 mm) in diameter shall be limited to a maximum of 12 mortars. Racks containing mortars 5 inches (127 mm) to 6 inches (152.4) in diameter shall be limited to a maximum of 10 mortars.

10.4. Mortars placed in wood racks shall not be reloaded during the display.

3308.6.2Mortar loading.Mortars shall be loaded as follows:

1. Mortars shall be loaded during daylight hours (between sunrise and sunset). Mortars shall not be loaded during night hours (between sunset and sunrise).

2. All unloading of fireworks from the delivery vehicle and loading and fusing of the fireworks shall be conducted under the supervision of a certificate of fitness holder in the presence of a department representative.

3. All shells shall be inspected by a certificate of fitness holder for fireworks display immediately prior to placement. Any shells that are torn, leaking, show signs of having been wet or have broken fuses shall not be used.

4. The certificate of fitness holder for fireworks display shall verify that the proper lifting charge has been attached to each shell to ensure the safe control of discharge height.

5. When loading into mortars, shells shall be held by their lowering cords (if provided) or their fuses (if no lowering cord is provided).

6. Shells shall be lowered carefully into the mortar, such that they are properly seated in the bottom of the mortar. Shells shall never be forced into a mortar.

7. No person shall place any part of his or her body over the mortar during its loading.

3308.6.3Control panel for firework displays.Control panels used to conduct firework displays shall be designed, installed and operated as follows:

1. The control panel and all related equipment, including any junction boxes, shall be located within the display site, at least 50 feet (15 240 mm) from the discharge site, with a clear line of sight to the discharge site.

2. A protective barrier capable of withstanding the impact of falling debris or a misfired shell and made of or covered with a fire-retardant material shall be provided between the control panel and the discharge site and above the control panel. Such protective barrier shall be of sufficient size to protect the control panel and all persons who will be positioned at the control panel during the fireworks display, including at least one department representative.

3. The control panel shall be provided with a double safety switch to prevent premature activation of current to the shells, such as combination of keys or single throw switches connected in series, both of which must be activated for current to flow.

4. Each switch on the control panel, including testing and firing controls, shall be clearly marked to indicate its function. The control panel shall be equipped with an indicator, such as a light, a sound device, or both, to indicate

when the control panel is armed for firing.

5. If the control panel has a built-in test circuit, the unit shall be designed to limit the test current to 0.05 ampere or to 20 percent of the no-fire current of the electric match being used, whichever is less.

6. Multi-testers, such as volt-ohm meters, shall not be used for testing electric matches unless the tester's maximum current delivery potential has been measured to be not more than 0.05 ampere or 20 percent of the no-fire current of the electric match being used, whichever is less.

7. Control panels shall be powered by batteries or isolated power supplies used for firing purposes only. If batteries are used, they shall be self-contained in the firing unit or otherwise covered or protected to prevent accidental contact with wires leading to the fireworks. Control panels powered by commercial power may be used, provided that an isolation transformer is used. The transformer shall be located within the firing unit or elsewhere in the firing system.

3308.6.4 Ground display pieces. Ground display pieces shall be positioned and discharged in compliance with the following requirements:

1. Combustible materials located beneath ground display pieces shall be wet down before the display. Vegetation within 50 feet (152 400 mm) shall be removed as set forth in Section 304.1.2.

2. Poles for ground display pieces shall be securely placed and braced so that they maintain the proper position when fireworks are displayed.

3308.6.5 Fireworks discharge. The discharge of fireworks shall be conducted in compliance with the following requirements:

1. All persons conducting the fireworks display shall wear clothing and protective gear in compliance with the requirements of the regulations of the United States Department of Labor, as set forth in 29 CFR Part 1910.

2. Communication shall be maintained at all times between the certificate of fitness holders for fireworks display and the command post.

3. No fireworks shall be discharged if any person is at an unsafe distance from the point of discharge. The certificate of fitness holders for firework displays shall ensure that all persons have moved a safe distance away from such mortar or ground display piece before firing it.

4. No more than 100 shells may be ignited by a single fuse.

5. Control panel operation.

5.1. The control panel and all cables, junctions, and attached electric matches shall be visually inspected immediately prior to the display. The control panel shall not be in "test" status or "arm" status during this inspection.

5.2. Mortars shall be connected to the control panel and the circuit tested only after all the shells have been loaded into the mortars and all electric matches are connected to the fuses. Ground display pieces shall be connected to the control panel and the circuit tested only after the fireworks have been loaded onto the display.

5.3. No person shall be in the discharge site when any circuit testing is performed.

5.4. If the testing of the circuits indicates a problem, the certificate of fitness holder for fireworks display shall reinspect any cables, connections, or electric matches and correct the problem. This reinspection shall be performed only after the control panel has been switched off or disconnected from the power source.

5.5. Only such fireworks contractor personnel as are necessary for the proper and safe operation of the display and department representatives shall be allowed at the control panel when fireworks are being discharged.

5.6. No person shall be in the discharge site when fireworks are being discharged. The certificate of fitness holder conducting an electrically-fired display shall personally visually check the discharge site prior to commencing a display to ensure that the area is clear of all persons, and shall not commence the display, or shall discontinue it, at any time persons are observed within such area.

5.7. The control panel shall be switched off and all cables disconnected after the conclusion of the display, prior to any cleanup or other work in the discharge site.

3308.6.6 Offshore displays. Offshore firework displays shall be conducted in compliance with the following requirements:

1. Offshore firework displays shall be conducted in accordance with the requirements of this chapter except as they may be inconsistent with this section.

2. Offshore firework displays shall be conducted from a barge maintained at a fixed position, as designated on the firework display permit. No fireworks shall be discharged from any tugboat or other vessel or platform.

3. Only fireworks to be discharged during the display shall be allowed on the fireworks barges. Storage of excess fireworks on the barges is prohibited.

4. Fireworks to be used in an offshore fireworks display shall be installed, loaded and fused in the presence of department representatives while the barge is moored at a lawful and safe location in New York City acceptable to the department. The department may authorize such installation, loading and fusing at a mooring outside of New York City at a location acceptable to the department. No installation, loading or fusing shall be conducted on the barge after the barge departs from its mooring. Department representatives shall accompany the barge from its mooring to the display site.

5. The fireworks display barge shall be towed into position by a tugboat authorized to operate in New York City. The tugboat shall be under power at all times during the display, so that all necessary maneuvering of the barge can be effected. The tugboat shall be equipped with an instrument to measure the distance to the shore to enable the tugboat to ascertain and maintain its position.

6. Barge design and construction. Barges used in conjunction with firework displays shall be designed, constructed and maintained in compliance with the following requirements:

6.1. Only steel barges acceptable to the United States Coast Guard shall be used as fireworks display barges.

6.2. Fireworks display barges shall bear durable signs on both sides reading "Fireworks-Stay Clear". The lettering shall be at least 18 inches high in red on a white background.

6.3. The control panel shall be located on the fireworks display barge.

6.4. Fireworks display barges shall be provided with suitable barriers constructed and arranged so as to protect the control panel, persons at the control panel, and the tugboat from misfired shells, fireworks and falling debris.

6.5. Railings shall be provided around the control panel area to prevent persons from falling overboard.

7. All personnel on board the fireworks barge or tugboat shall wear United States Coast Guard approved life preservers.

8. Department representatives shall be present on the fireworks barge and the tugboat at all times during a fireworks display.

9. Conduct of the display. Offshore firework displays shall be conducted in compliance with the following requirements:

9.1. All fireworks shall be discharged and directed in such a manner that any falling debris, sparks or embers will not land upon the shore, or a wharf, pier, bulkhead or other structure.

9.2. Reloading of mortars during the display is prohibited.

9.3. Communication shall be maintained at all times between the certificate of fitness holders for fireworks display conducting the display, the tugboat pilot and the command post.

9.4. One certificate of fitness holder for fireworks display shall be responsible for monitoring the position of the barge and the trajectory of the fireworks and the fireworks debris, and communicating to department representatives any change in wind direction or other condition requiring repositioning of the barge or other safety measure. Such certificate of fitness holder shall have no other duties during the display.

3308.7 Handling. Aerial shells shall be carried to mortars by the shell body. Shells shall never be held by their fuses except when they are being loaded into mortars. For the purpose of loading mortars, aerial shells shall be held by the thick portion of the fuse and carefully loaded into mortars.

3308.8 Supervision and department monitoring. Fireworks displays shall be conducted by a company holding a fireworks contractor certificate, and under the personal supervision of two certificate of fitness holders for firework displays as set forth in Section 3301.5.2, and shall be subject to monitoring by the department as set forth in this section.

3308.8.1 Department monitoring. The commissioner may require department personnel and equipment to monitor the delivery, unloading, loading, and discharge of fireworks, and post-display site safety measures upon a determination that the presence of such monitoring is in the interest of public safety.

3308.8.1.1 Loading and unloading. Fireworks displays, including all unloading of transport vehicles, loading and fusing of mortars and ground display pieces, and discharging of fireworks, shall be conducted in the presence of one or more representatives of the department.

3308.8.1.2 On scene directions. The fireworks contractor's personnel, the certificate of fitness holders conducting the display, and all other persons at the display site shall comply with the directions of department representatives, including any requirement different from or in addition to those set forth in the fireworks display permit, when, in the judgment of the department representative, such different or additional requirement is necessitated by a change in site or weather conditions or is otherwise necessary to ensure the safe conduct of the display.

3308.8.1.3 Delays and cancellations. No fireworks display shall commence until approval has been given by the department representatives on the scene. Department representatives may delay commencement of the display, or suspend or cancel the display, upon a determination that such action is in the interest of public safety, by reason of weather or other site conditions, the use of unapproved equipment or shells, the improper installation or unsafe operation of the display, the presence of any unauthorized person within the discharge site, the failure of any person to comply with the directions of the department representatives, or other good cause. In no case shall a display commence or continue when wind velocity exceeds 30 miles per hour (48.28 km per hour).

3308.8.1.4 Command post. The representative of the fireworks contractor overseeing the conduct of the display shall provide a command post from which the fireworks display may be monitored by department representatives and a representative of the fireworks contractor responsible for the conduct of the display. Such command post shall be

located onshore, in an area acceptable to the department that is outside of the discharge site, display site and viewing areas, and that has an unobstructed line of sight to such areas.

3308.8.1.5Communication. The representatives of the fireworks contractor overseeing the conduct of the display shall be present at the command post prior to the scheduled time of the fireworks discharge, and shall be in radio or telephone contact with the certificate of fitness holders conducting the display, the spotter, and for offshore displays, the tugboat pilot. Such representative shall relay to such personnel or pilot any directions of department representatives concerning the fireworks display, including authorization to commence the display. No fireworks display shall be authorized to commence until such representative is present at the command post.

3308.8.2Spotter. At least one fireworks contractor employee shall be designated as the spotter, whose sole responsibility during the display shall be to watch the flight and behavior of the shells and to notify department representatives of any dangerous conditions occurring during the display, such as hazardous debris falling into the audience. The spotter shall be in direct radio or telephone communication with the command post.

3308.8.3Discharge height. The maximum height of discharge shall be determined by the United States Federal Aviation Administration for each display. In no case shall any shell break at a height greater than 1,200 feet (365 760 mm) above sea level.

3308.9Post-display site safety measures. Immediately upon conclusion of the fireworks display, the certificate of fitness holders shall conduct an inspection of the display site, including each mortar or other device used to discharge fireworks, for the purpose of locating unexploded fireworks. This inspection shall be conducted before public access to the site is permitted. Certificate of fitness holders conducting a nighttime display shall conduct a daylight search of the display site at the next sunrise. The certificate of fitness holder shall keep a record of all aerial shells that fail to fire.

3308.9.1Post-display inspection affidavit. The certificate of fitness holders conducting any fireworks display shall, within 24 hours of the completion of the display, submit to the department a notarized post-display affidavit attesting to the fact that the area was found to be free and clear of any fireworks or other explosive materials or devices.

3308.10Disposal. Any fireworks found during the inspection required in Section 3308.9 shall not be handled until at least 15 minutes have elapsed from the time the fireworks were fired. The fireworks shall then be doused with water and allowed to remain for at least 5 additional minutes before being placed in a plastic bucket or fiberboard box and disposed of lawfully in accordance the manufacturer's instructions.

3308.11Reserved.

3308.12Fees. Fees for firework displays shall be as set forth in Appendix A.

1. The department shall bill the fireworks contractor for the time spent by department representatives inspecting or monitoring the fireworks display, including the unloading, installation, loading and discharge of the fireworks, post-display site safety measures, and any travel time and expenses associated with such inspection and monitoring at a mooring outside of New York City.

2. The department shall bill the sponsor after a fireworks display for the assignment of any department firefighting apparatus.



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TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 33: EXPLOSIVES, FIREWORKS AND SPECIAL EFFECTS
SECTION FC 3309: SPECIAL EFFECTS

NYC Administrative Code § 29-FC 3309

3309.1 Scope.

The storage, handling and discharge or other use of any material, article or device of an explosive, flammable, or combustible nature used to create a special effect, including any pyrotechnic material, article or device, fireworks, 1.4G, and open flames, shall be in accordance with this section, the rules and NFPA 1126.

3309.2 Prohibited conduct. It shall be unlawful to:

1. Store, handle, discharge or otherwise use any material, article or device of an explosive, flammable, or combustible nature used to create a special effect, without a special effects permit or production company special effects permit issued pursuant to this section.
2. Conduct a special effect inside a building or other enclosed structure if the materials, articles or devices used to create such special effects contain or use antimony, arsenic, cadmium, chromium, lead, mercury, naphthalene, nickel, selenium, or zinc, in amounts greater than trace quantities.

3309.3 General requirements. Materials used to create a special effect shall be stored, handled and used in accordance with Sections 3309.3.1 through 3309.3.7.

3309.3.1 Use of minimum amount necessary. The quantity of material, article, or device used in a special effect shall be no greater than necessary to produce the desired special effect.

3309.3.2 Demonstration. The commissioner may require a demonstration of the materials, articles or devices used to create a special effect.

3309.3.3 Monitoring. The commissioner may require department personnel and apparatus to monitor the preparation and conduct of a special effect upon a determination that such monitoring is in the interest of public safety.

3309.3.4Limitation on quantity stored.The commissioner may prescribe the maximum quantity of special effects material, article or device allowed to be stored in any approved storage facility. The location and design of the storage facility shall be approved by the commissioner.

3309.3.5Temporary storage.For temporary storage, special effects materials, articles or devices shall remain in their approved containers until required for use.

3309.3.6Prompt use.The time between removal from storage and use shall be the shortest time practicable.

3309.3.7Access to storage facility.Pyrotechnic materials, articles or devices shall not be left unattended, except in a secured storage facility. Unauthorized access to the storage facilities shall be prevented either through the means of a locking mechanism or through continuous supervision.

3309.4Special effects permit.Except as otherwise provided in Section 3309.5, a special effects permit shall be obtained for each display or other event involving the conduct of a special effect by the sponsor of the display or other event or, with the sponsor's written authorization, by a person holding a certificate of fitness for special effects issued pursuant to this section. A special effects permit shall be issued in the name of the applicant and shall specify the name of the sponsor, the date, time and location of the display or other event, the number and kind of pyrotechnic articles or devices to be discharged or otherwise used, or other materials, articles or devices used to create the special effects, and such other terms and conditions as the commissioner may prescribe as necessary or appropriate for the safe conduct of the display or other event.

3309.4.1Site inspection.The department may conduct an inspection of the special effects display site and its surroundings, prior to issuance of a permit and/or prior to the special effects operation. Representatives of the applicant shall attend any such site inspection and cooperate with the department in determining the suitability of the site for the proposed special effects operation, and, if suitable, appropriate separation distances and other safety measures. The applicant shall arrange for access by department representatives to the display site, for purposes of the site inspection and during the special effects operation.

3309.4.2Permit applications.The commissioner shall review each application for a special effects permit and shall grant such application only if the commissioner is satisfied that the display or other event can be safely conducted. Permit applications shall contain a special effects display plan, including the following information and such other information and documentation as the commissioner may prescribe:

1. The name of the person, group, or organization responsible for the special effects display.
2. The date, time and exact location of the display or other event.
3. The written authorization of the sponsor of the display or other event.
4. A description of the special effects to be created.
5. The amount and types of the pyrotechnic material, articles or devices to be discharged or otherwise used or stored for use, or other materials, articles or devices to be used or stored for use in creating the special effects.
6. The name of all persons personally supervising the temporary storage, handling and discharge or other use of the materials, articles or devices used to conduct the special effects and their certificate of fitness numbers.
7. The names, ages and duties of all assistants who will be present in connection with the special effects.
8. A dimensional diagram of the area where special effects are to be conducted that includes the following information:

8.1. The location at which the materials, articles or devices used for the special effects are to be discharged or otherwise used and stored for use.

8.2. Location of audiences, performers and support personnel in relation to the special effects, and the duties of the performers and support personnel in connection with the special effects.

8.3. If using pyrotechnic article or device, the fallout radius for each article or device.

8.4. If the special effects are displayed in front of an audience or bystanders, the lines behind which the audience or bystanders shall be restrained.

8.5. Such other information as the commissioner may prescribe relating to the safe conduct of the display or other event.

9. The manner, place, and quantity of storage for the materials, articles or devices to be used in creating the special effects.

10. Certifications that the set, scenery, curtains, and rigging materials are inherently flame-retardant or have been treated to achieve flame resistance.

3309.4.3 Applicant responsibility. The applicant for a special effects permit shall be responsible for the safe conduct of the display or other event including:

1. Arranging for the preparation and submission of the special effects display plan, and obtaining the special effects permit.

2. Obtaining any necessary permit or authorization, including any permit or authorization required by the United States Coast Guard, the Department of Parks and Recreation, the Port Authority of New York and New Jersey, and the United States Federal Aviation Administration.

3. Ensuring compliance with all applicable laws, rules and regulations, including the federal, state and local laws, rules and regulations governing the transportation of explosives and other hazardous materials, and the permit, labeling and fire protection requirements thereof.

4. Ensuring adequate facilities, fire protection, and staffing by qualified personnel, including the certificate of fitness holder required by this section.

5. In conjunction with the sponsor, ensuring maintenance of viewing areas at a safe distance from the location of the special effects discharge, and other appropriate safety and crowd control measures, as prescribed by the commissioner.

6. Ensuring compliance with the directions of department representatives.

7. Obtaining a liability and casualty insurance policy as set forth in Section 3301.2.4(4).

8. Ensuring that the site of the display or other event is left in a safe condition.

3309.5 Production company special effects permit. The commissioner may issue a production company special effects permit to a television, motion picture or theatrical production company that regularly conducts special effects at a designated location within a specific building or structure in accordance with Sections 3309.5.1 through 3309.5.4.

3309.5.1 Permit limitations. A production company special effects permit shall authorize the permit holder to conduct certain special effects at one or more designated locations within a specific building or structure for a specified period of

time, not to exceed one year, without obtaining special effects permits for each display or other event, and shall authorize the permit holder to store in a central storage facility the materials, articles or devices used to create such special effects.

3309.5.2 Permit conditions. A production company special effects permit shall specify the number and kind of materials, articles or devices to be used and stored for use, and shall set forth such other terms and conditions as the commissioner may prescribe for the safe conduct of the special effects or the storage of such materials, articles or devices at such locations.

3309.5.3 Permit applications. The commissioner shall review each application for a production company special effects permit and shall grant such application only if the commissioner is satisfied that the production company can meet the requirements of this section. Permit applications shall contain a special effects display plan, including the following information and such other information and documentation as the commissioner may prescribe:

1. The address of the designated building or structure and the specific location or locations within such building or structure at which the special effects or other events are to be conducted.
2. A description of the type of productions in connection with which special effects are to be conducted.
3. A plan of the layout of each special effects location, including the arrangement of any set, scenery, rigging, or equipment, and the proximity of the persons conducting the special effects and any assistants, performers, or audience.
4. A description of the special effect to be created.
5. The amount and types of the pyrotechnic material, articles or devices to be discharged or otherwise used or stored for use, or other materials, articles or devices to be used or stored for use in creating the special effects.
6. The frequency with which the special effects are to be conducted.
7. The names of all persons personally supervising the storage, handling and discharge or other use of the materials, articles or devices used for the special effects and their certificate of fitness numbers.
8. Design and installation documents for the central storage facility in which the materials, articles or devices used to create the special effects are to be stored.

3309.5.4 Permit holder responsibilities. A production company special effects permit holder shall be responsible for the safe conduct of the special effects and the safe storage and handling of all materials, articles or devices used therefore, in the manner prescribed by the commissioner, including:

1. The construction and maintenance of a central storage facility in compliance with all applicable federal, state and local laws, rules and regulations, including all permit and fire protection requirements, and ensuring adequate security of such facility.
2. Ensuring compliance with all applicable laws, rules and regulations, including the federal, state and local laws, rules and regulations governing the transportation of all pyrotechnic materials, articles and devices and all other materials, articles or devices of an explosive, flammable, or combustible nature, and the permit, labeling and fire protection requirements thereof.
3. Ensuring that all special effects are conducted by a person holding a certificate of fitness for special effects, and all materials, articles or devices for such purpose are handled and stored by or under the supervision of such a person, as required by this section.
4. Ensuring compliance with the directions of department representatives.

5. Obtaining a liability and casualty insurance policy as set forth in Section 3301.2.4(4).

3309.6Storage permit.Except as otherwise provided in Section 3309.5, it shall be unlawful to store for use in a special effects display or other event any material, article or device of an explosive, flammable, or combustible nature, including any pyrotechnic material, article or device and fireworks, 1.4G, without a permit issued pursuant to this section.

3309.7Sales pyrotechnic supplier certificate.It shall be unlawful to sell any pyrotechnic material, article or device designed to create a special effect or to exhibit any such material, article or device for sale without a pyrotechnic supplier certificate issued pursuant to Section 3301.5.3.4, and such materials, articles and devices shall be sold or offered for sale only to a person holding a certificate of fitness for pyrotechnic special effects issued pursuant to this section or to a production company holding a production company special effects permit issued pursuant to this section, and only in conjunction with a special effects display or other event for which a permit has been issued pursuant to this section.

3309.8Supervision.Special effects, including the storage, handling and use of pyrotechnic and other special effects materials, articles and devices, shall be supervised as set forth in Section 3301.5.

3309.9Fire protection requirements.Fire protection shall be provided in connection with special effects as set forth in Sections 3309.9.1 through 3309.9.3.

3309.9.1Portable fire extinguishers.At least two portable fire extinguishers of the proper classification and size applicable to the hazard associated, shall be readily accessible while the special effects materials, articles or devices are being handled.

3309.9.2Out-of-service.When the conduct of a special effects display requires that a fire protection device, equipment or system be placed out-of-service to avoid a false alarm, the out-of-service procedures, as set forth in Chapter 9, shall be observed. The impairment coordinator shall ensure that the device, equipment or system is returned to normal operating condition upon completion of the special effects display or as soon as the likelihood of false alarm has passed.

3309.9.3Obscuring egress.Special effects shall not generate a quantity of smoke or mist that would obscure the visibility of exit signs or paths of egress travel.

3309.10Product information.The commissioner may require the applicant to submit the following information regarding the materials, articles and devices to be used in connection with any special effects:

1. The name, address, and phone number of the manufacturer.
2. The name of the product and a description of its effect or use.
3. The performance characteristics, such as duration, height, and diameter of the special effects created.
4. A material safety data sheet (MSDS) for the special effect materials.
5. If a pyrotechnic article or device is used, whether the article or device is intended for indoor use and whether it is to be used with any cautions or special considerations and instructions for the proper method of placing, loading, and using the device.

3309.11Pyrotechnic material storage.The storage of pyrotechnic material, articles and devices shall be as set forth in Sections 3309.3, 3309.11.1 and 3309.11.2.

3309.11.1Compliance with federal regulations.All pyrotechnic materials, articles or devices shall be stored in

accordance with regulations of the Bureau of Alcohol, Tobacco, Firearms and Explosives of the United States Department of Justice, as set forth in 27 CFR Part 555, Subpart K.

3309.11.2 Ignition sources. Pyrotechnic materials, articles or devices shall not be stored within 50 feet (15240 mm) of any unprotected source of heat or open flame.

3309.12 Pyrotechnic material separation distances. If a pyrotechnic material, article or device is used to create a special effect before an audience or bystanders, the distance to the audience or bystanders shall be as set forth in Sections 3309.12.1 through 3309.12.3.

3309.12.1 Fallout radius separation. Each pyrotechnic material, article or device discharged or otherwise used to create a special effect shall be separated from any audience or bystanders by not less than twice the fallout radius of the device or 15 feet (4572 mm), whichever is greater.

3309.12.2 Concussion mortar separation. Concussion mortars shall be separated from the audience and bystanders by a minimum of 25 feet (7620 mm).

3309.12.3 Flaming particle separation. There shall be no glowing or flaming particles within 10 feet (3048 mm) of the audience or bystanders.

3309.13 Special effects safety precautions. Pre-firing safety precautions for pyrotechnic materials used to create a special effect shall be in accordance with Sections 3309.13.1 through 3309.13.9.

3309.13.1 Mounting. Special effects materials, articles or devices shall be mounted in a secure manner to ensure that when they are discharged or otherwise used they maintain the proper position in accordance with the approved permit application.

3309.13.2 Performer protection. Where a special effects material, article or device is placed on or in contact with a performer's body, appropriate shielding or other form of protection adequate to prevent any injury to the performer shall be provided. This protection shall be sufficient to protect against the normal functioning of the special effects material, article or device, as well as any possible malfunction.

3309.13.3 Security. The area where the special effects is to occur shall be secured from entry by unauthorized personal once the special effects material, article or device has been placed in position.

3309.13.4 Communication. Special effects materials, articles or devices shall be discharged or otherwise used only when the area wherein the effect is to occur is in clear view of the certificate of fitness holder for such special effects or in the clear view of a trained and knowledgeable assistant who is in direct communication with such certificate of fitness holder. Such communication may be accomplished through the use of lights or other nonverbal signals.

3309.13.5 Container condition. The certificate of fitness holder shall inspect the containers in which special effects materials, articles or devices have been shipped. Damaged special effects materials, articles or devices shall not be used and shall be promptly removed from the premises and disposed of lawfully.

3309.13.6 Protective clothing and equipment. All persons handling and using special effects materials, articles or devices shall wear protective clothing and gear appropriate to the hazard in accordance with the regulations of the United States Department of Labor.

3309.13.7 Final inspection. Immediately before any special effect, the certificate of fitness holder shall conduct a final inspection of all components of the special effects, including wiring, electrical connections and special effects materials, articles or devices, to ensure that they are in proper working order and to verify that all required safety distances are maintained.

3309.13.8Wiring placement.Special effects materials, articles or devices shall be placed and wired in a manner designed to minimize the risk of performers and others.

3309.13.9Disposal of unused special effects material.All special effects materials, articles and devices not needed for the conduct of the special effects shall be promptly returned to the storage facility prior to the conduct of the special effects. All unused special effects materials articles or devices shall be promptly returned to the storage facility after the special effects display.

3309.14Pyrotechnic safety precautions.Any special effects using a pyrotechnic special effects material, article or device shall be conducted in accordance with Sections 3309.13, and 3309.14.1 through 3309.14.7.

3309.14.1Projectile restrictions.No pyrotechnic material, article or device shall be discharged in a manner that projects an article or device or debris therefrom above the audience or bystanders or causes damage to the premises.

3309.14.2Mortar construction.Mortars and flash pots shall be constructed so that they are not damaged by the discharge or other use of the pyrotechnic material, article or device. Damaged mortars and flash pots shall not be used. Converted electrical switch boxes, lamp sockets, lamp holders, plug fuses, or other similar thin-walled, brittle devices shall not be used for concussion mortars or flash pots.

3309.14.3Flare placement.Flares shall be placed so that any debris falls into a safe, flame-resistant area.

3309.14.4Securing of rotating devices.Rotating pyrotechnic materials, articles or devices, such as wheels and saxons, shall be mounted securely so that their rotation does not cause the holder to fail.

3309.14.5Securing of rockets.Where rockets are launched before a proximate audience, performers, or support personnel, the rockets shall be attached securely to a guide wire or cable with both ends securely attached and placed on an impact-resistant surface located at the terminal end of the guide. This guide wire or cable shall be of sufficient strength and flame resistance to withstand the exhaust from the rocket. An effective arrangement to stop the rocket shall be provided.

3309.14.6Security.Firing systems shall not be left unattended while connected to loaded pyrotechnic materials, articles or devices, unless such systems are disconnected from their power source and have a removable activator, keyswitch, or coded arming system.

3309.14.7Firing safeguards.Pyrotechnic materials, articles or devices shall be discharged only from equipment specifically constructed for that purpose. All firing systems shall be designed to ensure against accidental discharge by providing at least a two-step interlock in which the firing circuit cannot be activated unless the operator intentionally enables or arms the firing system and deliberately activates the circuit.

3309.15Special effects post-discharge safety measures.Safety measures shall be implemented after the discharge of special effects as set forth in Sections 3309.15.1 and 3309.15.2.

3309.15.1Post-discharge inspection.At the earliest opportunity after the discharge of special effects, the certificate of fitness holder shall verify that the pyrotechnic materials, articles or devices have discharged, consumed or otherwise operated properly. Any special effects materials, articles or devices that have not operated properly shall either be immediately discharged or otherwise used in place, or immediately removed from the performance area and disposed of lawfully.

3309.15.2Final inspection.The certificate of fitness holder shall ensure that all special effects materials, articles and devices are removed from the premises after the performance in which the special effects was conducted.

3309.16Open flames.Where approved, open flames may be used in connection with theatrical performances when

adequate safety precautions have been taken in accordance with NFPA 160.

3309.17Storage of other special effects materials.A material, article or device of an explosive, flammable or combustible used to create special effects shall be stored in compliance with the storage requirements for the particular material, article or device as prescribed in this code, the rules and other applicable laws, rules and regulations.

3309.18Storage of special effects materials in television studios.The storage in television studios of special effects materials, articles and devices, including pyrotechnic materials, articles and devices, shall be in accordance with the rules.

3309.19Storage for sale of pyrotechnic materials.Pyrotechnic suppliers storing pyrotechnic materials, articles and devices for sale shall store such pyrotechnic materials, articles and devices in an approved facility.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 34: FLAMMABLE AND COMBUSTIBLE LIQUIDS
SECTION FC 3401: GENERAL

NYC Administrative Code § 29-FC 3401

3401.1 Scope.

This chapter shall govern the storage, handling and use of flammable and combustible liquids, including the dispensing and mixing of such liquids, including flammable and combustible liquids subject to the New York State Department of Environmental Conservation regulations, as set forth in 6 NYCRR Parts 595 through 614.

Exceptions. This chapter shall not apply to:

1. Medicines, foodstuffs, cosmetics, and commercial, institutional and industrial products in the same concentration and packaging containing not more than 50 percent by volume of water-miscible liquids and with the remainder of the solution not being flammable, and alcoholic beverages in retail or wholesale sales or storage uses when packaged in individual containers not exceeding 1.3 gallons (5 L).
2. Installation of fuel oil storage tanks and auxiliary storage tanks for oil-burning equipment, except that this chapter shall apply with respect to permit requirements and requirements relating to out-of-service fuel oil tanks.
3. Refrigerant liquids and oils in refrigerating systems (see Section 606).
4. Storage and display of aerosol products complying with the requirements of Chapter 28.
5. Storage and use of liquids that have no fire point when tested in accordance with ASTM D 92.
6. Liquids with a flash point greater than 95(degrees)F (35(degrees)C) in a water-miscible solution or dispersion with a water and inert (noncombustible) solids content of more than 80 percent by weight, which do not sustain combustion.
7. Liquids without flash points that can be flammable under some conditions, such as certain halogenated hydrocarbons and mixtures containing halogenated hydrocarbons.

8. The storage of distilled spirits and wines in wooden barrels and casks.

3401.2Reserved.

3401.3Design and installation documents.The commissioner may require design and installation documents, specifications and calculations in connection with the installation, alteration or repair of tanks and related devices, equipment and systems pursuant to this chapter, including fire protection systems.

3401.4Permits.Permits shall be required as set forth in Section 105.6.

3401.5Material classification.Flammable and combustible liquids shall be classified in accordance with the definitions in Section 3402.1.

3401.6Supervision.Manufacture, storage, handling and use of flammable and combustible liquids, including the dispensing of such liquids, shall be supervised as set forth in Sections 3401.6.1 through 3401.6.3.

3401.6.1Manufacture.The manufacture of flammable and combustible liquids shall be under the personal supervision of a certificate of fitness holder.

3401.6.2Storage.The storage of flammable and combustible liquids, excluding combustible liquids with a flash point over 300(degrees)F (149(degrees)C), in quantities exceeding 275 gallons (1041 L) or in any building or structure classified as Group H occupancy, shall be under the general supervision of a certificate of fitness holder.

3401.6.3Handling and use.The handling and use of flammable and combustible liquids, including the dispensing of such liquids, excluding combustible liquids with a flash point over 300(degrees)F (149(degrees)C), shall be under the personal supervision of a certificate of fitness holder when the total quantities stored, handled and used in or upon a premises exceeds 275 gallons (1041L) or in any building or structure classified as Group H occupancy.

3401.7Prohibitions.It shall be unlawful to:

1. Manufacture, refine or distill petroleum or coal tar, or the liquid products thereof.
2. Operate a refinery.
3. Install an aboveground flammable liquid storage tank indoors.
4. Store or transport in the harbor or the city any flammable or combustible liquid, except in a barge or marine vessel constructed, protected and operated in accordance with the regulations of the United States Coast Guard.

3401.8Certificate of license.Persons who install, alter, test or repair any flammable or combustible liquid storage system shall hold a certificate of license or shall be employed by and perform such duties under the general supervision of a person holding such certificate.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 34: FLAMMABLE AND COMBUSTIBLE LIQUIDS
SECTION FC 3402: DEFINITIONS

NYC Administrative Code § 29-FC 3402

3402.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

ALCOHOL-BASED HAND RUB. An alcohol-containing preparation designed for application to the hands for anti micro-bacterial or other medicinal purpose and containing ethanol or isopropanol in an amount not exceeding 70 percent by volume.

BULK PLANT OR TERMINAL. Any premises upon which flammable or combustible liquids are received from marine vessel, pipeline, tank car or cargo tank and are stored or blended in bulk for the purpose of distributing such liquids by marine vessel, pipeline, tank car, cargo tank or container.

BULK TRANSFER. The loading or unloading of flammable or combustible liquids from or between marine vessels, pipelines, tank cars, cargo tanks or storage tanks.

COMBUSTIBLE LIQUID. For purposes of transportation, a combustible liquid, as defined in the regulations of the United States Department of Transportation, as set forth in 49 CFR Section 173.120. For all other purposes, a liquid, other than a compressed gas or cryogenic fluid, having a closed cup flash point at or above 100(degrees)F (38(degrees)C), classified as follows:

Class II. Liquids having a closed cup flash point at or above 100(degrees)F (38(degrees)C) and below 140(degrees)F (60(degrees)C).

Class IIIA. Liquids having a closed cup flash point at or above 140(degrees)F (60(degrees)C) and below 200(degrees)F (93(degrees)C).

Class IIIB. Liquids having closed cup flash points at or above 200(degrees)F (93(degrees)C).

FIRE POINT. The lowest temperature at which a liquid will ignite and achieve sustained burning when exposed to a test flame in accordance with ASTM D 92.

FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE SYSTEM. A flammable or combustible liquid storage tank and all devices, equipment and systems associated with such tank, including the tank, piping, valves, fill connection, vent lines, pumps and any other ancillary equipment, except liquid motor fuel storage and dispensing systems and flammable and combustible liquid storage systems at a bulk plant or terminal used for bulk transfer operations.

FLAMMABLE LIQUID. For purposes of transportation, a flammable liquid defined in the regulations of the United States Department of Transportation, as set forth in 49 CFR Section 173.120. For all other purposes, a liquid, other than a compressed gas or cryogenic fluid, having a closed cup flash point below 100(degrees)F (38(degrees)C), classified as follows:

Class IA. Liquids having a flash point below 73(degrees)F (23(degrees)C) and having a boiling point below 100(degrees)F (38(degrees)C).

Class IB. Liquids having a flash point below 73(degrees)F (23(degrees)C) and having a boiling point at or above 100(degrees)F (38(degrees)C).

Class IC. Liquids having a flash point at or above 73(degrees)F (23(degrees)C) and below 100(degrees)F (38(degrees)C).

FLASH POINT. The minimum temperature in degrees Fahrenheit at which a liquid will give off sufficient vapors to form an ignitable mixture with air near the surface or in the container, but will not sustain combustion. The flash point of a liquid shall be determined by appropriate test procedure and apparatus as specified in ASTM D 56, ASTM D 93 or ASTM D 3278.

LIQUID STORAGE ROOM. A room classified as a Group H-3 occupancy used for the storage of flammable or combustible liquids.

PROCESS TRANSFER. The transfer of flammable or combustible liquids between cargo tanks or tank cars and containers, tanks piping and other equipment that is to be used in process operations.

PROCESSING VESSEL. A tank or other container used in manufacturing or other process operation that involves the use of a flammable or combustible liquid supplied from other than a cargo tank, tank car or pipeline.

REFINERY. A plant in which flammable or combustible liquids are produced on a commercial scale from crude petroleum, gasoline or other hydrocarbon sources.

REMOTE SOLVENT RESERVOIR. A liquid solvent container enclosed against evaporative losses to the atmosphere during periods when the container is not being utilized, except for a solvent return opening not larger than 16 square inches (10 322 mm²), which allows pump-cycled used solvent to drain back into the reservoir from a separate solvent sink or work area.

SOLVENT DISTILLATION UNIT. An appliance that receives contaminated flammable or combustible liquids and which distills the contents to remove contaminants and recover the solvents.

TANK, PRIMARY. A listed atmospheric tank used to store liquid.

TANK, PROTECTED ABOVEGROUND. An atmospheric aboveground tank listed in accordance with UL 2085 or equivalent standard that is provided with integral secondary containment, protection from physical damage, and an insulation system intended to reduce the heat transferred to the primary tank when the tank is exposed to a high intensity

liquid pool fire.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 34: FLAMMABLE AND COMBUSTIBLE LIQUIDS
SECTION FC 3403: GENERAL REQUIREMENTS

NYC Administrative Code § 29-FC 3403

3403.1 Electrical.

Electrical wiring and equipment shall be installed and maintained in accordance with the Electrical Code.

3403.1.1 Classified locations for flammable liquids. Areas where flammable liquids are stored, handled or used, including the dispensing or mixing of such liquids, shall be in accordance with Table 3403.1.1 and the Electrical Code. A classified area shall not extend beyond any floor, roof or other solid partition having no openings. The extent of the classified area is allowed to be reduced, or eliminated, where sufficient technical justification is provided to the commissioner that a concentration in the area in excess of 25 percent of the lower flammable limit cannot be generated.

3403.1.2 Classified locations for combustible liquids. Areas where Class II or III liquids are heated above their flash points shall have electrical installations in accordance with Section 3403.1.1 and the Electrical Code.

Exception: Solvent distillation units in accordance with Section 3405.4.

3403.1.3 Other applications. The commissioner may determine the extent of the Class I electrical equipment and wiring location when a condition is not specifically covered by these requirements or the Electrical Code.

3403.1.4 Tank grounding. Tanks shall be properly grounded.

3403.2 Fire protection. Fire protection for the storage, handling, and use of flammable and combustible liquids, including the dispensing and mixing of such liquids, and on-site transportation, shall be provided in accordance with this chapter and Chapter 9.

3403.2.1 Portable fire extinguishers and hose lines. Portable fire extinguishers shall be provided in accordance with Section 906. Where required, hose lines shall be provided in accordance with Section 905.

3403.3 Site assessment. The commissioner may require a owner or operator of a tank system to conduct a site

assessment upon a determination that a potential fire or explosion hazard exists as a result of a spill, leak or discharge from such system. Such site assessments shall be conducted to ascertain potential fire hazards and shall be completed and submitted to the department within a time period established by the commissioner, not to exceed 60 days.

3403.4Spill control and secondary containment.Where the maximum allowable quantity per control area is exceeded, and when required by Section 2704.2, rooms, buildings or areas used for storage, handling or use of Class I, II and III-A liquids, including the dispensing or mixing of such liquids, shall be provided with spill control and secondary containment in accordance with Section 2704.2.

3403.5Labeling and signage.The commissioner may require warning signs for the purpose of identifying the hazards of manufacturing, storing, handling or using flammable liquids, including the dispensing or mixing of such liquids. Signage for identification and warning such as for the inherent hazard of flammable liquids or smoking shall be provided in accordance with this chapter and Sections 2703.5 and 2703.6.

3403.5.1Style.Warning signs shall be of a durable material. Signs warning of the hazard of flammable liquids shall have white lettering on a red background and shall read: DANGER-FLAMMABLE LIQUIDS. Letters shall not be less than 3 inches (76 mm) in height and 0.5 inch (12.7 mm) in stroke.

3403.5.2Location.Signs shall be posted in locations as required by the commissioner. Piping containing flammable liquids shall be identified in accordance with ANSI A13.1.

3403.5.3Warning labels.Individual containers, packages and cartons shall be identified, marked, labeled and placarded in accordance with federal regulations and applicable state laws.

3403.5.4Identification.Color coding or other approved identification means consistent with the New York State Department of Environmental Conservation regulations, as set forth in 6 NYCRR Section 613.3(b), shall be provided on each loading and unloading riser for flammable or combustible liquids to identify the contents of the tank served by the riser.

3403.6Piping systems.Piping systems for flammable and combustible liquids shall be in accordance with this section.

Exception: Piping that is integral to stationary or portable engines, including engines in aircraft, watercraft and motor vehicles, and piping associated with boilers and pressure vessels regulated by the construction codes, including the Mechanical Code.

3403.6.1Reserved.

3403.6.2Design and manufacture of system components.Piping system components shall be designed and manufactured in accordance with NFPA 30, Chapter 3, except as modified by this section.

3403.6.2.1Special materials.Low-melting-point materials, such as aluminum, copper or brass, that soften on fire exposure, such as nonmetallic materials, and nonductile material, such as cast iron, shall be acceptable for use underground only in accordance with ANSI B31.9. Aboveground piping system components shall be constructed of Schedule 40 steel or a higher Schedule steel.

3403.6.3Testing.Unless tested in accordance with the applicable section of ANSI B31.9, piping, before being covered, enclosed or placed in use, shall be hydrostatically tested to 150 percent of the maximum anticipated operating pressure of the system, or pneumatically tested to 110 percent of the maximum anticipated pressure of the system, but not less than 15 pounds per square gauge (psig) (103.4 kPa) at the highest point of the system. This test shall be maintained for a sufficient time period to complete visual inspection of joints and connections. For a minimum of 60 minutes, there shall be no leakage or permanent distortion. Pneumatic testing shall be conducted using an inert gas,

except that air may be used if the piping system does not contain flammable or combustible liquid vapors. Piping system tests shall be conducted at the owner's risk by his or her representative before a representative of the department. Care shall be exercised to ensure that these pressures are not applied to vented storage tanks. Such storage tanks shall be tested independently from the piping.

3403.6.3.1 Existing piping. Existing piping shall be tested in accordance with this section, upon a determination by the commissioner that such piping may be leaking. Piping that could contain flammable or combustible liquid vapors shall not be tested pneumatically, except that vapor-recovery piping may be tested pneumatically using an inert gas. Such tests shall be conducted at the owner's risk by his or her representative.

3403.6.4 Protection from vehicles. Posts or other approved means shall be provided in accordance with Section 312 to protect piping, valves, fittings or ancillary equipment subject to vehicular damage.

3403.6.5 Protection from corrosion and galvanic action. Where subject to external corrosion, piping, related fluid-handling components and supports for both underground and aboveground applications shall be fabricated from noncorrosive materials, coated or otherwise provided with corrosion protection. Dissimilar metallic parts that promote galvanic action shall not be joined.

3403.6.6 Valves. Piping systems shall contain a sufficient number of manual control valves and check valves to operate the system properly and to protect the facility under both normal and emergency conditions. Piping systems in connection with pumps shall contain a sufficient number of such valves to control properly the flow of liquids in normal operation and in the event of physical damage or fire exposure.

3403.6.6.1 Backflow protections. Connections to pipelines or piping by which tank cars, cargo tanks, or marine vessels or other equipment discharge liquids into storage tanks shall be provided with check valves or block valves for automatic protection against backflow where the piping arrangement is such that backflow from the system is possible. Where loading and unloading is done through a common pipe system, a check valve is not required except as required by the applicable provisions of the New York State Department of Environmental Conservation regulations, as set forth in 6 NYCRR Section 613.3(c)(4). However, a block valve shall be provided which is located so as to be readily accessible or remotely operable.

3403.6.6.2 Manual drainage. Manual drainage-control valves shall be located at approved locations remote from the tanks, diked area, drainage system and impounding basin to ensure their operation in a fire condition.

3403.6.7 Connections. Aboveground tanks with connections located below normal liquid level shall be provided with internal or external isolation valves located as close as practical to the shell of the tank. Except for liquids whose chemical characteristics are incompatible with steel, such valves, when external, and their connections to the tank shall be of steel.

3403.6.8 Piping supports. Piping systems shall be substantially supported and protected from physical damage and designed to accommodate settlement, vibration, expansion, contraction or exposure to fire. The supports shall be constructed of steel, concrete or other approved noncombustible material.

3403.6.9 Flexible joints. Flexible joints shall be listed and approved and shall be installed on underground liquid, vapor and vent piping at all of the following locations:

1. Where piping connects to underground tanks.
2. Where piping ends at pump islands and vent risers.
3. At points where differential movement in the piping can occur.

3403.6.9.1Fiberglass-reinforced plastic piping.Fiberglass-reinforced plastic piping is not required to be provided with flexible joints in locations where both of the following conditions are present:

1. Piping does not exceed 4 inches (102 mm) in diameter.
2. Piping has a straight run of not less than 4 feet (1219 mm) on one side of the connection when such connections result in a change of direction.

3403.6.9.1.1Flexible joints.In lieu of the minimum 4-foot (1219 mm) straight run length required in Section 3403.6.9.1(2), approved and listed flexible joints are allowed to be used under dispensers and suction pumps, at submerged pumps and tanks, and where vents extend aboveground.

3403.6.10Pipe joints.Joints shall be liquid tight and shall be welded, flanged or threaded except that listed flexible connectors are allowed in accordance with Section 3403.6.9. Threaded or flanged joints shall fit tightly by using approved methods and materials for the type of joint. Joints in piping systems used for Class I liquids shall be welded when located in concealed spaces within buildings or structures. Nonmetallic joints shall be subject to the approval of the commissioner and shall be installed in accordance with the manufacturer's instructions. Pipe joints that are dependent on the friction characteristics or resiliency of combustible materials for liquid tightness of piping shall not be used in buildings or structures. Piping shall be secured to prevent disengagement at the fitting.

3403.6.11Bends.The bending of pipe and tubing shall be performed in accordance with ANSI B31.9.

3403.6.12Contents.Piping system components shall be documented as being compatible with the liquid to which such components will be exposed. Such documentation shall be approved and submitted to the department upon request.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 34: FLAMMABLE AND COMBUSTIBLE LIQUIDS
SECTION FC 3404: STORAGE

NYC Administrative Code § 29-FC 3404

3404.1 General.

Flammable and combustible liquids in containers and tanks shall be stored in accordance with this section, Chapter 27 and the New York State Department of Environmental Conservation regulations, as set forth in 6 NYCRR Parts 596, 598, 599, 612, 613 and 614.

3404.1.1 Aboveground storage prohibited. Except as specifically authorized in Section 3406, it shall be unlawful to store flammable liquids in an aboveground storage tank.

3404.1.2 Tank capacity limitations. Except at a bulk plant or terminal or as otherwise specified in this chapter, the capacity of flammable and combustible liquid storage tanks shall not exceed the amounts set forth in Sections 3404.1.2.1 through 3404.1.2.4.

3404.1.2.1 Underground flammable liquid tanks. Individual underground flammable liquid storage tanks shall not exceed a capacity of 4,000 gallons (15 140 L). The aggregate capacity of underground flammable liquid storage tanks at a premises shall not exceed 20,000 gallons (75 700 L).

3404.1.2.2 Underground combustible liquid tanks. Individual underground combustible liquid storage tanks shall not exceed a capacity of 12,000 gallons (45 420 L). The aggregate capacity of underground combustible liquid storage tanks at a premises shall not exceed 40,000 gallons (151 400 L).

3404.1.2.3 Aboveground, outdoor combustible liquid tanks. The aggregate capacity of aboveground combustible liquid tanks installed outdoors at a premises shall not exceed 30,000 gallons (113 550 L).

3404.1.2.4 Aboveground, indoor combustible liquid tanks. The aggregate capacity of aboveground combustible liquid tanks installed indoors shall not exceed 20,000 gallons (75 700 L).

3404.2 Tank storage. The provisions of this section shall apply to:

1. The storage of flammable liquids in stationary aboveground tanks located outdoors and underground tanks.
2. The storage of combustible liquids in stationary aboveground tanks indoors and outdoors, and underground tanks.
3. Existing storage tank installations at bulk plants and terminals which have not been used for the storage of flammable or combustible liquids for a period in excess of 2 years from the date of completion of construction of the tank structure, if the tank is to be placed in service.

3404.2.1Change of tank contents.Tanks subject to change in contents shall be subject to the approval of the commissioner and in accordance with this chapter, including Section 3404.2.7. Prior to a change in contents, the commissioner may require testing of a tank for leaks and documentation of compatibility. Tanks that have previously contained Class I liquids shall not be loaded with Class II or Class III liquids until such tanks and all piping, pumps, hoses and meters connected thereto have been completely drained and flushed.

3404.2.2Use of cargo tanks, tank cars, barges and marine vessels as storage tanks.Cargo tanks, tank cars, barges and marine vessels shall not be used as storage tanks.

Exception: A barge or marine vessel moored or anchored to privately owned waterfront property storing fuel oil to be used on such waterfront property, when the barge or vessel is located within the bulkhead line and the riparian ownership to the bulkhead line is under the same ownership as the waterfront property, the fuel oil is used only by the owner of such barge or vessel and the fuel oil is used beyond a radius of 200 feet (60 960mm) from the waterfront. Fuel oil stored shall have the specific gravity of not more than 16 degrees Baume. Such barges and marine vessels shall be located wholly within the bulkhead line and in such a position as not to constitute an encumbrance to navigation, and shall be constructed, equipped and protected against fire in compliance with the requirements of the commissioner.

3404.2.3Labeling and signs.Labeling and signs for storage tanks and storage tank areas shall comply with the requirements of Sections 3404.2.3.1 and 3404.2.3.2.

3404.2.3.1Smoking and open flame.Signs shall be posted in storage areas prohibiting open flames and smoking. Signs shall comply with the requirements of Section 3403.5.

3404.2.3.2Label or placard.Tanks more than 100 gallons (379 L) in capacity, which are used for the storage of Class I, II or IIIA liquids, shall bear a label and placard identifying the material therein. Placards shall be in accordance with NFPA 704.

Exception: Tanks located underground.

3404.2.4Sources of ignition.Open flames are prohibited in storage areas in accordance with Section 2703.7.

3404.2.5Explosion control.Explosion control shall be provided in accordance with Section 911.

3404.2.6Separation from incompatible materials.Flammable and combustible liquids shall be stored separated from incompatible materials, in accordance with Section 2703.9.8.

3404.2.7Design and installation requirements for tanks.Tanks shall be designed, constructed and installed in accordance with NFPA 30. Each tank shall bear a permanent nameplate or marking indicating the standard used as the basis of design.

3404.2.7.1Materials used in tank construction.The materials used in tank construction shall be in accordance with NFPA 30.

3404.2.7.2Pressure limitations for tanks.Tanks shall be designed for the pressures to which they will be subjected in

accordance with NFPA 30.

3404.2.7.3 Tank vents for normal venting. Tank vents for normal venting shall be installed and maintained in accordance with Sections 3404.2.7.3.1 through 3404.2.7.3.6.

3404.2.7.3.1 Vent lines. Vent lines from tanks shall not be used for purposes other than venting unless approved.

3404.2.7.3.2 Vent-line flame arresters and venting devices. Vent-line flame arresters and venting devices shall be installed in accordance with their listings. Use of flame arresters in piping systems shall be in accordance with API 2028.

3404.2.7.3.3 Vent pipe outlets. Vent pipe outlets shall be located such that the vapors are released at a safe point outdoors and not less than 15 feet (4572 mm) above the adjacent ground level. Vapors shall be discharged upward or horizontally away from adjacent walls to assist in vapor dispersion. Vent outlets shall be located such that flammable or combustible vapors will not be trapped by eaves or other obstructions and shall be at least 10 feet (3048 mm) from building openings or lot lines.

3404.2.7.3.4 Installation of vent piping. Vent piping shall be designed, sized, constructed and installed in accordance with Section 3403.6. Vent pipes shall be installed such that they will drain toward the tank without sags or traps in which liquid can collect. Vent pipes shall be installed in such a manner so as not to be subject to physical damage or vibration.

3404.2.7.3.5 Manifolding. Tank vent piping shall not be manifolded unless required for special purposes such as vapor recovery, vapor conservation or air pollution control.

3404.2.7.3.5.1 Aboveground tanks. For aboveground tanks, manifolded vent pipes shall be adequately sized to prevent system pressure limits from being exceeded when manifolded tanks are subject to the same fire exposure.

3404.2.7.3.5.2 Underground tanks. For underground tanks, manifolded vent pipes shall be sized to prevent system pressure limits from being exceeded when manifolded tanks are filled simultaneously.

3404.2.7.3.5.3 Tanks storing Class I liquids. Vent piping for tanks storing Class I liquids shall not be manifolded with vent piping for tanks storing Class II and III liquids unless positive means are provided to prevent the vapors from Class I liquids from entering tanks storing Class II and III liquids, to prevent contamination and possible change in classification of less volatile liquid.

3404.2.7.3.6 Tank venting for tanks and pressure vessels storing Class IB and IC liquids. Tanks and pressure vessels storing Class IB or IC liquids shall be equipped with venting devices which shall remain closed except when venting under pressure or vacuum conditions, or with listed flame arresters. The vents shall be installed and maintained in accordance with Section 2.2.5.1 of NFPA 30 or API 2000.

3404.2.7.4 Emergency venting. Aboveground tanks shall be equipped with additional venting that will relieve excessive internal pressure caused by exposure to fires. Emergency vents shall not discharge indoors. The venting shall be installed and maintained in accordance with Section 2.2.5.2 of NFPA 30.

Exception: Tanks storing Class IIIB liquids that are larger than 12,000 gallons (45 420 L) in capacity, located outdoors and not within the diked area or the drainage path of Class I or II liquids, do not require emergency relief venting.

3404.2.7.5 Tank openings other than vents. Tank openings for other than vents shall comply with the requirements of Sections 3404.2.7.5.1 through 3404.2.7.5.8.

3404.2.7.5.1 Connections below liquid level. Connections for tank openings below the liquid level shall be liquid

tight.

3404.2.7.5.2 Filling, emptying and vapor recovery connections. Filling, emptying and vapor recovery connections to tanks shall be located outdoors at a location free from sources of ignition and not less than 10 feet (3048 mm) away from building openings or lot lines. Such openings shall be provided with a liquid-tight cap which shall be closed when not in use and properly identified.

3404.2.7.5.3 Piping, connections and fittings. Piping, connections, fittings and other appurtenances shall be installed in accordance with Section 3403.6.

3404.2.7.5.4 Manual gauging. Openings for manual gauging, if independent of the fill pipe, shall be provided with a liquid-tight cap or cover. Covers shall be kept closed when not gauging. Openings for manual gauging shall not be permitted for tanks installed indoors.

3404.2.7.5.5 Fill pipes and discharge lines. For top-loaded tanks, a metallic fill pipe shall be designed and installed to minimize the generation of static electricity by terminating the pipe within 6 inches (152 mm) of the bottom of the tank, and it shall be installed in a manner which avoids excessive vibration.

3404.2.7.5.5.1 Class I liquids. For Class I liquids other than crude oil, gasoline and asphalt, the fill pipe shall be designed and installed in a manner which will minimize the possibility of generating static electricity by terminating within 6 inches (152 mm) of the bottom of the tank.

3404.2.7.5.5.2 Underground tanks. For underground tanks, fill pipe and discharge lines shall enter only through the top. Fill lines shall be sloped toward the tank. Underground tanks for Class I liquids shall be equipped with a tight fill device for connecting the fill hose to the tank.

3404.2.7.5.6 Location of connections. Filling, withdrawal and vapor-recovery connections that are made and broken shall be located outdoors at a location away from sources of ignition and not less than 5 feet (1524 mm) away from building openings. Such connections shall be closed and liquid tight when not in use and shall be properly identified.

3404.2.7.5.7 Protection against vapor release. Tank openings provided for purposes of vapor recovery shall be protected against vapor release by means of a springloaded check valve or dry-break connections, or other approved device, unless the opening is a pipe connected to a vapor processing system. Openings designed for combined fill and vapor recovery shall also be protected against vapor release unless connection of the liquid delivery line to the fill pipe simultaneously connects the vapor recovery line. Connections shall be vapor tight.

3404.2.7.5.8 Overfill prevention. An approved means or method in accordance with Section 3404.2.9.6.6 shall be provided to prevent the overfill of all flammable and combustible liquid storage tanks.

3404.2.7.6 Repair or alteration of tanks and piping. The repair or alteration, including welding, cutting and hot tapping of storage tanks and piping that have been placed in service, shall be in accordance with NFPA 30. Hot tapping shall only be permitted with the approval of the commissioner.

3404.2.7.7 Design of supports. The design of the supporting structure for tanks shall be in accordance with the construction codes, including the Building Code and NFPA 30.

3404.2.7.8 Locations subject to flooding. When a tank is located in an area where it is subject to buoyancy because of a rise in the water table, flooding or accumulation of water from fire suppression operations, the tank shall be secured from movement in accordance with Sections 2.3.2.6 and 2.3.3.5 of NFPA 30.

3404.2.7.9 Corrosion protection. Where subject to external corrosion, tanks shall be fabricated from corrosion-resistant materials, coated or provided with corrosion protection in accordance with Section 2.2.6.1 of NFPA

30 and the New York State Department of Environmental Conservation regulations, as set forth in 6 NYCRR Part 614.

3404.2.7.10 Leak reporting. A consistent or accidental loss of liquid, or other indication of a leak from a tank system, shall be reported immediately to the department and other authorities having jurisdiction.

3404.2.7.10.1 Leaking tank disposition. Leaking tanks shall be promptly emptied, repaired and returned to service, sealed in place or removed in accordance with Section 3404.2.13 or 3404.2.14.

3404.2.7.11 Tank lining. Steel tanks are allowed to be lined only for the purpose of protecting the interior from corrosion or providing compatibility with a material to be stored. Only those liquids tested for compatibility with the lining material are allowed to be stored in lined tanks. Tank lining shall not be used for purposes of repairing a tank.

3404.2.8 Reserved.

3404.2.9 Aboveground tanks. Aboveground storage of combustible liquids in tanks shall comply with the requirements of Section 3404.2 and Sections 3404.2.9.1.2 through 3404.2.9.6.10. Except as specifically authorized in Section 3406, the storage of flammable liquid in aboveground storage tanks is prohibited.

3404.2.9.1 Reserved.

3404.2.9.1.1 Reserved.

3404.2.9.1.2 Foam fire protection system installation. Where foam fire protection is approved for a required fire extinguishing system pursuant to this chapter, it shall be designed and installed in accordance with NFPA 11 and NFPA 11A.

3404.2.9.1.2.1 Foam storage. Where foam fire protection is approved for a required fire extinguishing system pursuant to this chapter, the foam-producing materials shall be stored on the premises.

3404.2.9.1.3 Fire protection of supports. Supports or pilings for aboveground tanks storing Class I, II or IIIA liquids elevated more than 12 inches (305 mm) above grade shall have a fire-resistance rating of not less than 2 hours in accordance with the fire exposure criteria specified in ASTM E 1529.

Exception: Structural supports tested as part of a protected aboveground tank in accordance with UL 2085.

3404.2.9.1.4 Inerting of tanks with boilover liquids. Liquids with boilover characteristics shall not be stored in fixed roof tanks larger than 150 feet (45 720 mm) in diameter unless an approved gas enrichment or inerting system is provided on the tank.

3404.2.9.2 Supports, foundations and anchorage. Supports, foundations and anchorages for aboveground tanks shall be designed and constructed in accordance with NFPA 30 and the construction codes, including the Building Code.

3404.2.9.3 Stairs, platforms and walkways. Stairs, platforms and walkways shall be of noncombustible construction and shall be designed and constructed in accordance with NFPA 30 and the construction codes, including the Building Code.

3404.2.9.4 Aboveground tank overfill prevention. Aboveground tanks shall not be filled in excess of 95 percent of their capacity. An approved overfill prevention system shall be provided for each tank. During tank-filling operations, the system shall automatically shut off the flow of liquid to the tank when the quantity of liquid in the tank reaches 95 percent of tank capacity. For rigid hose liquid-delivery systems, an approved means shall be provided to empty the fill hose into the tank after the automatic shutoff device is activated.

3404.2.9.5 Outdoor aboveground tanks. Outdoor aboveground tanks shall comply with the requirements of Sections

3404.2.9.5.1 through 3404.2.9.5.3.

3404.2.9.5.1 Locations of aboveground tanks. Outdoor aboveground tanks shall be located in accordance with Sections 3404.2.9.5.1.1 through 3404.2.9.5.1.5, as applicable.

3404.2.9.5.1.1 Location of tanks with pressures 2.5 psig or less. Aboveground tanks operating at pressures not exceeding 2.5 psig (17.2 kPa) for storage of Class I, II or IIIA liquids, which are designed with a floating roof or a weak roof-to-shell seam, or equipped with emergency venting devices limiting pressure to 2.5 psig (17.2 kPa), shall be located in accordance with Table 2.3.2.1.1(a) of NFPA 30.

Exceptions:

1. Vertical tanks having a weak roof-to-shell seam and storing Class IIIA liquids are allowed to be located at one-half the distances specified in Table 2.3.2.1.1(a) of NFPA 30, provided the tanks are not within a diked area or drainage path for a tank storing Class I or II liquids.

2. Liquids with boilover characteristics and unstable liquids in accordance with Sections 3404.2.9.5.1.4 and 3404.2.9.5.1.5.

3. For protected aboveground tanks in accordance with Section 3404.2.9.6, the distances in Table 2.3.2.1.1(b) of NFPA 30 shall apply and shall be reduced by one-half, but not to less than 5 feet (1524 mm).

3404.2.9.5.1.2 Location of tanks with pressures exceeding 2.5 psig. Aboveground tanks for the storage of Class I, II or IIIA liquids operating at pressures exceeding 2.5 psig (17.2 kPa) or equipped with emergency venting allowing pressures to exceed 2.5 psig (17.2 kPa) shall be located in accordance with Table 2.3.2.1.2 of NFPA 30.

Exception: Liquids with boilover characteristics and unstable liquids in accordance with Sections 3404.2.9.5.1.4 and 3404.2.9.5.1.5.

3404.2.9.5.1.3 Location of tanks for boilover liquids. Aboveground tanks for storage of liquids with boilover characteristics shall be located in accordance with Table 2.3.2.1.3 of NFPA 30.

3404.2.9.5.1.4 Location of tanks for unstable liquids. Aboveground tanks for the storage of unstable liquids shall be located in accordance with Table 2.3.2.1.4 of NFPA 30.

3404.2.9.5.1.5 Location of tanks for Class IIIB liquids. Aboveground tanks for the storage of Class IIIB liquids, excluding unstable liquids, shall be located in accordance with Table 2.3.2.1.5 of NFPA 30, except when located within a diked area or drainage path for a tank or tanks storing Class I or II liquids. Where a Class IIIB liquid storage tank is within the diked area or drainage path for a Class I or II liquid, distances required by Section 3404.2.9.5.1.2 shall apply.

3404.2.9.5.2 Separation between adjacent stable or unstable liquid tanks. The separation between tanks containing stable liquids shall be in accordance with Table 2.3.2.2.1 of NFPA 30. Where tanks are in a diked area containing Class I or II liquids, or in the drainage path of Class I or II liquids, and are compacted in three or more rows or in an irregular pattern, the commissioner may require greater separation than specified in Table 2.3.2.2.1 of NFPA 30 or other means to make tanks in the interior of the pattern accessible for firefighting purposes. The separation between tanks containing unstable liquids shall not be less than one-half the sum of their diameters.

Exception: Tanks used for storing Class IIIB liquids are allowed to be spaced 3 feet (914 mm) apart unless within a diked area or drainage path for a tank storing Class I or II liquids.

3404.2.9.5.3 Separation between adjacent tanks containing flammable or combustible liquids and LPG. The minimum horizontal separation between an LPG container and a Class I, II or IIIA liquid storage tank shall be 20 feet (6096 mm) except in the case of Class I, II or IIIA liquid tanks operating at pressures exceeding 2.5 psig (17.2 kPa) or

equipped with emergency venting allowing pressures to exceed 2.5 psig (17.2 kPa), in which case the provisions of Section 3404.2.9.5.2 shall apply. An approved means shall be provided to prevent the accumulation of Class I, II or IIIA liquids under adjacent LPG containers such as by dikes, diversion curbs or grading. When flammable or combustible liquid storage tanks are within a diked area, the LPG containers shall be outside the diked area and at least 10 feet (3048 mm) away from the centerline of the wall of the diked area.

Exception: Horizontal separation is not required between LPG containers and underground flammable and combustible liquid tanks.

3404.2.9.6 Additional requirements for protected aboveground tanks. In addition to the requirements of this chapter for aboveground tanks, the installation of protected aboveground tanks shall be in accordance with Sections 3404.2.9.6.1 through 3404.2.9.6.10.

3404.2.9.6.1 Tank construction. The construction of a protected aboveground tank and its primary tank shall be in accordance with Section 3404.2.7.

3404.2.9.6.2 Normal and emergency venting. Normal and emergency venting for protected aboveground tanks shall be provided in accordance with Sections 3404.2.7.3 and 3404.2.7.4. The vent capacity reduction factor shall not be allowed.

3404.2.9.6.3 Flame arresters. Approved flame arresters or pressure vacuum breather valves shall be installed in normal vents.

3404.2.9.6.4 Secondary containment. Protected aboveground tanks shall be provided with secondary containment, drainage control or diking in accordance with Section 2704.2 and 6 NYCRR Part 613.3(c)(6). A means shall be provided to establish the integrity of the secondary containment in accordance with NFPA 30.

3404.2.9.6.5 Vehicle impact protection. Where protected aboveground tanks, piping, electrical conduit or dispensers are subject to vehicular impact, they shall be protected therefrom, either by having the impact protection incorporated into the system design in compliance with the impact test protocol of UL 2085, or by meeting the provisions of Section 312, or where necessary, a combination of both. Where posts or other approved barriers are provided, they shall be independent of each aboveground tank.

3404.2.9.6.6 Overfill prevention sign. A durable sign shall be conspicuously posted on or immediately adjacent to the fill point for the tank, setting forth the filling procedure and the tank calibration chart. The filling procedure shall require the person filling the tank to determine the gallonage (literage) required to fill it to 90 percent of capacity before commencing the fill operation.

3404.2.9.6.7 Fill pipe connections. The fill pipe shall be provided with a means for making a direct connection to the cargo tank's fuel delivery hose so that the delivery of fuel by means of a liquid-tight connection is not exposed to the open air during the filling operation. Where any portion of the fill pipe exterior to the tank extends below the level of the top of the tank, a check valve shall be installed in the fill pipe not more than 12 inches (305 mm) from the fill hose connection.

3404.2.9.6.8 Spill containers. A spill container having a capacity of not less than 15 gallons (56.8 L) shall be provided for each fill connection. For tanks with a top fill connection, spill containers shall be noncombustible and shall be fixed to the tank and equipped with a manual drain valve that drains into the primary tank. For tanks with a remote fill connection, a portable spill container shall be allowed.

3404.2.9.6.9 Tank openings. Tank openings in protected aboveground tanks shall be through the top only.

3404.2.9.6.10 Antisiphon devices. Approved antisiphon devices shall be installed in each external pipe connected to

the protected aboveground tank when the pipe extends below the level of the top of the tank.

3404.2.10 Drainage and diking. The area surrounding a tank or group of tanks shall be provided with drainage control or shall be diked to prevent accidental discharge of liquid from endangering adjacent tanks, adjoining property or reaching waterways. The area shall be in compliance with the requirements of the New York State Department of Environmental Conservation regulations, as set forth in 6 NYCRR Section 613.3(c)(6).

Exceptions:

1. For tanks having a capacity of less than 10,000 gallons (37 850 L), the commissioner may modify these requirements based on an approved technical report which demonstrates that such tank or group of tanks does not constitute a hazard to other tanks, waterways or adjoining property, after consideration of special features such as topographical conditions, nature of occupancy and proximity to buildings or structures on the same or adjacent property, capacity, and construction of proposed tanks and character of liquids to be stored, and nature and quantity of private and public fire protection provided.

2. Drainage control and diking is not required for listed secondary containment tanks.

3404.2.10.1 Volumetric capacity. The volumetric capacity of the diked area shall not be less than the greatest amount of liquid that can be released from the largest tank within the diked area. The capacity of the diked area enclosing more than one tank shall be calculated by deducting the volume of the tanks other than the largest tank below the height of the dike.

3404.2.10.2 Diked areas containing multiple tanks. Diked areas containing multiple tanks shall be subdivided in accordance with NFPA 30.

3404.2.10.3 Protection of piping from exposure fires. Piping shall not pass through adjacent diked areas or impounding basins, unless provided with a sealed sleeve or otherwise protected from exposure to fire.

3404.2.10.4 Combustible materials in diked areas. Diked areas shall be kept free from combustible materials, drums and barrels.

3404.2.10.5 Equipment, controls and piping in diked areas. Pumps, manifolds and fire protection equipment or controls shall not be located within diked areas or drainage basins or in a location where such equipment and controls would be endangered by fire in the diked area or drainage basin. Piping above ground shall be minimized and located as close as practical to the shell of the tank in diked areas or drainage basins.

Exceptions:

1. Pumps, manifolds and piping integral to the tanks or equipment being served which is protected by intermediate diking, berms, drainage or fire protection, such as water spray, monitors or resistive coating.

2. Fire protection equipment or controls which are appurtenances to the tanks or equipment being protected, such as foam chambers or foam piping and water or foam monitors and hydrants, or hand and wheeled extinguishers.

3404.2.10.6 Dike construction. All dike walls shall be of steel or reinforced concrete, designed to be liquid tight and to withstand a full hydraulic head, and constructed to provide access to and from the diked area. Where stairways or other means are required to provide such access, they shall be constructed of steel. No dike wall shall be higher than 60 percent of the tank height.

3404.2.11 Underground tanks. Underground storage of flammable and combustible liquids in tanks shall comply with the requirements of Section 3404.2 and Sections 3404.2.11.1 through 3404.2.11.5.2.

3404.2.11.1Contents. Underground tanks shall not store petroleum products containing mixtures of a nonpetroleum nature, such as ethanol or methanol blends, without evidence of compatibility.

3404.2.11.2Location. Flammable and combustible liquid storage tanks located underground, either outdoors or under buildings, shall be in compliance with the following requirements:

1. Tanks shall be installed so that the external forces exerted from building foundations and support loads are not transmitted to the tanks. The distance from any part of a tank to the nearest wall of any basement, pit, cellar or any property line shall not be less than 3 feet (914 mm). Tanks shall not be placed less than 20 feet (6096 mm) from a subway wall.

2. Tanks shall be installed so that the highest point of the tank is not less than 2 feet (609.6 mm) below the level of the lowest cellar floor of any building within a radius of 10 feet (3048 mm) from the tank. No tank shall be located under a sidewalk or beyond the property line.

3. A minimum distance of 1 foot (305 mm), shell to shell, shall be maintained between underground tanks.

4. Manufacturer's installation instructions.

3404.2.11.3Depth and cover. Excavation for underground storage tanks shall be made with due care to avoid undermining of foundations of existing structures. Underground tanks shall be set on firm foundations and surrounded with at least 6 inches (152 mm) of noncorrosive inert material, in accordance with the manufacturer's installation instructions.

3404.2.11.4Overfill protection and prevention systems. Fill pipes shall be equipped with a spill container of not less than 15-gallon (56.8 L) capacity and an approved overfill prevention system to automatically prevent overflow in accordance with NFPA 30 and Section 3404.2.9.4.

3404.2.11.5Leak prevention. Leak prevention for underground tanks shall comply with the requirements of Sections 3404.2.11.5.1 and 3404.2.11.5.2.

3404.2.11.5.1Inventory control. Daily inventory records shall be maintained for underground storage tank systems.

3404.2.11.5.2Leak detection. Underground storage tank systems shall be provided with an approved method of leak detection from any component of the system that is designed and installed in accordance with NFPA 30. Leak detection systems shall be tested at the time of installation at the owner's risk by his or her representative before a representative of the department.

3404.2.11.6Periodic tank and piping test. Any underground single-walled flammable or combustible liquid storage tank existing prior to the effective date of this code that is single-walled or is not provided with a leak detection system meeting the requirements of Section 3404.2.11.5.2 shall be precision tested at least once every 5 years.

Exception: Bulk plant and terminal tanks.

3404.2.11.7Emergency tank and piping system test. The commissioner may require a tank and piping system to be precision tested, pressure tested or tested by other approved method in accordance with this section to determine the condition of the tank or piping or when the commissioner has good cause to believe that a leak exists. Storage systems that may contain flammable or combustible liquid vapor shall not be tested pneumatically. Such tests shall be conducted at the owner's risk by his or her representative.

3404.2.12Testing. Tank testing required by Sections 3404.2.12.1 through 3404.2.12.3 shall be at the owner's risk by his or her representative before a representative of the department.

3404.2.12.1 Acceptance testing. Prior to being placed into service, tanks shall be tested in accordance with Section 2.4 of NFPA 30.

3404.2.12.2 Testing of underground tanks. Underground tanks shall be tested hydrostatically at 15 pounds per square inch (psig)(103.4 kPa), or 150 percent of the maximum anticipated static head pressure, whichever is greater, for the inner tank, and pneumatically or hydrostatically at 5 pounds per square inch (psig)(34.5 kPa) for the annular space (secondary containment tank). When a pneumatic test is allowed, an inert gas shall be used; however, air may be used if the tank does not contain any flammable or combustible liquid vapor. Test pressure shall be maintained for sufficient time to complete visual inspection, but not less than 1 hour. A tank shall be deemed to have passed the test if it shows no evidence of leakage or permanent deformation.

3404.2.12.3 Testing of aboveground tanks. Aboveground tanks shall be tested hydrostatically at 15 pounds per square inch (psig)(103.4 kPa) for the inner tank, and pneumatically or hydrostatically at 5 pounds per square inch (psig)(34.5 kPa) for the annular space (secondary containment tank). When a pneumatic test is allowed, an inert gas shall be used; however, air may be used if the tank does not contain any flammable or combustible liquid vapor. Test pressure shall be maintained for sufficient time to complete visual inspection, but not less than 1 hour. A tank shall be deemed to have passed the test if it shows no evidence of leakage or permanent deformation.

3404.2.13 Out-of-service tanks. Tanks taken out-of-service shall be removed in accordance with Section 3404.2.14, or safeguarded in accordance with Sections 3404.2.13.1 through 3404.2.13.2.3 and API 1604.

Exceptions:

1. Tanks within operating facilities at bulk plants and terminals.
2. Tanks connected to fuel oil burning equipment that is used seasonally or as one of the fuels in dual-fueled equipment.
3. Tanks that are used for seasonal storage or standby storage.

3404.2.13.1 Underground tanks. Underground tanks taken out-of-service shall comply with the requirements of Sections 3404.2.13.1.2 through 3404.2.13.1.4.

3404.2.13.1.1 Reserved.

3404.2.13.1.2 Out-of-service for 30 days. Underground tanks not used for a period of 30 days or more shall be removed from the premises in accordance with Section 3404.2.14 or safeguarded in compliance with the following requirements:

1. Flammable or combustible liquids shall be removed from the tank and connecting piping.
2. The tank and connecting piping shall be rendered free of flammable and combustible vapors using an inert gas.
3. Except for any active fire extinguishing system piping, the tank and connecting piping, including fill line, gauge opening, vapor return and pump connection, shall be capped or plugged and secured from tampering and the fill connection covered with concrete.
4. Vent lines shall remain open and be maintained in accordance with Sections 3404.2.7.3 and 3404.2.7.4.

3404.2.13.1.3 Out-of-service for 1 year. Underground tanks that have been out-of-service for a period of 1 year or more shall be removed from the premises in accordance with Section 3404.2.14 or sealed in place in compliance with the following requirements:

1. Flammable and combustible liquids shall be removed from the tank and connected piping.
2. The tank and connecting piping shall be rendered free of flammable and combustible vapors, using an inert gas.
3. All tanks and connecting piping, including fire extinguishing system lines, fill line, gauge opening, vapor return and pump connection, shall be disconnected, capped or plugged and secured from tampering, and the fill connection sealed with concrete to prevent its use.
4. The tank shall be filled completely with an approved, inert solid material.

3404.2.13.2 Aboveground tanks. Aboveground tanks taken out-of-service shall comply with the requirements of Sections 3404.2.13.2.2 and 3404.2.13.2.3.

3404.2.13.2.1 Reserved.

3404.2.13.2.2 Out-of-service for 30 days. Aboveground tanks not used for a period of 30 days or more shall be removed from the premises in accordance with Section 3404.2.14 or safeguarded in compliance with the following requirements:

1. Tank and connecting piping shall be safeguarded in accordance with Section 3404.2.13.1.2.
2. The tank shall be protected from flotation in accordance with good engineering practice.

3404.2.13.2.3 Out-of-service for 1 year. Aboveground tanks that have been out-of-service for a period of 1 year or more shall be removed from the premises in accordance with Section 3404.2.14 or sealed in place in compliance with the following requirements:

1. Flammable and combustible liquids shall be removed from the tank and connected piping.
2. The tank and connecting piping shall be rendered free of flammable and combustible vapors using an inert gas.
3. All piping, including fire extinguishing system lines, fill line, gauge opening, vapor return and pump connection, shall be disconnected, capped or plugged and secured from tampering, and the fill connection sealed with concrete to prevent its use.
4. The tank shall be adequately protected from flotation in accordance with good engineering practice.
5. The tank shall be stenciled with the date that it was sealed in place.

3404.2.14 Removal and disposal of tanks. Removal and disposal of tanks shall comply with the requirements of Sections 3404.2.14.1 and 3404.2.14.2.

3404.2.14.1 Removal. Removal of aboveground and underground tanks shall be in compliance with the following requirements:

1. Flammable and combustible liquids shall be removed from the tank and connecting piping.
2. The tank and connecting piping shall be rendered free of flammable and combustible vapors using an inert gas.
3. Piping at tank openings shall be disconnected.
4. Piping shall be removed from the premises.

Exception: Piping may be sealed in place where the commissioner determines that removal is not practical. Sealed

in place piping shall be capped and safeguarded by filling with concrete or other approved material, and the fill connection removed from the fill pipe.

5. Tank openings shall be capped or plugged, leaving a 0.125-inch to 0.25-inch diameter (3.2 mm to 6.4 mm) opening for pressure equalization.

6. Tanks shall be removed from the premises.

3404.2.14.2 Disposal. Tanks and piping shall be disposed of lawfully.

3404.3 Container storage. Storage of flammable and combustible liquids in closed containers that do not exceed 60 gallons (227 L) in individual capacity, and transfers incidental thereto, shall comply with the requirements of this section. It shall be unlawful to store flammable and combustible liquids in containers with an individual capacity of greater than 60 gallons (227 L).

3404.3.1 Design, construction and capacity of containers. The design, construction and capacity of containers for the storage of flammable and combustible liquids shall be in accordance with this section and Section 4.2 of NFPA 30. It shall be unlawful to store flammable and combustible liquids in portable tanks, intermediate bulk containers and fiber drums.

3404.3.1.1 Approved containers. Only approved containers shall be used.

3404.3.2 Liquid storage cabinets. Where other sections of this code require that liquid containers be stored in storage cabinets, such cabinets and storage shall be in accordance with Sections 3404.3.2.1 through 3404.3.2.3.

3404.3.2.1 Design of storage cabinets. Design of liquid storage cabinets shall be in accordance with this section.

3404.3.2.1.1 Materials. Cabinets shall be listed in accordance with UL 1275.

3404.3.2.1.2 Labeling. Cabinets shall be provided with a conspicuous label in red letters on contrasting background which reads: FLAMMABLE-KEEP FIRE AWAY.

3404.3.2.1.3 Doors. Doors shall be well fitted, self-closing and equipped with a three-point latch.

3404.3.2.1.4 Bottom. The bottom of the cabinet shall be liquid tight to a height of at least 2 inches (51 mm).

3404.3.2.2 Capacity. The combined total quantity of liquids in a cabinet shall not exceed 120 gallons (454 L).

3404.3.2.3 Number of storage cabinets. Not more than three storage cabinets shall be located in a single fire area, except that in a Group F occupancy, additional cabinets are allowed to be located in the same fire area if the additional cabinets (or groups of up to three cabinets) are separated from other cabinets or groups of cabinets by at least 100 feet (30 480 mm).

3404.3.3 Indoor storage. Storage of flammable and combustible liquids indoors in containers shall be in accordance with this section.

Exceptions:

1. Liquids in the fuel tanks of motor vehicles, aircraft, watercraft or portable or stationary engines.
2. The storage of distilled spirits and wines in wooden barrels or casks.

3404.3.3.1 Portable fire extinguishers. Approved portable fire extinguishers shall be provided in accordance with specific sections of this chapter and Section 906.

3404.3.3.2 Incompatible materials. Materials that will react with water or other liquids to produce a hazard shall not be stored in the same room with flammable and combustible liquids in accordance with Section 2703.9.8.

3404.3.3.3 Clear means of egress. Storage of any liquids, including stock for sale, shall not be stored near or be allowed to obstruct physically the route of egress.

3404.3.3.4 Empty containers storage. The storage of empty containers previously used for the storage of flammable or combustible liquids shall be stored as required for filled containers. Containers, when emptied, shall have the covers or plugs immediately replaced in openings, be removed to an outdoor location and, if not cleaned on the premises, the empty containers shall be removed from the premises as soon as practical, but at least daily.

3404.3.3.5 Shelf storage. Shelving shall be of approved noncombustible construction, adequately braced and anchored. Seismic requirements shall be in accordance with the construction codes, including the Building Code.

3404.3.3.5.1 Reserved.

3404.3.3.5.2 Displacement protection. Shelves shall be of sufficient depth and provided with a lip or guard to prevent individual containers from being displaced.

Exception: Shelves in storage cabinets or on laboratory furniture specifically designed for such use.

3404.3.3.5.3 Orderly storage. Shelf storage of flammable and combustible liquids shall be maintained in an orderly manner.

3404.3.3.6 Rack storage. Where storage on racks is allowed elsewhere in this code, a minimum 4-foot-wide (1219 mm) aisle shall be provided between adjacent rack sections and any adjacent storage of liquids. Main aisles shall be a minimum of 8 feet (2438 mm) wide.

3404.3.3.7 Pile or palletized storage. Solid pile and palletized storage in liquid warehouses shall be arranged so that piles are separated from each other by at least 4 feet (1219 mm). Aisles shall be provided and arranged so that no container is more than 20 feet (6096 mm) from an aisle. Main aisles shall be a minimum of 8 feet (2438 mm) wide.

3404.3.3.8 Limited combustible storage. Limited quantities of combustible commodities are allowed to be stored in liquid storage areas where the ordinary combustibles, other than those used for packaging the liquids, are separated from the liquids in storage by a minimum of 8 feet (2438 mm) horizontally, either by open aisles or by open racks, and where protection is provided in accordance with Chapter 9.

3404.3.3.9 Idle combustible pallets. Storage of empty or idle combustible pallets inside an unprotected liquid storage area shall be limited to a maximum pile size of 2,500 square feet (232 m²) and to a maximum storage height of 6 feet (1829 mm). Storage of empty or idle combustible pallets inside a protected liquid storage area shall comply with the requirements of NFPA 13. Pallet storage shall be separated from liquid storage by aisles that are at least 8 feet (2438 mm).

3404.3.3.10 Containers in piles. Containers in piles shall be stacked in such a manner as to provide stability and to prevent excessive stress on container walls. Adequate material handling equipment shall be available to handle containers safely at the upper tier level.

3404.3.4 Quantity limits for storage. Liquid storage quantity limitations shall comply with the requirements of Sections 3404.3.4.1 through 3404.3.4.5.

3404.3.4.1 Maximum allowable quantity per control area. For occupancies other than Group M wholesale and retail sales uses, indoor storage of flammable and combustible liquids shall not exceed the maximum allowable quantities per control area indicated in Table 2703.1.1(1) and shall not exceed the additional limitations set forth in this section. For

Group M occupancy wholesale and retail sales uses, indoor storage of flammable and combustible liquids shall not exceed the maximum allowable quantities per control area indicated in Table 3404.3.4.1, except that no gasoline or flammable liquid motor fuel may be stored in portable containers for wholesale or retail sale. Storage of hazardous production material flammable and combustible liquids in Group H-5 occupancies shall be in accordance with Chapter 18.

3404.3.4.2 Limitations on storage. The quantity of flammable or combustible liquid stored shall be limited by occupancy as follows:

1. Group A, B, E, F, I and S occupancies. Flammable and combustible liquids shall be stored only for lawful uses incidental to the occupancy, including maintenance and operation of equipment, and in quantities not to exceed that which is necessary for such use.

2. Group M occupancies. Flammable and combustible liquids shall be stored only for lawful uses incidental to the occupancy, including maintenance and operation of equipment, and in quantities not to exceed that which is necessary for such use. The maximum allowable quantities for storage in wholesale and retail sales areas shall be in accordance with Section 3404.3.4.1.

3. Group R occupancies. Flammable and combustible liquids shall be stored only for maintenance and operation of equipment, and in quantities not to exceed that which is necessary for such use. Quantities within a dwelling unit shall be stored only for household use and in quantities below permit amounts. It shall be unlawful to store gasoline or other flammable liquid motor fuel within a dwelling unit.

4. Gasoline and other flammable liquid motor fuel. Storage of gasoline and other flammable liquid motor fuel in portable containers in quantities requiring a permit is subject to the approval of the commissioner, regardless of the occupancy classification of the premises.

3404.3.4.3 Quantities exceeding limits for control areas. Quantities exceeding those allowed in control areas set forth in Section 3404.3.4.1 shall be in liquid storage rooms or liquid storage warehouses in accordance with Sections 3404.3.7 and 3404.3.8.

3404.3.4.4 Liquids for maintenance and operation of equipment. In all occupancies, quantities of flammable and combustible liquids requiring a permit pursuant to Section 105.6, used for maintenance purposes and the operation of equipment, shall be stored in liquid storage cabinets in accordance with Section 3404.3.2. Quantities not requiring a permit pursuant to Section 105.6 are allowed to be stored outside of a cabinet when in approved containers and locations.

3404.3.4.5 Citywide permits. No citywide permit authorizing the storage and use of flammable or combustible liquids shall be valid for:

1. The storage or use of gasoline in quantities exceeding 5 gallons (19 L).
2. The storage or use of flammable liquids in quantities exceeding 250 gallons (946 L).
3. The storage or use of combustible liquids in quantities exceeding 300 gallons (1136 L).
4. The storage or use of any paint, varnish, or other flammable or combustible liquid commonly used for painting, varnishing, lacquering, staining, waxing or other finishing operations in quantities exceeding 200 gallons (757 L), except as otherwise limited in Chapter 15 for floor finishing operations.

3404.3.5 Storage in control areas. Storage of flammable and combustible liquids in control areas shall be in accordance with Sections 3404.3.5.1 through 3404.3.5.4.

3404.3.5.1 Storage below grade. Class I liquids shall not be permitted in basements, cellars or other areas below grade. Class II and III liquids shall be allowed to be stored in basements, cellars or other areas below grade provided that such basement, cellar or other below grade area is protected throughout by a sprinkler system, and other fire protection is provided in accordance with Chapter 9 and the construction codes, including the Building Code.

Exception: Class IIIB liquids may be stored in basements, cellars and other areas below grade that are not protected throughout by a sprinkler system when stored in a room or other area that is segregated, vertically and horizontally, from surrounding spaces by a fire separation of not less than 2-hour fire-resistance rating and such room or other area is protected throughout by a sprinkler system.

3404.3.5.2 Storage pile heights. Containers having less than a 30-gallon (114 L) capacity which contain Class I or II liquids shall not be stacked more than 3 feet (914.4 mm) or two containers high, whichever is greater, unless stacked on fixed shelving or otherwise satisfactorily secured. Containers of Class I or II liquids having a capacity of 30 gallons (114 L) or more shall not be stored more than one container high. Containers shall be stored in an upright position.

3404.3.5.3 Storage distance from ceilings and roofs. Piles of containers shall not be stored closer than 3 feet (914 mm) to the nearest beam, chord, girder or other obstruction, and shall be 3 feet (914 mm) below sprinkler deflectors or discharge orifices of water spray or other overhead fire extinguishing system.

3404.3.5.4 Combustible materials. In areas that are inaccessible to the public, Class I, II and IIIA liquids shall not be stored in the same pile or rack section as ordinary combustible commodities unless such materials are packaged together as kits. Table 3404.3.4.1 Maximum Allowable Quantity of Flammable and Combustible Liquids in Wholesale and Retail Sales Uses Per Control Area

Type of Liquid	Maximum Allowable Quantity Per Control Area (gallons)
Sprinklered	b
per footnote densities and arrangements	Sprinklered per Tables 3404.3.6.3(4) through 3404.3.6.3(8) and Table 3404.3.7.5.1 and the construction codes, including the Building Code
Nonsprinklered	Class IA 60 60 30 Class IB, IC, II and IIIA 7,500c 15,000c 1,600 Class IIIB Unlimited Unlimited 13,200

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m², 1 gallon = 3.785 L, 1 gallon per minute per square foot = 40.75 L/min/m². a. Control areas shall be separated from each other by not less than a 1-hour fire barrier wall. b. To be considered as sprinklered, a building shall be protected throughout by a sprinkler system with a design providing minimum densities as follows: 2. 1. For uncartoned commodities on shelves 6 feet or less in height where the ceiling height does not exceed 18 feet, quantities are those permitted with a minimum sprinkler design density of Ordinary Hazard Group 2.2. 2. For cartoned, palletized or racked commodities where storage is 4 feet 6 inches or less in height and where the ceiling height does not exceed 18 feet, quantities are those permitted with a minimum sprinkler design density of 0.21 gallon per minute per square foot over the most remote 1,500-squarefoot area. c. Where wholesale and retail sales or storage areas exceed 50,000 square feet in area, the maximum allowable quantities are allowed to be increased by 2 percent for each 1,000 square feet of area in excess of 50,000 square feet, up to a maximum of 100 percent of the table amounts. A control area separation is not required. The cumulative amounts, including amounts attained by having an additional control area, shall not exceed 30,000 gallons.

3404.3.6 Wholesale and retail sales. Flammable and combustible liquids in Group M occupancy wholesale and retail sales shall be in accordance with Sections 3404.3.6.1 through 3404.3.6.5, or NFPA 30 Sections 4.4.3.3, 4.5.6.7, 4.8.2, Tables 4.8.2(a) through (f), and Figures 4.8.2(a) through (d).

3404.3.6.1 Container type. Containers for Class I liquids shall be metal.

Exception: In sprinklered buildings, an aggregate quantity of 120 gallons (454 L) of water-miscible Class IB and Class IC liquids is allowed in nonmetallic containers, each having a capacity of 16 ounces (0.473 L) or less.

3404.3.6.2 Container capacity. Containers for Class I liquids shall not exceed a capacity of 5 gallons (19 L).

Exception: Metal containers not exceeding 55 gallons (208 L) are permitted to store up to 240 gallons (908 L) of the maximum allowable quantity per control area of Class IB and IC liquids in a control area. The building shall be

protected throughout by a sprinkler system in accordance with Table 3404.3.4.1. The containers shall be provided with plastic caps without cap seals and shall be stored upright. Containers shall not be stacked or stored in racks and shall not be located in areas accessible to the public.

3404.3.6.3 Fire protection and storage arrangements. Fire protection and container storage arrangements shall be in accordance with Table 3404.3.6.3(1) or the following:

1. Storage on shelves shall not exceed 6 feet (1829 mm) in height, and shelving shall be metal.

2. Storage on pallets or in piles greater than 4 feet 6 inches (1372 mm) in height, or where the ceiling exceeds 18 feet (5486 mm) in height, shall be protected by a sprinkler system in accordance with Table 3404.3.6.3(4), and the storage heights and arrangements shall be limited to those specified in Table 3404.3.6.3(2).

3. Storage on racks greater than 4 feet 6 inches (1372 mm) in height, or where the ceiling exceeds 18 feet (5486 mm) in height shall be protected in accordance with Tables 3404.3.6.3(5), 3404.3.6.3(6), 3404.3.6.3(7) and 3404.3.6.3(8) and the construction codes, including the Building Code as appropriate, and the storage heights and arrangements shall be limited to those specified in Table 3404.3.6.3(3).

3404.3.6.3.1 Combustible commodities. Combustible commodities shall not be stored above flammable and combustible liquids. Table 3404.3.6.3(1) Maximum Storage Height in Control Area Type of Liquid Nonsprinklered Area (feet) Sprinklered Area (feet) Sprinklered Area With in-Rack Protection (feet) Flammable liquids: Class I Class IB Class IC 4 4 4 4 8 8 4 12 12 Combustible liquids: Class II Class III Class IIIB 6 8 8 8 12 12 12 16 20 For SI: 1 foot = 304.8 mm. a. In-rack protection shall be in accordance with Table 3404.3.6.3(5), 3404.3.6.3(6), 3404.3.6.3(7) or 3404.3.6.3(8) and the construction codes, including the Building Code. 3] Table 3404.3.6.3(2) Storage Arrangements for Palletized or Solid-Pile Storage in Liquid Storage Rooms and Warehouses Class Storage Level Maximum Storage Height Drums Containers (feet) Maximum Quantity Per Pile (gallons) Containers Maximum Quantity Per Room (gallons) Containers 1] Class Storage Level Maximum Storage Height Drums Containers (feet) Maximum Quantity Per Pile (gallons) Containers Maximum Quantity Per Room (gallons) Containers 2] I A Ground floor Upper floors Basements d 1 1 Not Allowed 5 5 Not Allowed 3,000 2,000 Not Allowed 12,000 8,000 Not Allowed I B Ground floor Upper floors Basements d 1 1 Not Allowed 6.5 6.5 Not Allowed 5,000 3,000 Not Allowed 15,000 12,000 Not Allowed I C Ground floor Upper floors Basements d 1 1 Not Allowed 6.5c 6.5c Not Allowed 5,000 3,000 Not Allowed 15,000 12,000 Not Allowed II Ground floor Upper floors Basements d 3 3 1 10 10 5 10,000 10,000 7,500 25,000 25,000 7,500 III Ground floor Upper floors Basements d 5 5 3 20 20 10 15,000 15,000 10,000 50,000 50,000 25,000 For SI: 1 foot = 304.8 mm, 1 gallon = 3.785 L. a. See Section 3404.3.8.1 for unlimited quantities in liquid storage warehouses. b. Storage heights are allowed to be increased for Class IB, IC, II and III liquids in metal containers having a capacity of 5 gallons or less where an automatic AFFF-water protection system has been approved by the commissioner and the commissioner of buildings. c. These height limitations are allowed to be increased to 10 feet for containers having a capacity of 5 gallons or less. d. Basements include cellars and other areas below grade. 4] Table 3404.3.6.3(3) Storage Arrangements for Rack Storage in Liquid Storage Rooms and Warehouses Class Type Rack Storage Level

Maximum Storage Height (feet) Containers Maximum Quantity per Room (gallons) Containers I A Double row or Single row Ground floor Upper floors Basements 25 15 Not Allowed 7,500 4,500 Not Allowed I B IC Double row or Single row Ground floor Upper floors Basements 25 15 Not Allowed 15,000 9,000 Not Allowed II Double row or Single row Ground floor Upper floors Basements 25 25 15 24,000 24,000 9,000 III Multirow Double row Single row Ground floor Upper floors Basements 40 20 20 48,000 48,000 24,000 For SI: 1 foot = 304.8 mm, 1 gallon = 3.785 L.

3404.3.6.4 Container warning labels. All containers of flammable liquids offered for sale shall bear a warning label in accordance with federal laws, rules and regulations, painted or printed on the container, indicating the liquid is flammable, and shall be kept away from heat and an open flame.

3404.3.6.5 Storage plan. The commissioner may require that aisle and storage plans be submitted to the department

in accordance with Chapter 27.

3404.3.7 Liquid storage rooms. Liquid storage rooms shall comply with the requirements of Sections 3404.3.7.1 through 3404.3.7.5.2.

3404.3.7.1 General. Quantities of liquids exceeding those set forth in Section 3404.3.4.1 for storage in control areas shall be stored in a liquid storage room complying with the requirements of this section and constructed and separated as required by the construction codes, including the Building Code.

3404.3.7.2 Quantities and arrangement of storage. The quantity limits and storage arrangements in liquid storage rooms shall be in accordance with Tables 3404.3.6.3(2) and 3404.3.6.3(3) and Sections 3404.3.7.2.1 through 3404.3.7.2.3.

3404.3.7.2.1 Mixed storage. Where two or more classes of liquids are stored in a pile or rack section:

1. The quantity in that pile or rack shall not exceed the smallest of the maximum quantities for the classes of liquids stored in accordance with Table 3404.3.6.3(2) or 3404.3.6.3(3); and

2. The height of storage in that pile or rack shall not exceed the smallest of the maximum heights for the classes of liquids stored in accordance with Table 3404.3.6.3(2) or 3404.3.6.3(3).

3404.3.7.2.2 Separation and aisles. Piles shall be separated from each other by at least 4-foot (1219 mm) aisles. Aisles shall be provided so that all containers are 20 feet (6096 mm) or less from an aisle. Where the storage of liquids is on racks, a minimum 4-foot-wide (1219 mm) aisle shall be provided between adjacent rows of racks and adjacent storage of liquids. Main aisles shall be a minimum of 8 feet (2438 mm) wide. Additional aisles shall be provided for access to doors, required windows and ventilation openings, standpipe connections, mechanical equipment and switches. Such aisles shall be at least 3 feet (914 mm) in width, unless greater widths are required for separation of piles or racks, in which case the greater width shall be provided.

3404.3.7.2.3 Stabilizing and supports. Containers and piles shall be separated by pallets or dunnage to provide stability and to prevent excessive stress to container walls. Adequate material-handling equipment shall be readily available and used to handle containers safely at upper tier levels.

3404.3.7.3 Spill control and secondary containment. Liquid storage rooms shall be provided with spill control and secondary containment in accordance with Section 2704.2.

3404.3.7.4 Ventilation. Liquid storage rooms shall be ventilated in accordance with Section 2704.3.

3404.3.7.5 Fire protection. Fire protection for liquid storage rooms shall comply with the requirements of Sections 3404.3.7.5.1 and 3404.3.7.5.2.

3404.3.7.5.1 Fire extinguishing systems. Liquid storage rooms shall be protected throughout by sprinkler systems installed in accordance with Chapter 9, Tables 3404.3.6.3(4) through 3404.3.6.3(8) and Table 3404.3.7.5.1 and the construction codes, including the Building Code. In-rack sprinklers shall additionally comply with the requirements of NFPA 13 and the construction codes, including the Building Code. Foam fire extinguishing systems and aqueous film-forming foam (AFFF) fire extinguishing systems shall not be used except when approved by the commissioner and the Commissioner of Buildings. Protection criteria developed from fire modeling or full-scale fire testing conducted at an approved testing laboratory are allowed in lieu of the protection as required in Tables 3404.3.6.3(2) through 3404.3.6.3(8) and Table 3404.3.7.5.1 and the construction codes, including the Building Code when approved by the commissioner and the Commissioner of Buildings.

3404.3.7.5.2 Portable fire extinguishers. A minimum of one portable fire extinguisher complying with the

requirements of Section 906 and having a rating of not less than 20-B shall be located not less than 10 feet (3048 mm) or more than 50 feet (15 240mm) from any Class I or II liquid storage area located outside of a liquid storage room. A minimum of one portable fire extinguisher having a rating of not less than 20-B shall be located outside of, but not more than 10 feet (3048 mm) from, the door opening into a liquid storage room.

3404.3.8Liquid warehouses.Buildings used for storage of flammable or combustible liquids in quantities exceeding those set forth in Section 3404.3.4 for control areas and Section 3404.3.7 for liquid storage rooms shall comply with the requirements of Sections 3404.3.8.1 through 3404.3.8.5 and shall be constructed and separated as required by the construction codes, including the Building Code.

3404.3.8.1Quantities and storage arrangement.Except as may be limited by the commissioner at a particular premises in the interest of public safety, any amount of flammable and combustible liquids may be stored in a liquid warehouse as defined in NFPA 30. The arrangement of such storage shall be in accordance with Table 3404.3.6.3(2) or 3404.3.6.3(3).

3404.3.8.1.1Mixed storage.Mixed storage shall be in accordance with Section 3404.3.7.2.1.

3404.3.8.1.2Separation and aisles.Separation and aisles shall be in accordance with Section 3404.3.7.2.2.

3404.3.8.2Spill control and secondary containment.Liquid warehouses shall be provided with spill control and secondary containment as set forth in Section 2704.2.

3404.3.8.3Ventilation.Liquid warehouses storing containers greater than 5 gallons (19 L) in capacity shall be ventilated in accordance with the Mechanical Code.

3404.3.8.4Fire extinguishing systems.Liquid warehouses shall be protected throughout by sprinkler systems installed in accordance with Chapter 9 and Tables 3404.3.6.3(4) through 3404.3.6.3(8) and Table 3404.3.7.5.1, or Section 4.8.2 and Tables 4.8.2(a) through (f) of NFPA 30. In-rack sprinklers shall additionally comply with the requirements of NFPA 13 and the construction codes, including the Building Code. Foam fire extinguishing systems and automatic aqueous film-forming foam fire extinguishing systems shall not be used except when approved. Protection criteria developed from fire modeling or full-scale fire testing conducted at an approved testing laboratory are allowed in lieu of the protection as required in Tables 3404.3.6.3(2) through 3404.3.6.3(8) and Table 3404.3.7.5.1 and the construction codes, including the Building Code, when approved by the commissioner and the Commissioner of Buildings.

3404.3.8.5Warehouse hose lines.In liquid warehouses, either 1.5-inch (38 mm) lined or 1-inch (25 mm) hard rubber hand hose lines shall be provided in sufficient number to reach all liquid storage areas and shall be in accordance with Section 905 and the construction codes, including the Building Code.

3404.4Outdoor storage of containers.Storage of flammable and combustible liquids in closed containers outdoors shall be in accordance with Section 3403 and Sections 3404.4.1 through 3404.4.8. Capacity limits for containers shall be in accordance with Section 3404.3.

3404.4.1Plans.Storage shall be in accordance with approved plans.

3404.4.2Location on property.Outdoor storage of liquids in containers shall be in accordance with Table 3404.4.2. Storage of liquids near buildings located on the same property shall be in accordance with this section.

3404.4.2.1Mixed liquid piles.Where two or more classes of liquids are stored in a single pile, the quantity in the pile shall not exceed the smallest of maximum quantities for the classes of material stored.

3404.4.2.2Fire apparatus access.Storage of containers shall be provided with fire apparatus access roads in

accordance with Chapter 5 and the construction codes, including the Building Code.

3404.4.2.3Reserved.

3404.4.2.4Storage adjacent to buildings.A maximum of 1,100 gallons (4163 L) of liquids stored in closed containers is allowed adjacent to a building located on the same premises and under the same owner, provided that:

1. The building does not exceed one story in height. Such building shall be of fire-resistance-rated construction with noncombustible exterior surfaces or noncombustible construction and shall be used principally for the storage of liquids; or

2. The exterior building wall adjacent to the storage area shall have a fire-resistance rating of not less than 2 hours, having no openings to abovegrade areas within 10 feet (3048 mm) horizontally of such storage and no openings to belowgrade areas within 50 feet (15 240 mm) horizontally of such storage.

3404.4.2.4.1Separation.The quantity of liquids stored adjacent to a building protected in accordance with Section 3404.4.2.4(2) may exceed 1,100 gallons (4163 L), provided that the maximum quantity per pile does not exceed 1,100 gallons (4163 L) and each pile is separated by a 10-foot-minimum (3048 mm) clear space along the common wall. Where the quantity stored exceeds 1,100 gallons (4163 L) adjacent to a building complying with Section 3404.4.2.4(1), or the provisions of Section 3404.4.2.4(1) cannot be met, a minimum distance in accordance with the column for distance to a lot line in Table 3404.4.2 shall be maintained between buildings and the nearest container.

3404.4.3Spill control and secondary containment.Storage areas shall be provided with spill control and secondary containment in accordance with Section 3403.4.

Exception: Containers stored on approved containment pallets in accordance with Section 2704.2.3 and containers stored in cabinets and lockers with integral spill containment.

3404.4.4Security.Storage areas shall be protected against tampering or trespassers by fencing or other approved control measures.

3404.4.5Protection from vehicles.Posts or other means shall be provided to protect outdoor storage tanks from vehicular damage. When posts are installed, the posts shall be installed in accordance with Section 312.

3404.4.6Clearance from combustibles.The storage location shall be kept free from vegetation and other combustible waste as set forth in Sections 3404.6.1 and 3404.6.2.

3404.4.6.1Vegetation.Brush, grass, vines, weeds and other vegetation capable of being ignited that is located within 15 feet (4572 mm) of a flammable or combustible liquid storage location shall be regularly mowed or pruned and the clippings removed from the premises.

3404.4.6.2Combustible waste.Rubbish and other combustible waste shall not be allowed to accumulate within 15 feet (4572 mm) of a flammable or combustible liquid storage location.

3404.4.7Weather protection.Weather protection for outdoor storage shall be in accordance with Section 2704.13.

3404.4.8Empty containers storage.The storage of empty containers previously used for the storage of flammable or combustible liquids shall be stored as required for filled containers. Containers when emptied shall have the covers or plugs immediately replaced in openings.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 34: FLAMMABLE AND COMBUSTIBLE LIQUIDS
SECTION FC 3405: HANDLING AND USE

NYC Administrative Code § 29-FC 3405

3405.1 Scope.

The handling and use of flammable and combustible liquids, including the dispensing and mixing of such liquids, shall be conducted in accordance with this chapter. Cargo tank and tank car loading and unloading and other special operations shall be conducted in accordance with Section 3406.

Exception: Containers of organic coatings having no fire point and which are opened for pigmentation are not required to comply with the requirements of this section.

3405.2 Liquid transfer. Liquid transfer equipment and methods for transfer of Class I, II and IIIA liquids shall be subject to the approval of the commissioner and be in accordance with Sections 3405.2.1 through 3405.2.6.

3405.2.1 Pumps. Positive-displacement pumps shall be provided with pressure relief discharging back to the tank, pump suction or other approved location, or shall be provided with interlocks to prevent over-pressure.

3405.2.2 Pressured systems. Gases shall not be used to pressurize containers or tanks to provide for transfer.

3405.2.3 Piping, hoses and valves. Piping, hoses and valves used in liquid transfer operations shall be subject to the approval of the commissioner or listed for the intended use.

3405.2.4 Class I, II and III liquids. Class I and II liquids or Class III liquids in containers exceeding 5.3 gallons (20 L) capacity that are at a temperature higher than 20(degrees)F (11(degrees)C) less than their flash points shall not be dispensed by gravity, but shall be transferred by one of the following methods:

1. From safety cans complying with the requirements of UL 30.
2. Through an approved closed piping system.

3. From containers or tanks by an approved pump taking suction through an opening in the top of the container or tank.

4. Approved engineered liquid transfer systems.

3405.2.5 Manual container filling operations for Class I liquids. Class I liquids and Class II or III liquids at a temperature higher than 20(degrees)F (11(degrees)C) less than their flash points shall not be transferred into containers unless the nozzle and containers are electrically interconnected. Acceptable methods of electrical interconnection include:

1. Metallic floor plates on which containers stand while filling, when such floor plates are electrically connected to the fill stem; or

2. Where the fill stem is bonded to the container during filling by means of a bond wire.

3405.2.6 Automatic container-filling operations for Class I liquids. Container-filling operations for Class I liquids involving conveyor belts or other automatic-feeding operations shall be designed to prevent static accumulations.

3405.3 Indoor use. Indoor use of flammable and combustible liquids, including the dispensing and mixing of such liquids, shall be in accordance with Sections 3405.2 and 3405.3.1 through 3405.3.5.3.

3405.3.1 Closure of mixing or blending vessels. Vessels used for mixing or blending of Class I liquids and Class II or III liquids at a temperature higher than 20(degrees)F (11(degrees)C) less than their flash points shall be provided with self-closing, tight-fitting, noncombustible lids that will control a fire within such vessel.

Exception: Where such devices are determined by the commissioner to be impractical, a fire extinguishing system shall be provided.

3405.3.2 Bonding of vessels. Where differences of potential could be created, vessels containing Class I liquids, or Class II or III liquids at a temperature higher than 20(degrees)F (11(degrees)C) less than their flash points shall be electrically connected by bond wires, ground cables, piping or similar means to a static grounding system to maintain equipment at the same electrical potential to prevent sparking.

3405.3.3 Heating, lighting and cooking devices, equipment and systems. Heating, lighting and cooking devices, equipment and systems which utilize Class I liquids shall not be operated indoors, and shall comply with the requirements of Chapters 3 and 14, as applicable.

3405.3.4 Location of processing vessels. Processing vessels shall be located with respect to distances to lot lines, in accordance with Tables 3405.3.4(1) and 3405.3.4(2). Processing vessels for flammable liquids shall be limited to not more than 550 gallons (2082 L). Processing vessels for Class II and IIIA combustible liquids shall be limited to not more than 1,100 gallons (4164 L). Processing vessels for Class IIIB combustible liquids shall be limited to not more than 20,000 gallons (75 700 L).

Exception: Where the exterior wall facing the adjoining lot line is a blank wall having a fire-resistance rating of not less than 4 hours, the commissioner may modify the distances. The distance shall not be less than that set forth in the construction codes, including the Building Code, and when Class IA or unstable liquids are involved, explosion control shall be provided in accordance with Section 911.

Processing Vessels With Emergency Relief Venting	Location	Stable Liquids	Unstable Liquids
Not in excess of 2.5 psig	Table 3405.3.4(2)	2.5 times Table 3405.3.4(2)	Over 2.5 psig
1.5 times Table 3405.3.4(2)	4 times Table 3405.3.4(2)	For SI: 1 pound per square inch gauge = 6.895 kPa.	Table 3405.3.4(2) Reference Table for Use With Table 3405.3.4(1)
Tank Capacity (gallons)	Minimum Distance from Lot Line (feet)	Minimum Distance from a Building, Public Street or Private Road (feet)	275 or less
5	5	Over 275 to 750	10
5	5	Over 750 to 12,000	15
5	5	Over 12,000 to	

20,000 20 5 For SI: 1 foot = 304.8 mm, 1 gallon = 3.785 L.

3405.3.5 Quantity limits for use. Liquid use quantity limitations shall comply with the requirements of Sections 3405.3.5.1 through 3405.3.5.3.

3405.3.5.1 Maximum allowable quantity per control area. Indoor use of flammable and combustible liquids, including the dispensing and mixing of such liquids, shall not exceed the maximum allowable quantity per control area indicated in Table 2703.1.1(1) and shall not exceed the additional limitations set forth in Section 3405.3.5.

Exception: Cleaning with Class I, II and IIIA liquids shall be in accordance with Section 3405.3.6.

Use of hazardous production material flammable and combustible liquids in Group H-5 occupancies shall be in accordance with Chapter 18.

3405.3.5.2 Limitations on handling and use. The quantity of flammable or combustible liquid handled and used, including the quantity dispensed and mixed, shall be limited by occupancy as follows:

1. Group A, B, E, F, I and S occupancies. Flammable and combustible liquids shall be handled and used only for lawful uses incidental to the occupancy, including maintenance and operation of equipment, and in quantities not to exceed those which are necessary for such use.

2. Group M occupancies. Flammable and combustible liquids shall be handled and used only for lawful uses incidental to the occupancy, including maintenance and operation of equipment, and in quantities not to exceed those which are necessary for such use.

3. Group R occupancies. Flammable and combustible liquids shall be handled and used only for maintenance and operation of equipment, and in quantities not to exceed those which are necessary for such use. Quantities used within a dwelling unit shall be for household uses only and in quantities below permit amounts. It shall be unlawful to handle or use gasoline or other flammable liquid motor fuel within a dwelling unit.

4. Gasoline and other flammable liquid motor fuel. Gasoline and other flammable liquid motor fuel in portable containers in quantities requiring a permit is subject to the approval of the commissioner, regardless of the occupancy classification of the premises.

3405.3.5.2.1 Citywide permits. A citywide permit authorizing the use of flammable or combustible liquids shall not be deemed to authorize the handling and use of such liquids in amounts exceeding the quantity limitations set forth in Section 3404.3.4.5.

3405.3.5.3 Quantities exceeding limits for control areas. Quantities exceeding the maximum allowable quantity per control area indicated in Sections 3405.3.5.1 and 3405.3.5.2 shall be in compliance with the following requirements:

1. For open systems, indoor use of flammable and combustible liquids, including the dispensing and mixing of such liquids, shall be within a room or building complying with the construction codes, including the Building Code and Sections 3405.3.7.1 through 3405.3.7.5.

2. For closed systems, indoor use of flammable and combustible liquids, including the dispensing and mixing of such liquids, shall be within a room or building complying with the requirements of the construction codes, including the Building Code and Sections 3405.3.7 through 3405.3.7.4 and 3405.3.7.6.

3405.3.6 Cleaning with flammable and combustible liquids. Cleaning with Class I, II and IIIA liquids shall be in accordance with this section.

Exceptions:

1. Dry cleaning shall be in accordance with Chapter 12.

2. Spray-nozzle cleaning shall be in accordance with Section 1503.3.5.

3405.3.6.1Cleaning operations.Class I-A liquids and gasoline shall not be used to clean facilities or for other maintenance purposes, except as authorized by this code or the rules in connection with commercial and industrial process-related operations. The cleaning with Class I-B, I-C or II liquids shall be conducted as follows:

1. In a room or building in accordance with Section 3405.3.7; or

2. In a machine listed and approved for the purpose in accordance with Section 3405.3.6.2.

3405.3.6.2Listed and approved machines.Parts cleaning and degreasing conducted in listed and approved machines in accordance with Section 3405.3.6.1 shall be in accordance with Sections 3405.3.6.2.1 through 3405.3.6.2.7.

3405.3.6.2.1Solvents.Solvents shall be classified and shall be compatible with the machines within which they are used.

3405.3.6.2.2Machine capacities.The quantity of solvent shall not exceed the listed design capacity of the machine for the solvent being used with the machine.

3405.3.6.2.3Solvent quantity limits.Solvent quantities shall be limited as follows:

1. Machines without remote solvent reservoirs shall be limited to quantities set forth in Section 3405.3.5.

2. Machines with remote solvent reservoirs using a Class I-B or I-C liquid shall be limited to quantities set forth in Section 3405.3.5.

3. Machines with remote solvent reservoirs using Class II liquids shall be limited to 35 gallons (132 L) per machine. The total quantities shall not exceed an aggregate of 240 gallons (908 L) per control area in buildings not protected throughout by a sprinkler system and an aggregate of 480 gallons (1817 L) per control area in buildings protected throughout by a sprinkler system.

4. Machines with remote solvent reservoirs using Class IIIA liquids shall be limited to 80 gallons (303 L) per machine.

3405.3.6.2.4Immersion soaking of parts.Work areas of machines with remote solvent reservoirs shall not be used for immersion soaking of parts.

3405.3.6.2.5Separation.Multiple machines shall be separated from each other by a distance of not less than 30 feet (9144 mm) or by a fire barrier with a minimum 1-hour fire-resistance rating.

3405.3.6.2.6Ventilation.Machines shall be located in areas adequately ventilated to prevent accumulation of vapors.

3405.3.6.2.7Installation.Machines shall be installed in accordance with their listings.

3405.3.7Rooms or buildings for quantities exceeding the maximum allowable quantity per control area.Where required by Section 3405.3.5.3 or 3405.3.6.1, rooms or buildings used for the handling and use of flammable and combustible liquids, including the dispensing and mixing of such liquids, shall be in accordance with Sections 3405.3.7.1 through 3405.3.7.6.3.

3405.3.7.1Construction, location and fire protection.Rooms or buildings classified in accordance with the Building Code as Group H-2 or H-3 occupancies based on use of flammable or combustible liquids, including the dispensing or

mixing of such liquids, shall be constructed in accordance with the construction codes, including the Building Code.

3405.3.7.2 Basements and other areas below grade. In rooms or buildings classified in accordance with the Building Code as Group H-2 or H-3, dispensing or mixing of flammable or combustible liquids shall not be conducted in basements, cellars or other areas below grade.

3405.3.7.3 Fire protection. Rooms or buildings classified in accordance with the construction codes, including the Building Code, as Group H-2 or H-3 occupancies shall be protected throughout by a sprinkler system.

3405.3.7.4 Doors. Interior doors to rooms or portions of such buildings shall be selfclosing fire doors in accordance with the construction codes, including the Building Code.

3405.3.7.5 Open systems. Handling and use of flammable and combustible liquids, including the dispensing and mixing of such liquids, in open systems shall be in accordance with Sections 3405.3.7.5.1 through 3405.3.7.5.3.

3405.3.7.5.1 Ventilation. Continuous mechanical ventilation shall be provided and shall comply with the requirements of the construction codes, including the Building Code and the Mechanical Code.

3405.3.7.5.2 Explosion control. Explosion control shall be provided in accordance with Section 911.

3405.3.7.5.3 Spill control and secondary containment. Spill control shall be provided in accordance with Section 3403.4 where Class I, II or IIIA liquids are dispensed into containers exceeding a 1.3-gallon (5 L) capacity or mixed or used in open containers or systems exceeding a 5.3-gallon (20 L) capacity. Spill control and secondary containment shall be provided in accordance with Section 3403.4 when the capacity of an individual container exceeds 55 gallons (208 L) or the aggregate capacity of multiple containers or tanks exceeds 100 gallons (378.5 L).

3405.3.7.6 Closed systems. Handling and use of flammable or combustible liquids in closed containers, including the mixing of such liquids, shall be in accordance with Sections 3405.3.7.6.1 through 3405.3.7.6.3.

3405.3.7.6.1 Ventilation. Closed systems designed to be opened as part of normal operations shall be provided with ventilation in accordance with Section 3405.3.7.5.1.

3405.3.7.6.2 Explosion control. Explosion control shall be provided when an explosive environment can occur as a result of the use, including any mixing process. Explosion control shall be designed in accordance with Section 911.

Exception: When process vessels are designed to contain fully the worst-case explosion anticipated within the vessel under process conditions considering the most likely failure.

3405.3.7.6.3 Spill control and secondary containment. Spill control shall be provided in accordance with Section 3403.4 when flammable or combustible liquids are dispensed into containers exceeding a 1.3-gallon (5 L) capacity or mixed or used in open containers or systems exceeding a 5.3-gallon (20 L) capacity. Spill control and secondary containment shall be provided in accordance with Section 3403.4 when the capacity of an individual container or tank exceeds 55 gallons (208 L) or the aggregate capacity of multiple containers or tanks exceeds 1,000 gallons (3785 L).

3405.3.8 Outdoor handling and use. Outdoor handling and use of flammable and combustible liquids, including the dispensing of such liquids, shall be in accordance with Sections 3405.3.8.1 through 3405.3.8.3.

Exception: Dispensing of liquids into motor vehicle fuel tanks at liquid motor fuel dispensing facilities shall be in accordance with Chapter 22.

3405.3.8.1 Spill control and drainage control. Outdoor handling and use of flammable and combustible liquids, including the dispensing areas for such liquids, shall be provided with spill control as set forth in Section 3403.4.

3405.3.8.2 Location on property. Dispensing activities which exceed the quantities set forth in Table 3405.3.8.2 shall not be conducted within 15 feet (4572 mm) of buildings or combustible materials or within 25 feet (7620 mm) of building openings, lot lines, public streets or private roads. Dispensing activities that exceed the quantities set forth in Table 3405.3.8.2 shall not be conducted within 15 feet (4572 mm) of storage of Class I, II or III liquids unless such liquids are stored in tanks which are listed and labeled as 2-hour protected tank assemblies in accordance with UL 2085. The commissioner may impose by rule, or as a condition of a permit, additional restrictions on dispensing activities, including dispensing locations, dispenser requirements, container requirements and fire protection requirements, upon a determination that such additional restrictions are required in the interest of public safety.

Exceptions:

1. The requirements shall not apply to areas where only the following liquids are dispensed: Class III liquids; liquids that are heavier than water; water-miscible liquids; and liquids with viscosities greater than 10,000 centipoise (cp).

2. Flammable and combustible liquid dispensing in chemical plants, process facilities, oil blending and packaging facilities, bulk plants and terminals. Table 3405.3.8.2 Maximum Allowable Quantities for Dispensing of Flammable and Combustible Liquids in Outdoor Control Areas, a, b Class of Liquid Quantity (gallons) Flammable

Class IA10

Class IB15

Class IC20

Combination Class IA, IB and IC30c Combustible

Class II30

Class IIIA80

Class IIIB3,300 For SI: 1 gallon = 3.785 L. a. For definition of "Outdoor Control Area," see Section 2702.1.b. Reserved. c. Containing not more than the maximum allowable quantity per control area of each individual class.

3405.3.8.3 Location of processing vessels. Processing vessels shall be located with respect to distances to lot lines in accordance with Table 3405.3.4(1).

3405.4 Solvent distillation units. Solvent distillation units shall comply with the requirements of Sections 3405.4.1 through 3405.4.9.

3405.4.1 Unit with a capacity of 60 gallons or less. Solvent distillation units used to recycle Class I, II or IIIA liquids having a distillation chamber capacity of 60 gallons (227 L) or less shall be listed, labeled and installed in accordance with Section 3405.4 and UL 2208.

Exceptions:

1. Solvent distillation units installed in dry cleaning facilities in accordance with Chapter 12.

2. Solvent distillation units used in continuous through-put industrial processes where the source of heat is remotely supplied using steam, hot water, oil or other heat transfer fluids, the temperature of which is below the auto-ignition point of the solvent.

3. Solvent distillation units listed for and used in laboratories.

4. Approved research, testing and experimental processes.

3405.4.2 Units with a capacity exceeding 60 gallons. Solvent distillation units used to recycle Class I, II or IIIA liquids, having a distillation chamber capacity exceeding 60 gallons (227 L) shall be used in locations that comply with the use and mixing requirements of Section 3405 and other applicable provisions in this chapter.

3405.4.3 Prohibited processing. It shall be unlawful to process Class I, II and IIIA liquids also classified as unstable (reactive) in solvent distillation units.

3405.4.4 Labeling. Solvent distillation units shall have affixed by the manufacturer a permanent label indicating the capacity of the distillation chamber, the distance the unit shall be placed away from sources of ignition, and the products for which the unit has been listed for use.

3405.4.5 Manufacturer's instruction manual. An instruction manual shall be provided. The manual shall be readily available to the user and for inspection by any department representative. The manual shall include installation, use and servicing instructions. It shall identify the liquids for which the unit has been listed for distillation purposes along with each liquid's flash point and auto-ignition temperature. For units with adjustable controls, the manual shall include directions for setting the heater temperature for each liquid to be distilled.

3405.4.6 Location. Solvent distillation units shall be used in locations in accordance with the listing. Solvent distillation units shall not be used in basements, cellars or other areas below grade.

3405.4.7 Storage of liquids. Distilled liquids and liquids awaiting distillation shall be stored in accordance with Section 3404.

3405.4.8 Storage of residues. Hazardous residue from the distillation process shall be stored in accordance with Section 3404 and Chapter 27.

3405.4.9 Portable fire extinguishers. Portable fire extinguishers shall be provided in accordance with Section 906. At least one portable fire extinguisher having a rating of not less than 40-B shall be located not less than 10 feet (3048 mm) or more than 30 feet (9144 mm) from any solvent distillation unit.

3405.5 Alcohol-based hand rubs classified as Class I or Class II liquids. The storage, handling and use of dispensers containing alcohol-based hand rubs classified as Class I or Class II liquids shall be in compliance with the following requirements:

1. Dispensers shall be of the non-aerosol, disposable and non-refillable type.
2. The maximum capacity of each dispenser shall be 34 ounces (1.0 L).
3. The minimum separation between dispensers shall be 48 inches (1219 mm).
4. Dispensers shall not be installed directly adjacent to, above or below any electrical receptacle, switch, appliance, device or other ignition source. The wall space between the dispenser and the floor shall remain clear and unobstructed.
5. Dispensers shall be wall mounted with the bottom of each dispenser a minimum of 42 inches (1067 mm) and a maximum of 48 inches (1219 mm) above the finished floor.
6. Dispensers shall not release their contents except when the dispenser is manually activated.
7. The storage of dispensers shall be in compliance with the applicable requirements of Section 3404.
8. In occupancies with carpeted floors, dispensers may only be installed in smoke compartments or fire areas

protected throughout by a sprinkler system.

3405.5.1 Corridor installations. Dispensers installed in corridors shall additionally comply with the following requirements:

1. The maximum quantity allowed in a corridor within a control area shall be 10 gallons (38 L).
2. The minimum corridor width shall be 72 inches (1829 mm).
3. Projections into a corridor shall be in accordance with the construction codes, including the Building Code.
4. The corridor shall be protected throughout by a sprinkler system or smoke detection system.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 34: FLAMMABLE AND COMBUSTIBLE LIQUIDS
SECTION FC 3406: SPECIAL OPERATIONS

NYC Administrative Code § 29-FC 3406

3406.1 Scope.

Flammable and combustible liquids shall be stored, handled and used in connection with special operations, including the following operations, in compliance with the requirements of this section:

1. Storage and dispensing of flammable and combustible liquids at construction sites.
2. Bulk plants or terminals
3. Bulk transfer and process transfer operations utilizing cargo tanks and tank cars.
4. Cargo tanks and cargo tank operation.
5. Vapor recovery and vapor-processing systems.

3406.1.1 General. Special operations involving the storage, handling and use of flammable and combustible liquids shall be conducted in accordance with Sections 3401, 3403, 3404 and 3405, except as otherwise provided in this section.

3406.2 Storage and dispensing of flammable and combustible liquids at construction sites. Temporary storage and dispensing of flammable and combustible liquids at construction sites shall be in accordance with Sections 3406.2.1 through 3406.2.8.

Exception: Storage and use of fuel oil connected with nonportable oil-burning equipment regulated by the Mechanical Code.

3406.2.1 Combustibles and open flames near tanks. Storage areas shall be kept free from weeds and other combustible waste. It shall be unlawful to smoke, or light or maintain an open flame in a flammable or combustible

liquid storage area.

3406.2.2 Marking of tanks and containers. Tanks and containers for aboveground storage of liquids shall be conspicuously marked with the name of the product which they contain and the words: FLAMMABLE-KEEP FIRE AND FLAME AWAY. Tanks shall bear the additional marking: KEEP 50 FEET FROM BUILDINGS.

3406.2.3 Containers for storage and use. Flammable and combustible liquid shall only be stored in metal containers of a type meeting the requirements of the regulations of the United States Department of Transportation, as set forth in 49 CFR Part 178, or in containers of an approved design.

3406.2.3.1 Liquid handling devices. Discharge devices shall be of a type that do not develop an internal pressure on the container. Pumping devices or approved self-closing faucets used for dispensing liquids shall not leak and shall be well-maintained. Individual containers shall not be interconnected and shall be kept closed when not in use.

3406.2.3.2 Outdoor storage. Containers stored outdoors shall be in accordance with Section 3404 and the construction codes, including the Building Code.

3406.2.4 Temporary tanks. The capacity of temporary aboveground tanks containing flammable or combustible liquids shall not exceed 660 gallons (2498 L). Tanks shall be of the single-compartment design, shall be constructed of steel, and shall meet the requirements of the New York State Department of Environmental Conservation regulations, as set forth in 6 NYCRR Parts 613 and 614.

3406.2.4.1 Fill-opening security. Fill openings shall be equipped with a locking closure device. Fill openings shall be separate from vent openings.

3406.2.4.2 Vents. Tanks shall be provided with a method of normal and emergency venting. Normal vents shall also be in accordance with Section 3404.2.7.3. Emergency vents shall be in accordance with Section 3404.2.7.4. Emergency vents shall be arranged to discharge in a manner which prevents localized overheating or flame impingement on any part of the tank in the event that vapors from such vents are ignited.

3406.2.4.3 Location. Tanks containing flammable or combustible liquids shall be kept outdoors and at least 50 feet (15 240 mm) from buildings, combustible material and combustible waste. Additional distance shall be provided when necessary to ensure that vehicles, equipment and containers being filled directly from such tanks will not be less than 50 feet (15 240 mm) from structures or combustible storage.

3406.2.5 Type of tank. Tanks shall be provided with top openings only.

Exception: Aerial crane refueling operations when conducted in accordance with Section 3406.2.5.2.

3406.2.5.1 Tanks with top openings only. Tanks with top openings shall be mounted as follows:

1. On well-constructed metal legs connected to shoes or runners designed so that the tank is stabilized and the entire tank and its supports can be moved as a unit; or

2. For stationary tanks, on a stable base of timbers or blocks approximately 6 inches (152 mm) in height which prevents the tank from contacting the ground.

3406.2.5.1.1 Pumps and fittings. Tanks with top openings only shall be equipped with a tightly and permanently attached, approved pumping device having an approved hose of sufficient length for filling construction equipment or containers to be served from the tank. Either the pump or the hose shall be equipped with a padlock to its hanger to prevent tampering. An antisiphoning device shall be provided in the pump discharge unless a self-closing nozzle is used. Siphons or internal pressure discharge devices shall not be used.

3406.2.5.2 Tanks for gravity discharge. Tanks with a connection in the bottom or the end for gravity-dispensing liquids for aerial crane refueling operations shall be mounted and equipped as follows:

1. Support lugs used to elevate the tank for gravity discharge shall be designed to carry all required loads and provide stability.
2. Bottom or end openings for gravity discharge shall be equipped with a valve located adjacent to the tank shell which will close automatically in the event of fire through the operation of a heat-activated releasing device. Where this valve cannot be operated manually, it shall be supplemented by a second, manually operated valve.
3. The gravity discharge outlet shall be provided with an approved hose equipped with a self-closing valve at the discharge end of a type that can be padlocked to its hanger.

3406.2.6 Spill control drainage control and diking. Indoor storage and dispensing areas shall be provided with spill control and drainage control as set forth in Section 3403.4. Outdoor storage areas shall be provided with drainage control or diking as set forth in Section 3404.2.10.

3406.2.7 Portable fire extinguishers. Portable fire extinguishers with a minimum rating of 20-B:C and complying with the requirements of Section 906 shall be provided where required by this code.

3406.2.8 Dispensing from cargo tanks. Where approved, liquids used as fuels are allowed to be transferred from cargo tanks into the fuel tanks of construction equipment at a construction site, subject to the following requirements:

1. The cargo tank is used solely for the purpose of supplying fuel to construction equipment at a construction site.
2. The dispensing hose does not exceed 100 feet (30 480 mm) in length.
3. The dispensing nozzle is an approved type.
4. The dispensing hose is properly placed on the approved reel or in a compartment provided before the cargo tank is moved.
5. Signs prohibiting smoking and open flames within 25 feet (7620 mm) of the cargo tank and construction equipment being refueled are prominently posted on the cargo tank.
6. Electrical devices and wiring in areas where fuel dispensing is conducted are in accordance with the Electrical Code.
7. Cargo tank-dispensing equipment is operated only by a person holding a certificate of fitness.
8. Provision has been made to control and mitigate the accidental or unauthorized release of flammable and combustible liquid.
9. The cargo tank has a capacity of not more than 1,920 gallons (7267 L), and contains no Class IA liquid and not more than 640 gallons (2422 L) of any other Class I liquid.
10. Dispensing is conducted at least 50 feet (15 240 mm) from buildings, structures, combustible material or combustible waste.

3406.3 Reserved.

3406.4 Bulk plants and terminals. Any premises in or upon which flammable and combustible liquids are received by marine vessels, pipelines, tank cars or cargo tanks and which are stored or blended in bulk for the purpose of

distributing such liquids by marine vessels, pipelines, tanks cars, cargo tanks or containers shall be designed, installed, operated and maintained in accordance with Sections 3406.4.1 through 3406.4.10.4.

3406.4.1 Building construction. Buildings and structures shall be constructed in accordance with the construction codes, including the Building Code.

3406.4.1.1 Design and installation documents. A complete set of design and installation documents, including a site plan of the bulk plant or terminal shall be filed with the department.

3406.4.2 Means of egress. Rooms in which flammable and combustible liquids are stored, handled or used shall be arranged such that occupants engaging in such handling and use have readily available access to a means of egress in the event of fire.

3406.4.3 Heating. Rooms in which Class I liquids are stored, handled or used shall be heated only by means not constituting a source of ignition, such as steam or hot water.

3406.4.4 Ventilation. Ventilation shall be provided for rooms, enclosures and other areas in buildings or structures in which Class I liquids are handled or used, including any pumping or transfer. Ventilation systems shall be designed in a manner that takes into consideration the relatively high specific gravity of the vapors. When natural ventilation is approved, adequate openings in outside walls at floor level, unobstructed except by louvers or coarse screens, shall be provided. When natural ventilation is not approved, mechanical ventilation shall be provided in accordance with the construction codes, including the Mechanical Code.

3406.4.4.1 Basements and other areas below grade. Class I liquids shall not be stored, handled or used within a building or structure having a basement, cellar or other area below grade into which flammable vapors can travel, unless such area is provided with ventilation designed to prevent the accumulation of flammable vapors therein.

3406.4.4.2 Dispensing of Class I liquids. Containers of Class I liquids shall not be drawn from or filled indoors unless a provision is made to prevent the accumulation of flammable vapors in hazardous concentrations. Where mechanical ventilation is required, it shall be kept in operation while flammable vapors could be present.

3406.4.5 Storage. Except as otherwise provided in Section 3406.4, storage of flammable and combustible liquids in bulk plants and terminals shall be in compliance with the applicable requirements of Section 3404.

3406.4.5.1 Distance to lot line. The distance between any part of an aboveground flammable or combustible liquid storage tank and the nearest lot line shall be as provided in Table 3406.4.5.1, except where Sections 3406.4.5.1.1 through 3406.4.5.1.4 require a greater distance.

Tank Capacity	Minimum Distance (Feet)
≤ 30,000 gallons	20
Over 30,000 to 50,000 gallons	30
Over 50,000 to 100,000 gallons	50
Over 100,000 to 500,000 gallons	80
Over 500,000 to 1,000,000 gallons	100
Over 1,000,000 to 2,000,000 gallons	135
Over 2,000,000 to 3,000,000 gallons	165
Over 3,000,000 to 6,000,000 gallons	175

3406.4.5.1.1 Vertical cylindrical tanks over 50,000 gallons (189 250 L) storing a flammable liquid. For vertical cylindrical tanks over 50,000 gallons (189 250 L) storing a flammable liquid, the distance shall not be less than the greater dimension of height or diameter of the tank, up to a maximum distance of 175 feet (53 340 mm).

3406.4.5.1.2 Rectangular tanks over 50,000 gallons (189 250 L) storing a flammable liquid. For rectangular tanks over 50,000 gallons (189 250 L) storing a flammable liquid, the distance shall not be less than the total of the length and the width of the tank divided by two, up to a maximum distance of 175 feet (53 340 mm).

3406.4.5.1.3 Vertical cylindrical tanks over 50,000 gallons (189 250 L) storing a combustible liquid. For vertical cylindrical tanks over 50,000 gallons (189 250 L) storing a combustible liquid, the distance shall not be less than 1/2 the greater dimension of height or diameter of tank, up to a maximum distance of 175 feet (53 340 mm).

3406.4.5.1.4 Rectangular tanks over 50,000 gallons (189 250 L) storing a combustible liquid. For rectangular tanks over 50,000 gallons (189 250 L) storing a combustible liquid, the distance shall not be less than the total of the length and the width of the tank divided by 4, up to a maximum distance of 175 feet (53 340 mm).

3406.4.5.2 Distance between aboveground tanks. The distance between any part of an aboveground storage tank and adjacent tanks shall be in accordance with Table 3406.4.5.2. Table 3406.4.5.2 Distance Between Aboveground Storage Tanks Adjacent Tank Capacity Minimum Distance (Feet) ;le50,000 gallons 3 Over 50,000 to 100,000 gallons 6 Over 100,000 to 200,000 gallons 12 Over 200,000 gallons 25

3406.4.5.3 Height of aboveground storage tanks. The maximum height of aboveground flammable and combustible liquid storage tanks shall not exceed 40 feet (12 192 mm).

Exception: Aboveground vertical cylindrical tanks storing combustible liquids shall not exceed 48 feet (14 630 mm) in height.

3406.4.5.4 Distance from aboveground tanks to buildings. The distance between any part of an aboveground storage tank and buildings or structures used for housing of fire extinguishing equipment, central heating plant or electrical distribution equipment shall not be less than 50 feet (15 240 mm).

3406.4.5.5 Maximum capacity for aboveground tanks. The maximum capacity of any aboveground tank used for storage of a flammable liquid shall not exceed 500,000 gallons (1892 500 L). The maximum capacity of any aboveground tank used for storage of combustible liquid shall not exceed 6,000,000 gallons (22 710 000 L).

3406.4.5.6 Distance from aboveground tanks to exposures. No aboveground tank shall be installed within:

1. 1,000 feet (304 800 mm) of the nearest wall of a building occupied as a school or hospital, or an entrance to or exit from a tunnel for motor vehicles, subway or railroad trains, or the ventilating buildings or shafts of such tunnels.
2. 250 feet (76 200 mm) of any point under a bridge for pedestrians, motor vehicles, subway or railroad trains, a public park or a land zoned for residential purposes.

3406.4.5.7 Depth of underground storage tanks. The maximum distance between the top and bottom plates of an underground flammable and combustible liquid storage tank shall not exceed 40 feet (12 192 mm).

3406.4.5.8 Underground tank location. Underground tanks shall be located such that the top plate thereof shall be at least 2 feet (609.6 mm) below the established grade. No such tank shall be buried within 10 feet (3048 mm) of any building or adjoining property line. Individual underground tanks shall be covered with 2 feet (609.6 mm) of earth or 4 inches (101.6 mm) of reinforced concrete extending 10 feet (3048 mm) beyond all the vertical walls of the tank, and the excavation made to receive the tank shall be backfilled with well-compacted clean sand or earth, free of any ash or other corrosive substance, and free from stones larger than will pass through a 1-inch (25.4 mm) mesh. Underground tanks may be erected in groups of 2 or more, when such tanks are separated by a space of 1 foot (304.8 mm), and provided the reinforced concrete top cover extends unbroken over the open space between the tanks.

3406.4.5.9 Mounded-over tanks. Mounded-over tanks shall be considered underground tanks. A mounded-over tank may be erected with its base at any desired elevation not higher than the grade plane of the premises. It shall be enclosed with a steel, reinforced concrete, or closed-face-concrete cribbing wall extending from the established grade to the top of the top cover, with the exterior face of the wall at least 10 feet (3048 mm) from the exterior face of the wall of the tank, and backfilled between the tank and the enclosing wall with compacted clean earth or sand containing no ash or other corrosive substance. The wall and backfill may be replaced with compacted similar fill, extending from the established grade to the level of the top cover on the tank, at the normal angle of repose of the material so used, with the provision that the width of the sloped material at the level of the top of the top cover shall be at least 10 feet (3048 mm) wide. When two or more mounded-over tanks, either rectangular or vertical-cylindrical, are grouped together, the tanks shall

be at least 1 foot (304.8 mm) apart from each other, and the group of tanks shall be enclosed around the periphery with the same type of wall and backfill described above for one mounded-over tank.

3406.4.5.10 Maximum capacity of flammable liquid underground tanks. Underground storage tanks used for storage of a flammable liquid shall not exceed 500,000 gallons (1892 500 L), except that the commissioner may approve the installation of underground tanks with a capacity not to exceed 6,000,000 gallons (22 710 000 L) where such greater capacity is determined to be necessary because of the capacity of the marine vessel, pipeline or tank car delivering such liquid and where such increased capacity does not endanger the public safety.

3406.4.5.11 Maximum capacity of combustible liquid underground tanks. Underground storage tanks used for storage of a combustible liquid shall not exceed 6,000,000 gallons (22 710 000 L). Such tanks may be compartmented; however, in no case shall any compartment exceed 4,000,000 gallons (15 140 000 L).

3406.4.6 Overfill protection. To prevent an overfill during the transfer of flammable or combustible liquid from a marine vessel, pipeline, tank car, cargo tank or storage tank, each tank shall be equipped with an approved electrically operated overfill protection system. Such system shall be in accordance with API 2350.

3406.4.6.1 Alarms. Audible and visible alarms shall be activated automatically when the liquid level in the tank approaches 95 percent of tank capacity and again when it attains a level of 98 percent of tank capacity. This alarm shall be connected to both the marine vessel, pipeline, tank car or cargo tank receiving point, as applicable, and to the facility dispatcher's office.

3406.4.6.2 Tanks filled from pipelines. Tanks filled by pipeline shall be provided with a shutoff valve in the fill line that will automatically shut off the flow to the tank when the liquid level in the tank approaches 95 percent.

3406.4.7 Wharves. This section shall apply to all wharves, piers, bulkheads and other structures over or contiguous to navigable water having a primary function of transferring liquid cargo in bulk between shore installations and marine vessels, including barges, lighter boats or similar watercraft.

Exception: Marine liquid motor fuel-dispensing facilities designed, installed, operated and maintained in accordance with Chapter 22.

3406.4.7.1 Transferring approvals. Handling packaged cargo of liquids, including full and empty drums, bulk fuel and stores, over a wharf during cargo transfer shall be subject to the approval and under the personal supervision of the bulk plant or terminal certificate of fitness holder and the senior deck officer on duty.

3406.4.7.2 Transferring location. Wharves at which liquid cargoes are to be transferred in bulk quantities to or from marine vessels shall be at least 100 feet (30 480 mm) from any bridge over a navigable waterway; or from any entrance to, or superstructure of, any vehicular or railroad tunnel under a waterway. The termination of the fixed piping used for loading or unloading at a wharf shall be at least 200 feet (60 960 mm) from a bridge or from an entrance to, or superstructures of, a tunnel.

3406.4.7.3 Superstructure and decking material. Superstructure and decking shall be designed for the intended use. Decking shall be constructed of materials that will afford the desired combination of flexibility, resistance to shock, durability, strength and fire resistance.

3406.4.7.4 Wharf tanks prohibited. It shall be unlawful to install, operate or maintain on wharfs any tanks containing flammable and combustible liquids.

3406.4.7.5 Transferring equipment. Loading pumps capable of building up pressures in excess of the safe working pressure of cargo hose or loading arms shall be provided with bypasses, relief valves or other arrangements to protect the loading facilities against excessive pressure. Relief devices shall be tested at least annually to determine that they

function satisfactorily at their set pressure.

3406.4.7.6Piping, valves, fittings and ancillary equipment.Piping systems shall be in accordance with Section 3403.6 except as otherwise provided as follows:

1. Piping systems shall be designed to protect against physical damage resulting from the motion of the wharf from wave action, currents, tides or the mooring of marine vessels.

2. Pipe joints that depend on the friction characteristics of combustible materials or on the grooving of pipe ends for mechanical continuity of piping shall not be used.

3. Swivel joints may be used in piping to which hoses are connected and for articulated, swivel-joint transfer systems, provided that the design of the swivel joints is such that the mechanical strength of the joint will not be impaired if the packing materials fail such as by exposure to fire.

4. Each pipe used to convey Class I or II liquids leading to a wharf shall be provided with a readily accessible block valve located on shore near the approach to the wharf and outside of any diked area. Where more than one line is used to convey liquid, the valves shall be grouped in one location.

5. Means shall be provided for ready access to cargo line valves located below the wharf deck.

6. Piping systems shall contain a sufficient number of valves to operate the system properly and to control the flow of liquid both during normal operation and in the event of physical damage.

7. Piping on wharves shall be bonded and grounded where Class I and II liquids are transported. If excessive stray current conditions exist, insulating joints shall be installed. Bonding and grounding connections on piping shall be located on the wharf side of hose riser insulating flanges, where used, and shall be accessible for inspection.

8. Hose or articulated swivel-joint pipe connections used for cargo transfer shall be capable of accommodating the combined effects of change in draft and maximum tidal range, and mooring lines shall be kept adjusted to prevent surge of the marine vessel from placing stress on the cargo transfer system.

9. Hoses shall be supported to avoid kinking and physical damage, including damage from chafing.

10. Piping, hoses, valves and fittings shall be constructed of steel. Valves shall be rated for not less than 150 pounds per square inch (psig)(1034 kPa).

3406.4.7.7Loading and unloading.Loading or unloading shall not commence until the bulk plant or terminal certificate of fitness holder and officer in charge of the marine vessel agree that the marine vessel has been properly moored and connections have been properly made.

3406.4.7.8Construction work.Construction work shall not be performed on the wharf except as approved by the commissioner upon a determination that such work can be safely performed, and subject to such terms and conditions as the commissioner may prescribe in the interest of public safety.

3406.4.8Sources of ignition.Class I, II or IIIA liquids shall not be used, drawn or dispensed where flammable vapors can reach a source of ignition.

3406.4.9Drainage control.Loading and unloading areas shall be provided with drainage control in accordance with Section 3404.2.10.

3406.4.10Fire protection.Fire protection shall be in accordance with Chapter 9 and Sections 3406.4.10.1 through 3406.4.10.8.

3406.4.10.1 Portable fire extinguishers. Portable fire extinguishers with a rating of not less than 20-B and complying with the requirements of Section 906 shall be located within 75 feet (22 860 mm) of hose connections, pumps and separator tanks.

3406.4.10.2 Fire hoses. Fire hose connected to a water supply in a size appropriate for the water supply shall be provided in accordance with Section 905 and the construction codes, including the Building Code, so that manifolds where connections are made and broken can be reached by at least one hose stream.

3406.4.10.3 Obstruction of equipment. Material shall not be placed on wharves in such a manner that would obstruct access to firefighting apparatus or equipment or important pipeline or other delivery control valves.

3406.4.10.4 Fire apparatus access. An unobstructed fire apparatus access road to the shore end of the wharf shall be maintained in accordance with Chapter 5.

3406.4.10.5 Fire protection systems. Aboveground tanks, mounded-over tanks, underground tanks, tank car loading and unloading racks, cargo tank loading racks, cargo tank unloading areas, marine vessel loading and unloading areas and all other portions of a bulk plant or terminal shall be provided with fire extinguishing systems that are approved by the commissioner, inspected by a representative of the department and tested at the owner's risk by his or her representative before a representative of the department. Such systems shall include an approved yard hydrant system and tank monitor nozzles.

3406.4.10.5.1 Cargo tank loading racks. A fire extinguishing system shall be provided over and under each cargo tank loading position. At least one remote control valve shall be provided to control the extinguishing agent for each three loading positions. Piping systems shall be installed so they can be thoroughly drained. The fire extinguishing system shall be sized to provide protection for the three largest adjacent loading positions.

3406.4.10.6 Emergency alarm transmission. Manual pull stations shall be provided at one or more approved locations that will automatically transmit a signal to the department via an approved central station.

3406.4.10.7 Periodic tests. Fire extinguishing systems, fire protection systems and tank overfill protection shall be tested once every 2 years at the owner's risk by his or her representative before a representative of the department. Tests of foam extinguishing systems shall produce foam at the most remote tank and produce water flow at each tank. In the event that the discharge of foam to the most remote tank would result in a reportable hazardous material release in accordance with federal, state or local laws, rules or regulations, such other test acceptable to the commissioner may be conducted.

3406.4.10.8 Color coding and labeling. Fire protection systems shall be color-coded and labeled in accordance with Sections 3406.4.10.8.1 through 3406.4.10.8.2. Copies of the color code shall be posted in all central locations for fire extinguishing media, such as the foam house location.

3406.4.10.8.1 Color coding. Fire protection systems shall be color-coded as follows:

1. Standpipe and/or yard hydrant systems:

1.1. Piping, valve bodies and handles, hydrants and hydrant or hose houses:

Red with contrasting white bands.

1.2. Department siamese connections: Red.

2. Sprinkler systems (wet or dry):

2.1. Piping and valve bodies and handles: Red with contrasting bright green bands.

2.2. Department siamese connections: Red with green caps.

3. Non-automatic sprinkler systems (including fog spray systems):

3.1. Piping and valve bodies and handles: Red with contrasting aluminum bands.

3.2. Department siamese connections: Aluminum.

4. Carbon dioxide extinguishing systems - piping, valve bodies and handles: Red with contrasting brown bands.

5. Steam extinguishing systems - piping, valve bodies and handles: Red with contrasting black bands.

6. Foam extinguishing systems:

6.1. Piping, valve bodies and handles, hydrants and hydrant or hose houses: Red with contrasting bright orange bands.

6.2. Department water connections: Red. A durable sign that reads "WATER FOR FOAM SYSTEM", shall be conspicuously posted immediately adjacent to such connections.

6.3. Department foam connection: Red with contrasting bright orange band or caps. A durable sign that reads "CHEMICAL FOAM DIRECT TO TANKS" or ". . .% MECHANICAL FOAM SOLUTION DIRECT TO TANKS", shall be conspicuously posted immediately adjacent to such connections.

3406.4.10.8.2 Labeling. Bands, or piping immediately adjacent to bands, shall be labeled to indicate the names of the extinguishing media. The letters shall be in a contrasting color of a suitable size in proportion to the pipe diameters. The width of each band shall be not less than the pipe diameter and shall be spaced not more than 30 feet (9144 mm) apart. Bands, lettering and piping shall be painted in sun- and weather-resistant colors and paint; but bands and lettering may be applied by means of pressure sensitive tape that is sun- and weather-resistant.

3406.4.11 Interconnected piping. All tanks shall be connected by a system of steel pipes in a manner that the contents of each tank may be transferred to another tank without resulting in product contamination, or flash point reduction of the stored liquid.

3406.4.12 Supervision. Bulk plants and terminals, including transfer operations, shall be continuously under the personal supervision of a person holding a certificate of fitness for such facility. Such supervision shall satisfy the certificate of fitness supervision requirements of this code for all fire protection systems at the facility, including standpipe systems, sprinkler systems, yard hydrant systems and foam systems.

3406.4.13 Oil spills. Bulk plants and terminals storing petroleum products and petroleum product pipelines operating within the city shall provide oil absorbent material, oil dispersant material, booms and other such material and equipment for the control and remediation of oil spills in such quantity and at such locations as set forth in Section 3406.4.13.1 through 3406.4.13.4.

Exceptions:

1. Bulk plants and terminals storing petroleum products when such facility has in place a spill prevention control and countermeasure plan meeting the requirements of United States Department of Transportation regulations, as set forth in 40 CFR Part 112.

2. Petroleum product pipelines when such pipeline operator has in place for its city of New York operations a response plan for onshore oil pipelines meeting the requirements of United States Department of Transportation regulations, as set forth in 49 CFR Part 194.

3406.4.13.1Quantities of clean-up materials and equipment.Oil spill clean-up materials and equipment shall be stored for use at each bulk plant and terminal and locations designated for pipeline operations in accordance with Table 3406.4.13.1, the rules or as a condition of the permit for the facility.Table 3406.4.13.1 Oil Spill Materials and Equipment to be Stored at Each Bulk Plant and Terminal or Pipeline Material orEquipmentTotal Petroleum Product Storage 1,000,000 Gallons or Less 5,000,000 Gallons or Less 10,000,000 Gallons or Less or Pipeline Operation Over 10,000,000 Gallons Absorbent materialto recover3,000 gallons 5,000 gallons 10,000 gallons 20,000 gallons Boom300 feet 300 feet plus enough to encircle marine vessel or barge which may be loading or unloading at the premises

3406.4.13.2Availability.Adequate storage facilities, materials handling equipment and personnel shall be provided by the bulk plant and terminal or pipeline operator. Such materials handling equipment and personnel shall be continuously available to properly deploy and apply the materials and equipment specified in Section 3406.4.13.1.

3406.4.13.3Use of clean-up service.The commissioner may approve the utilization of an oil spill clean-up service as a "back-up" spill mitigation measure, authorizing the material quantities to be reduced by 2/3 of those specified in Table 3406.4.13.1, but to a quantity not less than 3,000 gallons of absorbent material and 300 feet of boom, and subject to the following conditions:

1. A responsible officer of the bulk plant and terminal or pipeline operation shall submit a sworn affidavit identifying the oil spill clean-up service with which it has contracted to perform such services, averring that such oil spill clean-up service meets the standardsset forth in Section 3406.4.13.4 and setting forth the nature of the services to be rendered.

2. The department shall be notified, in writing, within 10 business days of the date when the utilization of the clean-up service is cancelled or the service goes out of business.

3. Such approval may be rescinded by the commissioner for good cause for failure of the spill clean-up service to timely respond to an oil spill, to have adequate equipment, materials or personnel, or to obey or cooperate with the department representatives in charge of the scene of the oil spill.

3406.4.13.4Oil spill clean-up service standards.An oil spill clean-up service may be retained by a bulk plant, bulk terminal or pipeline operation pursuant to Section 3406.13.3 provided it is capable of meeting the following standards:

1. It maintains the stockpile of material and equipment required by Section 3406.4.13.1 for storage of over 10,000,000 gallons (37 850 000 L) of petroleum products, regardless of the amount of petroleum products actually stored at the contracting bulk plants, bulk terminals or pipelines.

2. A supervisor will respond to the spill site within 1 hour from time of notification.

3. It is capable of delivering, on a 24-hour, 7-day-a-week basis, sufficient materials, equipment and personnel to the contracting bulk plant, bulk terminal or pipeline within 2 hours from time of notification.

4. Such service is licensed and operated in accordance with all applicable federal, state and local laws.

3406.4.14Valves.All inlet and outlet nozzles of tanks shall be provided with a valve of steel construction of a 150 pounds per square inch (psig)(1034 kPa) rating located as close as practicable to the tank.

3406.4.15Dike construction.All dike walls shall be of steel or reinforced concrete, designed to be liquid tight and to withstand a full hydraulic head, and constructed so as to afford ready access. Where stairways or other similar means are required to afford such access, they shall be constructed of steel or other approved noncombustible material.

3406.4.16Dike capacity.Each single dike wall enclosure shall have a capacity equal to 110 percent of the tank's capacity. Tanks arranged in groups with a total capacity not exceeding 500,000 gallons (1892 500 L) may be enclosed

in a single dike wall enclosure. Each group tank dike area shall have a net capacity not less than that of the largest tank plus 10 percent of the aggregate capacity of all other tanks served by the dike enclosure. That portion of the surface occupied by tank or tanks shall be included when computing the diked area.

3406.4.17 Tank and piping test. Tank and piping shall be tested at the time of installation at the owner's risk by his or her representative before a representative of the department as follows:

1. Aboveground, underground and mounded-over tanks shall be filled to capacity with water and maintained for not less than 24 hours.

2. Piping shall be hydrostatically tested to a pressure of 100 pounds per square inch (psig)(689.5 kPa) or 150 percent of the maximum operating pressure, whichever is greater, for 30 minutes.

3406.4.17.1 Periodic test. Underground piping shall be tested once every 10 years at the owner's risk by his or her representative before a representative of the department. Such test shall be made at 100 pounds per square inch (psig)(689.5 kPa) or 150 percent of the maximum operating pressure, whichever is greater, for 30 minutes.

3406.5 Bulk transfer and process transfer operations. Bulk transfer and process transfer operations shall be subject to the approval of the commissioner and be in accordance with Sections 3406.5.1 through 3406.5.4.4. Liquid motor fuel-dispensing facilities shall comply with the requirements of Chapter 22.

3406.5.1 General. The provisions of Sections 3406.5.1.1 through 3406.5.1.16 shall apply to bulk transfer operations and process transfer operations; Sections 3406.5.2 and 3406.5.2.1 shall apply to bulk transfer operations; Sections 3406.5.3 through 3406.5.3.3 shall apply to process transfer operations; and Sections 3406.5.4 through 3406.5.4.4 shall apply to dispensing from cargo tanks and tank cars.

3406.5.1.1 Location. Bulk transfer and process transfer operations shall be conducted in approved locations. Tank cars shall be unloaded only on private sidings or railroad-siding facilities equipped for transferring flammable or combustible liquids. Cargo tank and tank car transfer facilities shall be separated from buildings, aboveground tanks, combustible materials, lot lines, public streets and private roads by a distance of 25 feet (7620 mm) for Class I liquids and 15 feet (4572 mm) for Class II and III liquids measured from the nearest position of any loading or unloading valve or connection. Buildings for pumps or shelters for personnel shall be considered part of the transfer facility.

3406.5.1.2 Weather protection canopies. Where weather protection canopies are provided, they shall be constructed in accordance with Section 2704.13. Weather protection canopies shall not be located within 15 feet (4572 mm) of a building or combustible material or within 25 feet (7620 mm) of building openings, lot lines, public streets or private roads.

3406.5.1.3 Ventilation. Ventilation shall be provided to prevent accumulation of vapors in accordance with Section 3405.3.7.5.1.

3406.5.1.4 Sources of ignition. Sources of ignition shall be controlled or eliminated in accordance with Section 2703.7.

3406.5.1.5 Spill control and secondary containment. Areas where transfer operations are located shall be provided with spill control and secondary containment in accordance with Section 3403.4. The spill control and secondary containment system shall have a design capacity capable of containing the capacity of the largest tank compartment located in the area where transfer operations are conducted. Containment of the rainfall volume specified in Section 2704.2.2.6 is not required.

3406.5.1.6 Fire protection. Fire protection shall be in accordance with Section 3406.4.10.5.

3406.5.1.7Static protection.Static protection shall be provided to prevent the accumulation of static charges during transfer operations. Bonding facilities shall be provided during the transfer through open domes where Class I liquids are transferred, or where Class II and III liquids are transferred into cargo tanks or tank cars which could contain vapors from previous cargoes of Class I liquids. Protection shall consist of a metallic bond wire permanently electrically connected to the fill stem. The fill pipe assembly shall form a continuous electrically conductive path downstream from the point of bonding. The free end of such bond wire shall be provided with a clamp or equivalent device for convenient attachment to a metallic part in electrical contact with the cargo tank or tank car. For cargo tanks, protection shall consist of a flexible bond wire of adequate strength for the intended service and the electrical resistance shall not exceed 1 megohm. For tank cars, bonding shall be provided where the resistance of a tank car to ground through the rails is 25 ohms or greater. Such bonding connection shall be fastened to the cargo tank or tank car before dome covers are raised and shall remain in place until filling is complete and all dome covers have been closed and secured.

Exceptions:

1. Where cargo tanks or tank cars are loaded exclusively with products not having a static-accumulating tendency, such as asphalt, cutback asphalt, most crude oils, residual oils and water-miscible liquids.
2. When Class I liquids are not handled at the transfer facility and the cargo tanks are used exclusively for Class II and III liquids.
3. Where cargo tanks or tank cars are loaded or unloaded through closed top or bottom connections when the hose is conductive.

3406.5.1.7.1Filling through open domes.Filling through open domes into the tanks of cargo tanks or tank cars that contain vapor-air mixtures within the flammable range, or where the liquid being filled can form such a mixture, shall be by means of a downspout which extends to near the bottom of the tank. It shall be unlawful to fill a cargo tank or tank car with gasoline through an open dome.

3406.5.1.8Stray current protection.Tank car loading facilities where Class I, II or IIIA liquids are transferred through open domes shall be protected against stray currents by permanently bonding the pipe to at least one rail and to the transfer apparatus. Multiple pipes entering the transfer areas shall be permanently electrically bonded together. In areas where excessive stray currents are known to exist, all pipes entering the transfer area shall be provided with insulating sections to isolate electrically the transfer apparatus from the pipelines.

3406.5.1.9Top loading.When top loading a cargo tank with Class I and II liquids without vapor control, valves used for the final control of flow shall be of the self-closing type and shall be manually held open except where automatic means are provided for shutting off the flow when the tank is full. When used, automatic shutoff systems shall be provided with a manual shutoff valve located at a safe distance from the loading nozzle to stop the flow if the automatic system fails. When top loading a cargo tank with vapor control, flow control shall be in accordance with Section 3406.5.1.10. Self-closing valves shall not be tied or locked in the open position.

3406.5.1.10Bottom loading.When bottom loading a cargo tank or tank car with or without vapor control, a positive means shall be provided for loading a predetermined quantity of liquid, together with an automatic secondary shutoff control to prevent overfill. The connecting components between the transfer equipment and the cargo tank or tank car required to operate the secondary control shall be functionally compatible.

3406.5.1.10.1Dry disconnect coupling.When bottom loading a cargo tank, the coupling between the liquid loading hose or pipe and the cargo tank piping shall be a dry disconnect coupling.

3406.5.1.10.2Venting.When bottom loading a cargo tank or tank car that is equipped for vapor control and vapor control is not required or used for the product being loaded, the tank shall be vented to the atmosphere to prevent pressurization of the tank. Such venting shall be at a height equal to or greater than the top of the cargo tank or tank car.

3406.5.1.10.3 Vapor-tight connection. Connections to the plant vapor control system shall be designed to prevent the escape of vapor to the atmosphere when not connected to a cargo tank or tank car.

3406.5.1.10.4 Vapor recovery and processing equipment. Vapor recovery and processing equipment at bulk plants and terminals shall comply with the requirements of Section 3406.8.

3406.5.1.11 Switch loading. Cargo tanks or tank cars which have previously contained Class I liquids shall not be loaded with Class II or III liquids until such tanks or cars and all piping, pumps, hoses and meters connected thereto have been completely drained and flushed.

3406.5.1.12 Loading racks. Where provided, loading racks, stairs or platforms shall be constructed of noncombustible materials. Buildings for pumps or for shelter of loading personnel are allowed to be part of the loading rack. Wiring and electrical equipment located within 25 feet (7620 mm) of any portion of the loading rack shall be in accordance with Section 3403.1.1.

3406.5.1.13 Transfer apparatus. Bulk and process transfer apparatus shall be of an approved type.

3406.5.1.14 Inside buildings. Cargo tanks and tank cars shall not be located indoors while transferring Class I, II or III liquids.

Exception: Cargo tanks are allowed under weather protection canopies and canopies of automotive liquid motor fuel-dispensing facilities.

3406.5.1.15 Cargo tank and tank car certification. Certification shall be maintained for cargo tanks and tank cars in accordance with the regulations of the United States Department of Transportation, as set forth in Parts 100-178.

3406.5.1.15.1 Loading and unloading from cargo tanks. It shall be unlawful for any person to load a cargo tank with any flammable or Class II or IIIA combustible liquid or to receive or accept delivery of such products in or from a cargo tank, except in or from a cargo tank for which a department permit has been issued and is displayed pursuant to the provisions of Chapter 27. The provisions of this section shall not prohibit the loading of a cargo tank with any liquid products with a flash point over 200(degrees)F (93(degrees)C) nor the receiving or acceptance of delivery from a cargo tank of any liquid products with a flash point over 200(degrees)F (93(degrees)C), provided that such cargo tank is designed, constructed, and equipped in accordance with the regulations of the United States Department of Transportation governing the transportation of dangerous articles by common, contract, private and proprietary carriers engaged in interstate commerce.

3406.5.1.16 Cargo tank and tank car stability. Cargo tanks and tank cars shall be stabilized against movement during loading and unloading in accordance with Sections 3406.5.1.16.1 through 3406.5.1.16.3.

3406.5.1.16.1 Cargo tanks. When a cargo tank is parked for loading or unloading, such cargo tank shall be secured in a manner that will prevent unintentional movement.

3406.5.1.16.2 Chock blocks. At least two chock blocks not less than 5 inches by 5 inches by 12 inches (127 mm by 127 mm by 305 mm) in size and dished to fit the contour of the tires shall be used during transfer operations of cargo tanks.

3406.5.1.16.3 Tank cars. Brakes shall be set and the wheels shall be blocked to prevent rolling.

3406.5.2 Bulk transfer. Bulk transfer shall be in accordance with Sections 3406.5.1 and 3406.5.2.1.

3406.5.2.1 Vehicle motor. Motors of cargo tanks or tank cars shall be shut off during the making and breaking of hose connections and during the unloading operation.

Exception: Where unloading is performed with a pump deriving its power from the cargo tank motor.

3406.5.3 Process transfer. Process transfer shall be in accordance with Section 3406.5.1 and Sections 3406.5.3.1 through 3406.5.3.3.

3406.5.3.1 Piping, valves, hoses and fittings. Piping, valves, hoses and fittings which are not a part of the cargo tank or tank car shall be designed and installed in accordance with Section 3403.6. Caps or plugs which prevent leakage or spillage shall be provided at all points of connection to transfer piping.

3406.5.3.1.1 Shutoff valves. Approved automatically or manually activated shutoff valves shall be provided where the transfer hose connects to the process piping, and on both sides of any exterior fire-resistance-rated wall through which the piping passes. Manual shutoff valves shall be arranged such that they are readily accessible from grade. Valves shall not be locked in the open position.

3406.5.3.1.2 Hydrostatic relief. Hydrostatic pressure-limiting or relief devices shall be provided where pressure buildup in trapped sections of the system could exceed the design pressure of the components of the system. Devices shall relieve to other portions of the system or to another approved location.

3406.5.3.1.3 Antisiphon valves. Antisiphon valves shall be provided when the system design would allow siphonage.

3406.5.3.2 Vents. Normal and emergency vents shall be maintained in good working order at all times.

3406.5.3.3 Motive power. Motors of cargo tanks and tank cars shall be shut off during the making and breaking of hose connections and during the unloading operation.

Exception: When unloading is performed with a pump deriving its power from the cargo tank motor.

3406.5.4 Dispensing from cargo tanks and tank cars. It shall be unlawful to dispense any flammable or combustible liquid from a cargo tank or tank car into the fuel tanks of motor vehicles, except as authorized by and conducted in accordance with Sections 3406.5.4.3 and 3406.5.4.4.

3406.5.4.1 Reserved.

3406.5.4.2 Reserved.

3406.5.4.3 Aircraft fueling. Transfer of liquids from aircraft-refueling vehicles to the fuel tanks of aircraft shall be in accordance with Chapter 11.

3406.5.4.4 Fueling of vehicles at construction sites. The transfer of liquid from cargo tanks to construction equipment at construction sites shall be conducted in accordance with Section 3406.2.8.

3406.6 Reserved.

3406.7 Reserved.

3406.8 Vapor recovery and processing systems for use in bulk plants and terminals. Vapor recovery and processing systems installed at bulk plants and terminals, including systems associated with piping, loading racks, dikes, fire detection and fire protection equipment, shall be designed, installed, operated and maintained in accordance with Sections 3406.8.1 through 3406.8.3. Such compliance shall be required for all vapor recovery processing systems, whether installed voluntarily or pursuant to the requirements of the United States Environmental Protection Agency, United States Coast Guard or New York State Department of Environmental Conservation.

3406.8.1 General. Vapor recovery and processing systems shall comply with the requirements of Section 5.10 of NFPA 30, except as otherwise provided in this section, the regulations of the United States Environmental Protection Agency, United States Coast Guard and New York State Department of Environmental Conservation, as applicable, and the following general requirements:

1. Electrical equipment shall comply with the requirements of the Electrical Code. Upon request, proof of compliance with the Electrical Code shall be filed with the department.
2. The installation of any refrigerating system shall comply with the requirements of Chapter 6 and the Mechanical Code.
3. All tanks and piping shall be grounded. Static bonding connections shall be made between loading arm, vehicle and vapor recovery unit. An interlock shall be provided to prevent pumping operations until properly grounded.
4. All product pumps and compressors shall be of a type approved for such use.
5. Pressure vessels shall conform to the ASME Boiler and Pressure Vessel Code. The manufacturer data sheet for the pressure vessel shall be maintained on the premises and made available for inspection to any representative of the department.
6. Knock-out vessels shall be provided with a high liquid level sensor that will initiate shutdown of the liquid transfer into the vessel and the vapor recovery or processing system.
7. A flame arrestor and mist eliminator element shall be provided at final emission vent.
8. A fire detection system shall be provided that will initiate shutdown of the vapor recovery and processing system in the event of fire.
9. An annunciator panel with audible and visible alarms shall be provided in the dispatcher's office. The annunciator panel shall monitor and shut down the vapor recovery and processing system upon any equipment malfunction, including a malfunction of the fire detection system.
10. Insulation material shall be noncombustible.
11. Lightning protection shall be provided in accordance with NFPA 780.
12. Pressure relief valves shall be provided on all pressure vessels and wherever else required by the system design, and shall be sized in accordance with the ASME Boiler and Pressure Vessel Code. Pressure relief valves shall discharge to a safe location. No shutoff valve may be permitted in the line of relief. Tanks and equipment shall have independent venting for over-pressure or vacuum conditions that might occur from malfunction of the vapor recovery or recovery unit.
13. A reinforced concrete base shall be provided and approved by the agency having jurisdiction.
14. Vapor recovery and processing systems shall be placed in an unpierced dike of such construction and capacity as the commissioner may prescribe. No drains shall be permitted, and any drain pump used shall be manually activated.
15. Vapor recovery and processing systems shall be installed at least 25 feet (7620 mm) from bulk storage tanks, warehouses, loading racks, dispatchers' offices, transfer facilities, buildings housing fire protection systems, central heating plants or electrical distribution systems, other plant buildings, building lines and adjoining lot lines. When vessels in the vapor recovery and processing system operate in excess of 50 pounds per square inch gauge (psig)(345 kPa), but less than 150 pounds per square inch gauge (psig)(1034 kPa), the minimum distance shall be 50 feet (15 240 mm), unless a protective structure, such as masonry or concrete fire wall, is installed in the line of sight between such

vessel and the exposure, in which case the minimum distance of 25 feet (7620 mm) shall be applicable.

16. Vents on vapor-processing equipment shall be not less than 15 feet (4572 mm) from ground level, with outlets located and directed so that flammable vapors will disperse to below the lower flammable limit (LFL) before reaching a potential ignition source.

17. The vapor recovery and processing system shall be protected from physical damage, including damage by motor vehicles utilizing dikes, posts, or other approved means.

18. The entire vapor recovery and processing system shall be inspected for proper operation on a periodic basis, but not less than once every six months, by a qualified person. Such inspection shall be documented in a log book maintained at the facility for such purpose.

19. Durable signs reading "DANGER-NO SMOKING, MATCHES, OPEN LIGHTS OR SPARKING DEVICES AT THIS EQUIPMENT" shall be conspicuously posted at or near the vapor recovery and processing system in addition to the "No Smoking" signs required throughout the facility.

20. One or more foam hydrants, yard hydrants, monitor nozzles and portable fire extinguishers having a minimum 40-B:C rating, shall be provided within 50 feet (15 240 mm) of the vapor recovery and processing system and shall be readily available for use.

21. All piping associated with a vapor recovery and processing system, including piping connecting such system to storage tanks, shall be hydrostatically tested to a pressure of 100 pounds per square inch gauge (psig)(690 kPa) or 1 1/2 times the maximum working pressure, whichever is greater, for a period of 2 hours, and shall show no leaks. Such hydrostatic testing shall be conducted at the owner's risk by his or her representative before a representative of the department. In lieu of such hydrostatic testing, the commissioner may accept an affidavit from the manufacturer attesting to the integrity of piping integral to the vapor recovery and processing system.

22. Where a storage tank is connected to a vapor recovery and processing system, a mist eliminator shall be provided in the vapor line at or adjacent to the tank to remove entrained liquid and return same to the tank or an approved collection system.

23. The vapor recovery and processing system shall be designed to minimize and dissipate static electricity in accordance with NFPA 77.

3406.8.2 Atmospheric condensation and refrigeration vapor recovery and processing systems. A vapor condenser system shall be placed in an unpierced dike or within a concrete trench of adequate width and depth to hold at least 1 hour's vapor recovery.

3406.8.3 Absorption vapor recovery and processing systems. Absorption vapor recovery and processing systems shall comply with the following requirements:

1. A lean oil storage tank shall be protected by a foam fire extinguishing system.

2. The entire vapor recovery and processing system, including the lean oil storage tank, shall be placed in an unpierced dike. The height of the dike shall be based upon the size of the lean oil storage tank and shall have a capacity of at least 110% of such tank, but in any event not less than the maximum pumping capacity of the system for 20 minutes of operation.

3. Heaters used shall be of a type approved for such use and shall be equipped with an automatic shut-off device that activates upon reaching the high temperature limit for the absorption vapor recovery and processing system.

4. All absorbers, saturators, heat exchangers and condensers shall conform to ASME Boiler and Pressure Vessel

Code and the provisions of Chapter 30.

5. A relief valve shall be provided for compressors, stripper columns and other pressure vessels.

6. Lean oil tanks and vapor vessels shall be constructed and installed in accordance with this chapter and API 650.

7. Upon installation, a vapor vessel bladder shall be pneumatically tested at $1\frac{1}{4}$ times the maximum operating pressure for 4 hours without leakage. A retest shall be performed annually. All such tests shall be conducted at the owner's risk by his or her representative before a representative of the department.

3406.9Cargo tank loading rack systems.Loading rack systems shall be designed, installed, operated and maintained in accordance with the following requirements:

1. Any vapor recovery and processing system used in connection with a loading rack system shall comply with the requirements of Sections 3406.8.1 through 3406.8.3.

2. Loading racks shall be protected throughout by a fire extinguishing system as set forth in Section 3406.4.10.5.1.

3. Cargo tanks loaded at bulk plants or terminals shall be compatible with all safety features incorporated into the loading rack.

4. Dry break adapters conforming to API standards shall be provided on the fill and vapor recovery lines. During loading, each cargo tank compartment shall be sealed except for the dry-break fill coupling and vapor recovery line.

5. An interlock shall be provided to prevent loading when the cargo tank vehicle motor is running and to prevent start up of the cargo tank vehicle motor during loading. Such interlock device shall further prevent the vehicle motor from starting before the product fill line and vapor return line have been disconnected.

6. An interlock device shall be provided so that no loading may take place unless the vapor recovery line is properly connected to the cargo tank.

7. Except when loading, protective caps shall cover all dry-break adapters as protection against the elements and physical damage from impact.

8. No more than 3 compartments may be loaded at a time.

9. A two-stage preset meter shall be provided for each loading arm. Loading arms shall be equipped with manual or electronic dead-man control valves.

10. All electrical equipment shall be suitable for use in hazardous locations. The design of the electronic sending device shall be such that a source of higher voltage or current cannot be connected to same.

11 An approved overfill prevention system shall be provided at the loading rack and shall be designed to ensure at least 1% vapor space per compartment. In no event shall the vapor space in a compartment be less than 40 gallons (151 L) in capacity.

12. A liquid detector shall be provided in the vapor return line, to automatically shut off the loading system if liquid reaches the vapor line.

13. All components of the fill and vapor recovery loading arm assemblies making contact with the cargo tank, including the loading head, shall be constructed of spark-proof material.

14. The fill line and the vapor recovery line in loading arm assemblies shall be of the same diameter. The maximum

velocity in any liquid line shall not exceed 15 feet per second (4572 mm per second).

15. The fill line and vapor recovery line in loading arm assemblies shall be constructed of rigid steel, except that flexible hose may be used for fill or vapor recovery loading assemblies provided that such hose is no longer in length than necessary, has an inner diameter no greater than 4 inches (102 mm), is of steel construction and is rated for not less than 800 pounds per square inch gauge (psig)(5617 kPa).

16. Cargo tanks shall not be filled with flammable or combustible liquids unless one or more devices, equipment or systems are provided to immediately shut down the flow of such liquid in the event of cargo tank overfilling, faulty dome seal, cargo tank pressure exceeding 3 pounds per square inch gauge (psig)(21.7 kPa) and electrical grounding fault.

17. The loading arm assembly shall be grounded.

18. The loading arm assembly shall be designed to break away from the cargo tank without rupture should the cargo tank move with the loading arm still in place.

19. All liquid and vapor piping at the loading arm assembly shall be hydrostatically tested to a pressure of 100 pounds per square inch gauge (psig)(690 kPa) or 1 1/2 times the maximum working pressure, whichever is greater, for a period of 2 hours. Such test shall be conducted at the owner's risk by his or her representative before a representative of the department.

20. The loading head unit seal against the cargo tank shall not exceed a force of 200 pounds (90.8 kg) or a pressure of 5 pounds per square inch gauge (psig)(34.5 kPa).

21. A mist eliminator shall be provided in the vapor line at or adjacent to the loading arm to remove entrained liquid and return same to the cargo tank, or to an approved collection system.

22. Cargo tanks containing flammable liquids in any compartment shall not be loaded with combustible liquids unless the loading rack is protected by a fire extinguishing system in accordance with this chapter.

23. The loading rate of combustible liquids into cargo tanks shall be such that the initial velocity in the liquid line is 3 feet per second (914.4 mm per second) and the final rate does not exceed 15 feet per second (4572 mm per second).



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 35: FLAMMABLE GASES
SECTION FC 3501: GENERAL

NYC Administrative Code § 29-FC 3501

3501.1 Scope.

This chapter shall govern the storage, handling and use of flammable gases.

Exceptions:

1. Flammable gases used as refrigerants in refrigerating systems, as set forth in Section 606.
2. Liquefied petroleum gases, as set forth in Chapter 38.
3. Fuel-gas systems, as set forth in the construction codes, including the Fuel Gas Code.
4. Flammable gas motor fuel-dispensing facilities as set forth in Chapter 22.
5. Liquefied natural gas (LNG) as set forth in Chapter 32.

3501.2Permits.Permits shall be required as set forth in Section 105.6.

3501.3General.Flammable gases shall be stored, handled and used in accordance with this chapter and Chapter 30.

3501.3.1Gaseous hydrogen.Gaseous hydrogen systems at consumer sites shall additionally comply with the requirements of NFPA 50A.

3501.4Supervision.Except for ethylene oxide, compressed natural gas and methane recovery, the handling and use of flammable gases in quantities requiring a permit shall be under the personal supervision of a certificate of fitness holder. The storage of flammable gases in quantities requiring a permit shall be under the general supervision of a certificate of fitness holder.

3501.4.1 Ethylene oxide. The handling and use of flammable compositions of ethylene oxide, including the cleaning and maintenance of the sterilizer, shall be under the personal supervision of a person holding a certificate of fitness.

3501.4.2 Compressed natural gas. The connecting and disconnecting of CNG containers shall be performed by a person holding a certificate of fitness. The handling and use of CNG containers in quantities requiring a permit, or for purposes of operating a tar kettle, conducting torch operations, curing concrete, drying plaster and similar applications, or conducting hot air balloon operations, shall be under the personal supervision of a person holding a certificate of fitness applicable to such operation. In addition, a pilot's license issued by the United States Federal Aviation Administration shall be required for hot air balloon operations involving the handling and use of CNG.

3501.4.3 Methane recovery. Methane recovery facilities shall be operated under the personal supervision of a person holding a certificate of fitness to recover methane gas from landfills.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 35: FLAMMABLE GASES
SECTION FC 3502: DEFINITIONS

NYC Administrative Code § 29-FC 3502

3502.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

FLAMMABLE GAS. A material which is a gas at 68(degrees)F (20(degrees)C) or less at 14.7 pounds per square inch absolute (psia) (101 kPa) of pressure which:

1. Is ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with air, in accordance with testing procedures set forth in ASTM E 681; or
2. Has a flammable range at 14.7 psia (101 kPa) with air of at least 12 percent, regardless of the lower limit, in accordance with testing procedures set forth in ASTM E 681.

FLAMMABLE LIQUEFIED GAS. A liquefied compressed gas which, under a charged pressure, is partially liquid at a temperature of 68(degrees)F (20(degrees)C) and which is a flammable gas.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 35: FLAMMABLE GASES
SECTION FC 3503: GENERAL REQUIREMENTS

NYC Administrative Code § 29-FC 3503

3503.1 Quantities not exceeding the maximum allowable quantity per control area.

Flammable gases in amounts not exceeding the maximum allowable quantity per control area set forth in Section 2703.1 shall be stored, handled and used in accordance with Sections 2701, 2703, 3501, 3503, 3506, 3507 and 3508.

3503.1.1 Special limitations for indoor storage, handling and use. Flammable gases shall not be stored, handled or used in Group A, B, E, I or R occupancies.

Exceptions:

1. Containers not exceeding a capacity of 250 SCF (7.08 m³) used for maintenance purposes or operation of equipment.

2. Food service operations conducted in accordance with Section 3803.2.1.7.

3503.1.1.1 Medical gases. It shall be unlawful to store, handle or use flammable gas as an anesthetizing agent. Medical gas systems using flammable gas for other approved purposes, shall be located in medical gas storage rooms or gas cabinets as set forth in Section 3006.

3503.1.1.2 Aggregate quantity. The aggregate quantities of flammable gases used for maintenance purposes and operation of portable equipment shall not exceed the maximum allowable quantity per control area set forth in Table 2703.1.1(1).

3503.1.2 Storage containers. Containers for flammable gases shall be designed, constructed, installed, operated and maintained in accordance with Chapter 30.

3503.1.3 Emergency shutoff. Flammable gas piping systems shall be provided with approved emergency shutoff valves that can be activated at each point of use and each source of supply.

3503.1.4 Ignition source control. Ignition sources in areas containing flammable gases shall be controlled in accordance with Section 2703.7 and the following requirements:

1. Static-producing equipment located in flammable gas storage areas shall be grounded.
2. "No Smoking" signs shall be posted at entrances to and in areas containing flammable gas containers, piping and equipment in accordance with Section 2703.6.

3503.1.5 Liquefied flammable gases and flammable gases in solution. Containers of liquefied flammable gases and flammable gases in solution shall be positioned in the upright position or positioned so that the pressure relief valve is in direct contact with the vapor space of the container.

Exceptions:

1. Containers of flammable gases in solution with a capacity of 1.3 gallons (5 L) or less.
2. Containers of flammable liquefied gases, with a capacity not exceeding 1.3 gallons (5 L), designed to preclude the discharge of liquid from safety relief devices.

3503.2 Quantities exceeding the maximum allowable quantity per control area. The storage, handling and use of flammable gases in amounts exceeding the maximum allowable quantity per control area set forth in Section 2703.1 shall be in accordance with Chapter 27 and this chapter.

3503.3 Filling of containers. No container shall be filled in the city, except as authorized by this code or the rules. It shall be unlawful for any person to fill balloons with hydrogen or any other flammable gas, or to possess, store, handle, use, transport, or sell any such balloon.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 35: FLAMMABLE GASES
SECTION FC 3504: STORAGE

NYC Administrative Code § 29-FC 3504

3504.1 Indoor storage.

Indoor storage of flammable gases in amounts exceeding the maximum allowable quantity per control area set forth in Table 2703.1.1(1), is not allowed where outdoor storage is available on the premises. Indoor storage shall be in accordance with Sections 2701, 2703 and 2704, and this chapter.

3504.1.1Explosion control.Buildings or portions thereof containing flammable gases shall be provided with explosion control in accordance with Section 911.

3504.1.2Maximum storage quantity.Storage of flammable gases shall not exceed 15,000 SCF (424.8 m3) in any building or structure.

3504.1.3Flammable gas storage of 3,500 SCF (99.12 m3) or less.Indoor storage shall be protected against damage or injury from falling objects or surrounding activity, and be located not less than:

1. 20 feet (6096 mm) from all classes of flammable and combustible liquids, oxidizing gases and readily combustible materials, such as paper and combustible fibers.
2. 25 feet (7620 mm) from open flames, ordinary electrical equipment or other sources of ignition.
3. 50 feet (15 240 mm) from air-conditioning equipment, air compressors and intakes of ventilation.
4. 50 feet (15 240 mm) from other flammable gas storage.

3504.1.4Flammable gas storage of more than 3,500 SCF (99.12 m3).There may be more than one storage location of 3,500 SCF (99.12 m3) in a room, provided that each storage location does not exceed 3,500 SCF (99.12 m3) and the storage locations are separated by at least 50 feet (15 240 mm) or an approved masonry barrier having a minimum fire resistance rating of 2 hours. Each such storage location shall additionally comply with the requirements of Section

3504.1.2 and 3504.1.3.

3504.2 Outdoor storage. Outdoor storage of flammable gases in amounts exceeding the maximum allowable quantity per control area set forth in Table 2703.1.1(3) shall be limited to a maximum storage of 3,500 SCF (99.12 m³) except where the provisions of this code or the rules authorize storage in larger quantities at construction sites. Outdoor storage of flammable gases shall be in accordance with Sections 2701, 2703 and 2704, and this chapter.

3504.2.1 Location of outdoor storage areas. Outdoor storage areas for flammable gases shall be located at or above grade level, and in accordance with Sections 3504.2.1.1 and Table 3504.2.1, as applicable.

3504.2.1.1 Proximity to hazards. Storage shall not be located where the stored flammable gases would be exposed to the following hazards in the event of the failure of their structure or containment systems:

1. Electric power lines.
2. Piping containing flammable or combustible liquids.
3. Piping containing flammable gases.

4. Piping containing oxidizing materials. 3] Table 3504.2.1 Flammable Gases Distance from Outdoor Storage Areas to Exposures

Type of Outdoor Exposure	Flammable Gas Storage Area More Than 1500 SCF up to Maximum 3500 SCF	Minimum Distance to Outdoor Exposure (Feet)
1] Type of Outdoor Exposure	Flammable Gas Storage Area More Than 1500 SCF up to Maximum 3500 SCF	Minimum Distance to Outdoor Exposure (Feet)
2] Building or structure of combustible construction	10a Building openings	10 Flammable and combustible liquids Aboveground-1,000 gallons or less
	10a Flammable and combustible liquids Aboveground-in excess of 1,000 gallons	20a Flammable and combustible liquids Underground tank-1,000 gallons or less
	10a Flammable and combustible liquids Underground tank-in excess of 1,000 gallons	15a Flammable and combustible liquids Underground tank-in excess of 1,000 gallons
	Vent or fill opening of tank	15a Flammable gas storage area, any pressure 1,500 SCF or less
	10a Flammable gas storage area, any pressure More than 1,500 SCF up to maximum 3,500 SCF	20a Oxygen storage-20,000 SCF or less
	In accordance with NFPA 51a	Oxygen storage-in excess of 20,000 SCF
	In accordance with NFPA 50a	Combustible material or combustible waste
10a	Air compressor intakes or inlets to ventilating or air-conditioning equipment	5 Group A occupancies and public gathering places
25	Public sidewalks and parked vehicles	10 Public streets, private roads and lot lines
10a	4] For SI: 1 foot = 304.8 mm, 1 cubic foot = 0.02832 m ³ , 1 gallon = 3.785 L.	a. The minimum required distances shall be reduced to 5 feet when protective structures having a minimum fire-resistance rating of 2 hours interrupt the line of sight between the container and the exposure. The protective structure shall be at least 5 feet from the exposure. The configuration of the protective structure shall be designed to allow natural ventilation to prevent the accumulation of hazardous gas concentrations.

3504.2.2 Proximity to flammable and combustible liquid storage. Storage within 50 feet (15 240 mm) of aboveground storage of flammable and combustible liquids shall be located on ground higher than such storage, except where dikes, diversion curbs, grading or walls are used to prevent these liquids from accumulating under the flammable gas storage.

3504.2.3 Electrical equipment. Electrical equipment within 3 feet (914 mm) in any direction of an outdoor flammable gas storage area shall comply with the Class I, Division 2 wiring requirements of the Electrical Code for hazardous locations, unless such electrical equipment is separated from such area by a wall or other solid partition having no openings.



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Chapter 35: FLAMMABLE GASES

SECTION FC 3505: USE

NYC Administrative Code § 29-FC 3505

3505.1 General.

Flammable gases in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) or 2703.1.1(3) shall be used in accordance with Sections 2701, 2703 and 2705, and this chapter.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 35: FLAMMABLE GASES
SECTION FC 3506: ETHYLENE OXIDE

NYC Administrative Code § 29-FC 3506

3506.1 Scope.

This section shall govern the storage, handling and use of flammable gas containing ethylene oxide used for sterilization purposes.

3506.2General. Flammable gases containing ethylene oxide used for sterilization purposes shall be stored, handled and used in compliance with the requirements of this chapter and Chapter 30.

3506.3Design and installation requirements. The design and installation of sterilization systems shall comply with the requirements of Sections 3506.3.1 through 3506.3.7.

3506.3.1Sterilizer design. The sterilization equipment shall be of a type listed by an approved testing laboratory, and approved by the department, and having a chamber volume of not more than 10 cubic feet (0.2832 m³).

3506.3.2Sprinkler protection. Sterilization systems shall be located in a room or other area protected by a sprinkler system.

3506.3.3Proximity to hazard. Sterilization systems shall be installed away from sources of heat and ignition, means of egress and areas of activity, and shall not be installed in any room or other area in which flammable liquids or flammable gases, other than sterilizer gases, are stored, handled or used.

3506.3.4Sterilization system room and local area ventilation. Room ventilation and local area ventilation shall comply with the requirements of Sections 3506.3.4.1 and 3506.3.4.2.

3506.3.4.1Room ventilation. Rooms in which sterilization systems are installed shall be equipped with ventilation systems that provide not less than 10 air changes per hour.

3506.3.4.2Local area ventilation. When a local ventilation system is required by the regulations of the United States

Department of Labor, such ventilation system shall comply with the following requirements:

1. The discharge point of the ventilation system shall be at least 25 feet (7620 mm) from pedestrian traffic, building openings or sources of ignition. Prevailing wind direction and location of adjacent buildings shall be considered in selecting the discharge point.

2. At each discharge location there shall be a durable sign, conspicuously posted, that reads "DANGER-FLAMMABLE GAS."

3. Signage shall appear on the duct at intervals of not more than 20 feet (6090 mm) and at least once in each room and each story traversed by the duct. Such signage shall be by means of metal tags, stenciling, stamping or adhesive markers, which shall be attached or imprinted in a manner that is not readily removable.

4. A spark-proof centrifugal fan with backward curved blades designed for continuous operation shall be used, and the impeller and the ring around the impeller drive shaft shall be non-ferrous.

3506.3.5 Vent lines. Sterilization system vent lines shall be designed and installed in accordance with the following requirements:

1. The discharge point of vent lines shall be at least 25 feet (7620 mm) from pedestrian traffic, building openings and sources of ignition. Prevailing wind direction and location of adjacent buildings shall be considered in selecting the discharge point.

2. At each discharge location there shall be a durable sign, conspicuously posted, that reads "Danger-Flammable Gas."

3. Signage shall appear on the vent line at intervals of not more than 20 feet (6090 mm) and shall be present in at least one place in each room and in each story traversed by the duct.

4. A spark-proof centrifugal fan with backward curved blades designed for continuous operation shall be used, and the impeller and the ring around the impeller drive shaft shall be non-ferrous.

5. Vent terminals shall be provided with a flash arrester, provided that the manufacturer of the sterilizer or the testing laboratory does not prohibit same. The flash arrester, when used, shall be constructed of material compatible with ethylene oxide and installed in such a manner as not to restrict gas flow.

3506.3.6 Storage. The storage of flammable gases containing ethylene oxide shall comply with the following requirements:

1. Only containers of the type, composition and size approved by the manufacturer for the particular model of sterilization system shall be stored or used.

2. A one-day supply of flammable gases that contain ethylene oxide, but not more than 12 containers, may be stored in its original packaging in the room or other area in which the sterilizer is installed, provided that:

- 2.1. Such room or other area is above grade.

- 2.2. The containers are stored at room temperature, away from sources of heat and ignition.

- 2.3. The containers are stored not less than 5 feet (1524 mm) from the sterilizer, on open shelving protected by a sprinkler system or in an approved flammable liquid storage cabinet.

- 2.4. In addition to the amounts specified in Section 3506.3.6(2), a maximum of 3 gallons (11.4 L) liquid volume

(9908 grams (21.8 pounds)) of flammable gases that contain ethylene oxide may be stored in their original packaging in a flammable gas storage room, provided that such storage room meets the requirements of the construction codes, including the Building Code, is located above grade, is away from sources of heat and ignition, and is protected by a sprinkler system. Storage of flammable gases that contain ethylene oxide, in excess of 3 gallons (11.4 L) liquid volume, shall be in a detached above grade building designed for the storage of flammable gas in accordance with this chapter and the construction codes. For purposes of complying with the foregoing, 3-gallon (11.4 L) storage limitation, Table 3506.3.6 shall be used to determine the quantity of ethylene oxide being stored: Table 3506.3.6 Quantity of Gas per Container (grams) Maximum Number of Containers not Exceeding 3 Gallon Limit 100 99 134 73 150 66 170 58 200 49

3506.3.7 Installation documentation certification. The owner of the facility in which the sterilization system is installed shall maintain on the premises and make available for inspection by any representative of the department a written certification from the manufacturer of the sterilizer, the certificate of fitness holder responsible for the supervision of the sterilization system and/or a New York State licensed professional engineer, that the installation conforms to the requirements of the manufacturer, the approved testing laboratory that listed the sterilizer and this section.

3506.4 Operation and maintenance. Sterilization systems shall be operated and maintained the compliance with the following requirements:

1. The quantity of flammable gases that contain ethylene oxide connected to the sterilizer at any one time shall be no more than required for a single sterilization cycle and in no case more than 200 grams (7 ounces) net weight. Containers shall be opened only while connected to the sterilizer in the manner specified by the manufacturer of the sterilizer.

2. Empty or underweight containers, containers with past expiration dates, and containers which fail to open in the sterilizer shall be kept separate from other containers and promptly removed from the premises and lawfully disposed of. Containers shall not be incinerated.

3506.5 Portable fire extinguishers. At least one portable fire extinguisher having a minimum 40 B:C rating shall be provided in the area where flammable gases containing ethylene oxide are stored or used. The maximum travel distance to such extinguisher shall not exceed 30 feet (9144 mm).



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Chapter 35: FLAMMABLE GASES
SECTION FC 3507: COMPRESSED NATURAL GAS

NYC Administrative Code § 29-FC 3507

3507.1 Scope.

This section shall govern the storage, handling and use of compressed natural gas (CNG).

Exceptions:

1. Storage, handling and use of CNG, including dispensing, for use as a fuel in motor vehicles, as set forth in Chapter 22.
2. The storage, handling and use of CNG in connection with special effects.

3507.2General.Compressed natural gas shall be stored, handled and used in accordance with this chapter, including this section, and the rules.

3507.3General prohibitions.It shall be unlawful to:

1. Fill a CNG container with CNG or transfer CNG from one container to another, except as authorized by Section FC 2208.
2. Store, handle or use CNG in any container with a capacity greater than 381 SCF.
3. Store, handle or use CNG in a basement, cellar or other below grade area, except as authorized by the commissioner.
4. Store, handle or use CNG without a permit when such storage, handling or use exceeds the quantities set forth in Section 105.6.
5. Store CNG in any outdoor or indoor storage facility, or store, handle or use CNG for a stationary CNG

installation, that has not been approved.

6. Store, handle or use in, or bring or allow into any residential occupancy, or on any lot containing a building used for a residential occupancy, any CNG container with a capacity greater than 8.7 SCF, except as authorized by the commissioner.

7. Store, handle or use in, or bring or allow into any non-residential building, any CNG container with a capacity greater than 8.7 SCF, except as authorized by the commissioner.

8. Store CNG containers on the roof of any building.

9. Handle or use on the roof of any building CNG containers with a capacity greater than 8.7 SCF of gas, except as authorized by the commissioner.

10. Store, handle or use CNG in or on motor vehicles, except as temporary storage incidental to transportation, or as a fuel for generating motive power for a motor vehicle, or otherwise authorized by the commissioner.

11. Store, handle or use CNG for a stationary installation in any area where access to piped natural gas from a public utility is available, except as authorized by the commissioner.

12. Store, handle or use CNG in any equipment used or previously used for LPG, except as may be authorized by the commissioner on an emergency basis.

13. Store, handle or use CNG for space heating or water heating, except as authorized by the commissioner.

14. Use non-metallic pipe, tubing and components for any installation, appliance or equipment using CNG, except as authorized by the commissioner.

15. Store, handle or use CNG at bazaars, carnivals, street fairs and similar outdoor events, including public gathering places.

16. Store, handle, use or sell any CNG that has not been satisfactorily odorized with mercaptans or other approved chemical.



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SECTION FC 3508: METHANE RECOVERY

NYC Administrative Code § 29-FC 3508

3508.1 Recovery operations.

The commissioner shall promulgate rules relating to the recovery of methane gas from landfills and other approved locations, to ensure the safe recovery thereof.



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Chapter 36: FLAMMABLE SOLIDS
SECTION FC 3601: GENERAL

NYC Administrative Code § 29-FC 3601

3601.1 Scope.

This chapter shall govern the storage, handling and use of flammable solids.

3601.2Permits.Permits shall be required as set forth in Section 105.6.

3601.3General.Flammable solids shall be stored, handled and used in accordance with this chapter.



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Chapter 36: FLAMMABLE SOLIDS
SECTION FC 3602: DEFINITIONS

NYC Administrative Code § 29-FC 3602

3602.1 Definitions.

The following term shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

FLAMMABLE SOLID. A solid, other than a blasting agent or other explosive, whether in elemental or alloy form, that is capable of causing fire through friction, absorption or moisture, spontaneous chemical change, or heat retained from manufacturing or processing, or which has an ignition temperature below 212(degrees)F (100(degrees)C) or which burns so vigorously and persistently when ignited as to create a serious hazard. A chemical shall be considered a flammable solid if upon testing using the method prescribed in CPSC regulations, as set forth in 16 CFR Section 1500.44, it ignites and burns with a self-sustained flame at a rate greater than 0.1 inch (2.5 mm) per second along its major axis.



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SECTION FC 3603: GENERAL REQUIREMENTS

NYC Administrative Code § 29-FC 3603

3603.1 Quantities not exceeding the maximum allowable quantity per control area.

The storage and use of flammable solids in amounts not exceeding the maximum allowable quantity per control area as indicated in Section 2703.1 shall be in accordance with Sections 2701, 2703, 3601 and this section.

3603.2 Quantities exceeding the maximum allowable quantity per control area. The storage and use of flammable solids exceeding the maximum allowable quantity per control area as indicated in Section 2703.1 shall be in accordance with Chapter 27, this chapter, and NFPA 484.



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SECTION FC 3604: STORAGE

NYC Administrative Code § 29-FC 3604

3604.1 Indoor storage.

Indoor storage of flammable solids in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) shall be in accordance with Sections 2701, 2703, 2704, this chapter, and NFPA 484.

3604.1.1 Pile size limits and location. Flammable solids stored in quantities greater than 1,000 cubic feet (28 m³) shall be separated into piles each not larger than 1,000 cubic feet (28 m³).

3604.1.2 Aisles. Aisle widths between piles shall not be less than the height of the piles or 10 feet (3.1 m), whichever is greater.

3604.1.3 Basement storage. Flammable solids shall not be stored in basements or other below grade areas.

3604.2 Outdoor storage. Outdoor storage of flammable solids in amounts exceeding the maximum allowable quantities per control area indicated in Table 2703.1.1(3) shall be in accordance with Sections 2701, 2703, 2704, this chapter, and NFPA 484.

3604.2.1 Distance from storage to exposures. Outdoor storage of flammable solids shall not be located within 20 feet (6096 mm) of a building, lot line, public street, private road or means of egress. A 2-hour fire barrier without openings or penetrations and extending 30 inches (762 mm) above and to the sides of the storage area is allowed in lieu of such distance. The fire barrier shall either be an independent structure, or the exterior wall of the building adjacent to the storage area.

3604.2.2 Pile size limits. Outdoor storage of flammable solids shall be separated into piles not larger than 5,000 cubic feet (141 m³) each. Piles shall be separated by aisles with a minimum width of not less than one-half the pile height or 10 feet (3048 mm), whichever is greater.

3604.3 Combustible material and combustible waste. Combustible material and combustible waste, including

packing materials and oily rags, shall not be stored in the same area as that where solid combustible metal scraps or powders are stored.



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Chapter 36: FLAMMABLE SOLIDS

SECTION FC 3605: HANDLING AND USE

NYC Administrative Code § 29-FC 3605

3605.1 General.

The handling and use of flammable solids in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) or 2703.1.1(3) shall be in accordance with Sections 2701, 2703, 2705, this chapter, and NFPA 484.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 37: HIGHLY TOXIC AND TOXIC MATERIALS
SECTION FC 3701: GENERAL

NYC Administrative Code § 29-FC 3701

3701.1 Scope.

This chapter shall govern the storage, handling and use of highly toxic and toxic materials and ozone gas generators.

Exceptions:

1. Storage and display in Group M and storage in Group S occupancies complying with the requirements of Section 2703.11.
2. Storage, handling or use for agricultural purposes, including as a pesticide, herbicide, fertilizer or similar application, when approved for such use by the federal, state or city regulatory agency having jurisdiction and when such storage, handling or use is in accordance with the manufacturer's instructions.
3. Storage, handling or personal or domestic use as a pesticide, herbicide, fertilizer in and around a residential dwelling, when approved for such use by the federal, state or city regulatory agency having jurisdiction and when such storage, handling or use is in accordance with the manufacturer's instructions.

3701.2Permits.Permits shall be required as set forth in Section 105.6.

3701.3General.Highly toxic and toxic materials and ozone gas generators shall be stored, handled and used in accordance with this chapter. Highly toxic and toxic materials that are compressed gases shall additionally comply with the requirements of Chapter 30.

3701.4Highly toxic and toxic material mixtures.The level of toxicity of highly toxic and toxic materials may be reduced by diluting such materials with other materials, such as water, to a degree that the resulting mixture may no longer be highly toxic or toxic. A mixture containing any amount of highly toxic and/or toxic material is presumed to be a highly toxic or toxic material, as applicable, unless it is otherwise certified and labeled by the manufacturer.

3701.5Supervision.The handling and use of highly toxic and toxic materials in quantities requiring a permit shall be under the personal supervision of a certificate of fitness holder. The storage of highly toxic and toxic materials in quantities requiring a permit shall be under the general supervision of a certificate of fitness holder.

3701.6Prohibition.It shall be unlawful to compress highly toxic and toxic materials.



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SECTION FC 3702: DEFINITIONS

NYC Administrative Code § 29-FC 3702

3702.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

CONTAINMENT SYSTEM. A gas-tight recovery system comprised of devices or equipment which, when placed over or around the portion of the compressed gas container that is leaking, stops or controls the escape of gas from the container.

CONTAINMENT VESSEL. A gas-tight vessel which, when installed or placed over or around a leaking compressed gas container, confines the container and the gas leaking therefrom.

EXCESS FLOW VALVE. A valve inserted into a compressed gas container that is designed to shut off the flow of gas in the event that its predetermined flow is exceeded.

HIGHLY TOXIC MATERIAL. A chemical that is lethal at the following doses or concentration, including the following:

1. A chemical that has a median lethal dose (LD50) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each; or
2. A chemical that has a median lethal dose (LD50) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each; or
3. A chemical that has a median lethal concentration (LD50) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume or dust, when administered by continuous inhalation for one hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

OZONE GAS GENERATOR. Equipment which produces ozone.

REDUCED FLOW VALVE. A valve equipped with a restricted flow orifice and inserted into a compressed gas container that is designed to reduce the maximum flow from the valve under full-flow conditions. The maximum flow rate from the valve is determined with the valve allowed to flow to atmosphere with no other piping or fittings attached.

TOXIC MATERIAL. A chemical that is lethal at the following doses or concentration:

1. A chemical that has a median lethal dose (LD50) of more than 50 milligrams per kilogram, but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each; or
2. A chemical that has a median lethal dose (LD50) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each; or
3. A chemical that has a median lethal concentration (LD50) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than 2 milligrams per liter but not more than 20 milligrams per liter of mist, fume or dust, when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

Exception: For purposes of this code, chlorine is classified as a highly toxic material.



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SECTION FC 3703: HIGHLY TOXIC AND TOXIC SOLIDS AND LIQUIDS

NYC Administrative Code § 29-FC 3703

3703.1 Indoor storage, handling and use.

The indoor storage, handling and use of highly toxic and toxic materials shall comply with the requirements of Sections 3703.1.1 through 3703.1.5.3.

3703.1.1Quantities not exceeding the maximum allowable quantity per control area.The indoor storage, handling or use of highly toxic and toxic solids or liquids in amounts not exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(2) shall be in accordance with Sections 2701, 2703 and 3701.

3703.1.2Quantities exceeding the maximum allowable quantity per control area.The indoor storage, handling or use of highly toxic and toxic solids or liquids in amounts exceeding the maximum allowable quantity per control area set forth in Table 2703.1.1(2) shall be in accordance with Sections 3701 through 3703.1.3 and Chapter 27.

3703.1.3Treatment system-highly toxic liquids.Exhaust scrubbers or other systems for processing vapors of highly toxic liquids shall be provided where a spill or accidental release of such liquids can be expected to release highly toxic vapors at normal temperature and pressure. Treatment systems and other processing systems shall be installed in accordance with the construction codes, including the Mechanical Code.

3703.1.4Indoor storage.Indoor storage of highly toxic and toxic solids and liquids shall comply with the requirements of Sections 3703.1.4.1 and 3703.1.4.2.

3703.1.4.1Floors.In addition to the requirements set forth in Section 2704.12, floors of storage areas shall be of liquid-tight construction.

3703.1.4.2Separation-highly toxic solids and liquids.In addition to the requirements set forth in Section 2703.9.8, highly toxic solids and liquids in storage shall be located in approved hazardous material storage cabinets or isolated from other hazardous material storage by construction in accordance with the construction codes, including the Building

Code.

3703.1.5 Indoor handling and use. Indoor handling and use of highly toxic and toxic solids and liquids shall be in accordance with Sections 3703.1.5.1 through 3703.1.5.3.

3703.1.5.1 Liquid transfer. Highly toxic and toxic liquids shall be transferred in accordance with Section 2705.1.10.

3703.1.5.2 Exhaust ventilation for open systems. Mechanical exhaust ventilation shall be provided for highly toxic and toxic liquids used in open systems in accordance with Section 2705.2.1.1.

Exception: Liquids or solids that do not generate highly toxic or toxic fumes, mists or vapors.

3703.1.5.3 Exhaust ventilation for closed systems. Mechanical exhaust ventilation shall be provided for highly toxic and toxic liquids used in closed systems in accordance with Section 2705.2.2.2.

Exception: Liquids or solids that do not generate highly toxic or toxic fumes, mists or vapors.

3703.2 Outdoor storage, handling and use. Outdoor storage, handling and use of highly toxic and toxic materials shall be in accordance with Sections 3703.2.1 through 3703.2.6.

3703.2.1 Quantities not exceeding the maximum allowable quantity per control area. The outdoor storage, handling or use of highly toxic and toxic solids or liquids in amounts not exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(4) shall be in accordance with Sections 2701, 2703 and 3701.

3703.2.2 Quantities exceeding the maximum allowable quantity per control area. The outdoor storage, handling or use of highly toxic and toxic solids or liquids in amounts exceeding the maximum allowable quantity per control area set forth in Table 2703.1.1(4) shall be in accordance with Sections 3701 and 3703.2 and Chapter 27.

3703.2.3 General outdoor requirements. The general requirements applicable to the outdoor storage of highly toxic or toxic solids and liquids shall be in accordance with Sections 3703.2.3.1 and 3703.2.3.2.

3703.2.3.1 Location. Outdoor storage, handling or use of highly toxic or toxic solids and liquids shall not be located within 20 feet (6096 mm) of lot lines, public streets, private roads, exit discharges or exterior wall openings. A 2-hour fire barrier wall without openings or penetrations extending not less than 30 inches (762 mm) above and to the sides of the storage is allowed in lieu of such distance. The fire barrier wall shall be either an independent structure or the exterior wall of the building adjacent to the storage area.

3703.2.3.2 Treatment system-highly toxic liquids. Exhaust scrubbers or other systems for processing vapors of highly toxic liquid shall be installed where a spill or accidental release of such liquids can be expected to release highly toxic vapors at normal temperature and pressure (NTP). Treatment systems and other processing systems shall be installed in accordance with the construction codes, including the Mechanical Code.

3703.2.4 Outdoor storage piles. Outdoor storage piles of highly toxic and toxic solids and liquids shall be separated into piles not larger than 2,500 cubic feet (71 m³). Aisle widths between piles shall not be less than one-half the height of the pile or 10 feet (3048 mm), whichever is greater.

3703.2.5 Weather protection-outdoor storage or use. Where overhead weather protection is provided for outdoor storage or use of highly toxic and toxic liquids or solids, and the weather protection is attached to a building or structure, the storage or use area shall either be protected throughout by a sprinkler system, or storage or use vessels shall be fire-resistance rated. Weather protection shall be provided in accordance with Section 2704.13 for storage and Section 2705.3.9 for use.

3703.2.6 Outdoor liquid transfer. Highly toxic and toxic liquids shall be transferred in accordance with Section

2705.1.10.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 37: HIGHLY TOXIC AND TOXIC MATERIALS
SECTION FC 3704: HIGHLY TOXIC AND TOXIC COMPRESSED GASES

NYC Administrative Code § 29-FC 3704

3704.1 General.

The storage, handling and use of highly toxic and toxic compressed gases shall comply with the requirements of this section.

3704.1.1 Prohibited indoor storage, handling and use by occupancy. It shall be unlawful to store, handle or use highly toxic and toxic compressed gases in:

1. Group A, E, I, R or U occupancies.
2. Offices in Group B, F, M or S occupancies, or any other areas of such occupancies that are accessible to the public.

3704.1.2 Gas cabinets. Gas cabinets containing highly toxic or toxic compressed gases shall comply with the requirements of Section 2703.8.5 and shall be ventilated in accordance with the Mechanical Code.

3704.1.2.1 Capacity limits. The maximum number of containers located in a single gas cabinet shall not exceed three, except that cabinets containing containers not over 1 pound (0.454 kg) net contents are allowed to contain up to 100 containers.

3704.1.2.2 Fire protection. Gas cabinets required by Section 3704.2 or 3704.3 shall be protected by a sprinkler system. Alternative fire extinguishing systems shall not be used in lieu of a sprinkler system.

3704.1.3 Exhausted enclosures. Exhausted enclosures containing highly toxic or toxic compressed gases shall be ventilated in accordance with the Mechanical Code.

3704.1.3.1 Fire protection. Exhausted enclosures required by Section 3704.2 or 3704.3 shall be protected by a sprinkler system. Alternative fire extinguishing systems shall not be used in lieu of a sprinkler system.

3704.2 Indoor storage, handling and use. The indoor storage, handling and use of highly toxic or toxic compressed gases shall be in accordance with Sections 3704.2.1 through 3704.2.2.10.3.

3704.2.1 Applicability. The applicability of regulations governing the indoor storage, handling and use of highly toxic and toxic compressed gases shall be as set forth in Sections 3704.2.1.1 through 3704.2.1.3.

3704.2.1.1 Quantities not exceeding the maximum allowable quantity per control area. The indoor storage, handling or use of highly toxic and toxic gases in amounts not exceeding the maximum allowable quantity per control area set forth in Table 2703.1.1(2) shall be in accordance with Sections 2701, 2703, 3701 and 3704.1.

3704.2.1.2 Quantities exceeding the maximum allowable quantity per control area. The indoor storage, handling or use of highly toxic and toxic gases in amounts exceeding the maximum allowable quantity per control area set forth in Table 2703.1.1(2) shall be in accordance with Sections 3701, 3704.1, 3704.2 and Chapter 27.

3704.2.1.3 Ozone gas generators. The indoor use of ozone gas-generating equipment shall be in accordance with Section 3705.

3704.2.2 General indoor requirements. The general requirements applicable to the indoor storage, handling and use of highly toxic and toxic compressed gases shall be in accordance with Sections 3704.2.2.1 through 3704.2.2.10.3.

3704.2.2.1 Container location. Portable containers shall be located within gas cabinets, exhausted enclosures or gas rooms. All other containers shall be located within gas rooms or exhausted enclosures.

3704.2.2.2 Ventilated areas. The room or other area in which gas cabinets or exhausted enclosures are located shall be provided with exhaust ventilation. Gas cabinets or exhausted enclosures shall not be used as the sole means of exhaust for any room or area.

3704.2.2.3 Leaking containers. One or more gas cabinets or exhausted enclosures shall be available on the premises to capture the gas from the containers until such time as the leaking container can be removed from the premises and disposed of lawfully.

Exceptions:

1. Where containers are located within gas cabinets or exhausted enclosures.
2. Where approved containment vessels or containment systems are provided in accordance with the following requirements:
 - 2.1. Containment vessels or containment systems shall be capable of fully containing or terminating a release.
 - 2.2. Trained personnel shall be available at an approved location.
 - 2.3. Containment vessels or containment systems shall be capable of being transported to the leaking container.

3704.2.2.3.1 Location. Gas cabinets and exhausted enclosures shall be located in gas rooms and connected to an exhaust system.

3704.2.2.4 Local exhaust for portable containers. A means of local exhaust shall be provided to capture leaks from portable containers. The local exhaust shall consist of portable ducts or collection systems designed to be applied to the site of a leak in a valve or fitting on the container. The local exhaust system shall be located in a gas room. Exhaust shall be directed to a treatment system in accordance with Section 3704.2.2.7.

3704.2.2.5 Piping and controls-stationary containers. In addition to the requirements of Section 2703.2.2, piping and

controls on stationary containers shall comply with the following requirements:

1. Pressure relief devices shall be vented to a treatment system designed in accordance with Section 3704.2.2.7.

Exception: Pressure relief devices on outdoor containers provided exclusively for relieving pressure due to fire exposure are not required to be vented to a treatment system provided that:

1. The material in the container is not flammable.
2. The container is not located in a diked area with other containers containing combustible materials.
3. The container is located not less than 30 feet (9144 mm) from combustible materials or structures or is shielded by a fire barrier complying with the requirements of Section 3704.3.2.1.1.

2. Filling or dispensing connections shall be provided with a means of local exhaust. Such exhaust shall be designed to capture fumes and vapors. The exhaust shall be directed to a treatment system in accordance with Section 3704.2.2.7.

3. Stationary containers shall be provided with a means of excess flow control on all container inlet or outlet connections.

Exceptions:

1. Inlet connections designed to prevent backflow.
2. Pressure relief devices.

3704.2.2.6 Gas rooms. Gas rooms shall comply with the requirements of Section 2703.8.4 and both of the following requirements:

1. The exhaust ventilation from gas rooms shall be directed to an exhaust system.
2. Gas rooms shall be protected throughout by a sprinkler system. Alternative fire extinguishing systems shall not be used in lieu of a sprinkler system.

3704.2.2.7 Treatment systems. The exhaust ventilation from gas cabinets, exhausted enclosures and gas rooms, and local exhaust systems required by Sections 3704.2.2.4 and 3704.2.2.5 shall be directed to a treatment system. The treatment system shall be utilized to handle the accidental release of gas and to process exhaust ventilation. The treatment system shall be designed in accordance with Sections 3704.2.2.7.1 through 3704.2.2.7.5 and Section 510 of the Mechanical Code.

Exceptions:

1. Highly toxic and toxic gases-storage. A treatment system is not required for containers in storage when the following controls are provided:

- 1.1. Valve outlets are equipped with gas-tight outlet plugs or caps.
- 1.2. Handwheel-operated valves have handles secured to prevent movement.
- 1.3. Approved containment vessels or containment systems are provided in accordance with Section 3704.2.2.3.

2. Toxic gases-use. Treatment systems are not required for toxic gases supplied by portable containers not exceeding 660 gallons (2 498 L) liquid capacity when the following controls are provided:

2.1. A gas detection system with a sensing interval not exceeding 5 minutes.

2.2. An approved automatic-closing fail-safe valve located immediately adjacent to container valves. The fail-safe valve shall close when gas is detected at the permissible exposure limit (PEL) by a gas detection system monitoring the exhaust system at the point of discharge from the gas cabinet, exhausted enclosure, ventilated enclosure or gas room. The gas detection shall comply with the requirements of Section 3704.2.2.10.

3704.2.2.7.1Design. Treatment systems shall be capable of diluting, adsorbing, absorbing, containing, neutralizing, burning or otherwise processing the contents of the largest compressed gas container. Where a total containment system is used, the system shall be designed to handle the maximum anticipated pressure of release to the system when it reaches equilibrium.

3704.2.2.7.2Performance. Treatment systems shall be designed to reduce the maximum allowable discharge concentrations of the gas to one-half immediate dangerous to life and health (IDLH) at the point of discharge to the atmosphere. Where more than one gas is emitted to the treatment system, the treatment system shall be designed to handle the worst-case release based on the release rate, the quantity and the IDLH for all compressed gases stored or used.

3704.2.2.7.3Sizing. Treatment systems shall be sized to process the maximum worstcase release of gas based on the maximum flow rate of release and the entire contents from the largest container utilized.

3704.2.2.7.4Stationary containers. Stationary containers shall be labeled with the maximum rate of release for the compressed gas contained based on valves or fittings that are inserted directly into the container. Where multiple valves or fittings are provided, the maximum flow rate of release for valves or fittings with the highest flow rate shall be indicated. Where liquefied compressed gases are in contact with valves or fittings, the liquid flow rate shall be utilized for computation purposes. Flow rates indicated on the label shall be converted to SCF.

3704.2.2.7.5Portable containers. The maximum flow rate of release for portable containers shall be calculated based on the total release from the container within 5 minutes for containers with nonliquefied content and 30 minutes for containers with liquefied content. When portable containers are equipped with approved excess flow or reduced flow valves, the worst-case release shall be determined by the maximum achievable flow from the valve as determined by the valve manufacturer or compressed gas supplier. Reduced flow and excess flow valves shall be permanently marked by the valve manufacturer to indicate the maximum design flow rate. Such markings shall indicate the flow rate for air under normal temperature and pressure.

3704.2.2.8Emergency power. Emergency power shall be provided in accordance with the Electrical Code and the Building Code where any of the following systems are required:

1. Exhaust ventilation system.
2. Treatment system.
3. Gas detection system.
4. Smoke detection system.
5. Temperature control system.
6. Fire alarm system.
7. Emergency alarm system.

Exception: Emergency power is not required for mechanical exhaust ventilation, treatment systems and temperature

control systems where approved fail-safe engineered systems are installed.

3704.2.2.9 Automatic fire detection system-highly toxic compressed gases. An approved automatic fire detection system shall be installed in rooms or areas where highly toxic compressed gases are stored or used. Activation of the detection system shall sound a local alarm. The fire detection system shall comply with the requirements of the Building Code.

3704.2.2.10 Gas detection system. A gas detection system shall be provided to detect the presence of gas at or below the permissible exposure limit (PEL) or ceiling limit of the gas for which detection is provided. The system shall be capable of monitoring the discharge from the treatment system at or below one-half the IDLH limit.

Exception: A gas detection system is not required for toxic gases when the physiological warning properties for the gas are at a level below the accepted PEL for the gas.

3704.2.2.10.1 Alarms. The gas detection system shall initiate a local alarm and transmit a signal to a continuously attended control station on the premises whenever it detects the presence of the gas in the atmosphere. The alarm shall be both visual and audible and shall provide warning both inside and outside the area where gas is detected.

Exception: Signal transmission to a continuously attended control station is not required where not more than one container of highly toxic or toxic gas is stored.

3704.2.2.10.2 Shut off of gas supply. The gas-detection system shall automatically close the shutoff valve at the source on gas supply piping and tubing related to the system being monitored for whichever gas is detected.

Exception: Automatic shutdown is not required for reactors utilized for the production of highly toxic or toxic compressed gases where such reactors are:

1. Operated at pressures less than 15 pounds per square inch gauge (psig) (103.4 kPa).
2. Continuously attended.
3. Provided with readily accessible emergency shutoff valves.

3704.2.2.10.3 Valve closure. When the gas-detection sampling point initiating the gas-detection system alarm is at a use location or within a gas valve enclosure of a branch line downstream of a piping distribution manifold, the shutoff valve in the gas valve enclosure for the branch line located in the piping distribution manifold enclosure shall automatically close. Under all other circumstances, shutoff valves shall comply with the following automatic closure requirements:

1. When the gas-detection sampling point initiating the gas detection system alarm is within a gas cabinet or exhausted enclosure, the shutoff valve in the gas cabinet or exhausted enclosure for the specific gas detected shall automatically close.

2. Where the gas-detection sampling point initiating the gas detection system alarm is within a gas room and compressed gas containers are not in gas cabinets or exhausted enclosures, the shutoff valves on all gas lines for the specific gas detected shall automatically close.

3. Where the gas-detection sampling point initiating the gas detection system alarm is within a piping distribution manifold enclosure, the shutoff valve for the container of specific gas detected supplying the manifold shall automatically close.

3704.3 Outdoor storage, handling and use. The outdoor storage, handling and use of highly toxic and toxic compressed gases shall be in accordance with Sections 3704.3.1 through 3704.3.9.

3704.3.1 Applicability. The outdoor storage, handling and use of highly toxic and toxic compressed gases shall be in accordance with Sections 3704.3.1.1 through 3704.3.1.3.

3704.3.1.1 Quantities not exceeding the maximum allowable quantity per control area. The outdoor storage, handling or use of highly toxic and toxic gases in amounts not exceeding the maximum allowable quantity per control area set forth in Table 2703.1.1(4) shall be in accordance with Sections 2701, 2703 and 3701.

3704.3.1.2 Quantities exceeding the maximum allowable quantity per control area. The outdoor storage, handling or use of highly toxic and toxic gases in amounts exceeding the maximum allowable quantity per control area set forth in Table 2703.1.1(4) shall be in accordance with Sections 3701 and 3704.3 and Chapter 27.

3704.3.1.3 Ozone gas generators. The outdoor use of ozone gas-generating equipment shall be in accordance with Section 3705.

3704.3.2 General outdoor requirements. The outdoor storage, handling and use of highly toxic and toxic compressed gases shall be in accordance with Sections 3704.3.2.1 through 3704.3.2.7.

3704.3.2.1 Location. Outdoor storage, handling or use of highly toxic or toxic compressed gases shall be located in accordance with Sections 3704.3.2.1.1 through 3704.3.2.1.3.

Exception: Compressed gases located in gas cabinets complying with the requirements of Sections 2703.8.5 and 3704.1.2 and located 5 feet (1524 mm) or more from buildings and 25 feet (7620 mm) or more from an exit discharge.

3704.3.2.1.1 Distance limitation to exposures. Outdoor storage, handling or use of highly toxic or toxic compressed gases shall not be located within 75 feet (22 860 mm) of a lot line, public street, private road, exit discharge or building not associated with the manufacture or distribution of such gases, unless all of the following conditions are met:

1. Storage is shielded by a 2-hour fire-resistant barrier which interrupts the line of sight between the storage and the exposure.
2. The 2-hour fire-resistant barrier shall be located at least 5 feet (1524 mm) from any exposure.
3. The 2-hour fire-resistant barrier shall not have more than two sides at approximately 90-degree (1.57 rad) directions, or three sides with connecting angles of approximately 135 degrees (2.36 rad).

3704.3.2.1.2 Openings in exposed buildings. Where the storage, handling or use area is located closer than 75 feet (22 860 mm) to a building not associated with the manufacture or distribution of highly toxic or toxic compressed gases, openings into a building other than for piping are not allowed above the height of the top of the 2-hour fire-resistant barrier or within 50 feet (15 240 mm) horizontally from the storage area whether or not shielded by a fire barrier.

3704.3.2.1.3 Air intakes. Any area used for storage, handling or use shall not be located within 75 feet (22 860 mm) of air intakes.

3704.3.2.2 Leaking containers. The requirements of Section 3704.2.2.3 shall apply to outdoor containers. Gas cabinets and exhausted enclosures shall be located within or immediately adjacent to outdoor storage, handling or use areas.

3704.3.2.3 Local exhaust for portable containers. Local exhaust for outdoor portable containers shall be provided in accordance with Section 3704.2.2.4.

3704.3.2.4 Piping and controls-stationary containers. Piping and controls for outdoor stationary containers shall be in accordance with Section 3704.2.2.5.

3704.3.2.5Treatment systems.The treatment system requirements set forth in Section 3704.2.2.7 shall apply to highly toxic or toxic gases located outdoors.

3704.3.2.6Emergency power.The requirements for emergency power set forth in Section 3704.2.2.8 shall apply to highly toxic or toxic gases located outdoors.

3704.3.2.7Gas detection system.The gas detection system requirements set forth in Section 3704.2.2.10 shall apply to highly toxic or toxic gases located outdoors.

3704.3.3Outdoor storage weather protection for portable containers.Weather protection in accordance with Section 2704.13 shall be provided for portable containers located outdoors and not within gas cabinets or exhausted enclosures. The storage area shall be protected throughout by a sprinkler system.

Exception: A sprinkler system is not required when:

1. All materials under the weather protection structure, including hazardous materials and the containers in which they are stored, are noncombustible.

2. The weather protection structure is located not less than 30 feet (9144 mm) from combustible materials or structures or is separated from such materials or structures using a fire barrier complying with the requirements of Section 3704.3.2.1.1.

3704.3.4Outdoor use of portable containers.Portable containers in outdoor use shall be located in gas cabinets or exhausted enclosures.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 37: HIGHLY TOXIC AND TOXIC MATERIALS
SECTION FC 3705: OZONE GAS GENERATORS

NYC Administrative Code § 29-FC 3705

3705.1 Scope.

This section shall govern the design, installation, operation and maintenance of ozone gas generators with a maximum ozone-generating capacity of 0.5 pound (0.23 kg) or more over a 24-hour period, except ozone-generating equipment used in Group R-3 occupancies.

3705.2Design.Ozone gas generators shall be designed, manufactured and tested in accordance with NEMA 250.

3705.3Location.Ozone gas generators shall be located in approved cabinets or ozone generator rooms in accordance with Section 3705.3.1 or 3705.3.2.

3705.3.1Cabinets.Ozone cabinets shall be constructed of approved materials and compatible with ozone. Cabinets shall display an approved sign stating: OZONE GAS GENERATOR-HIGHLY TOXIC-OXIDIZER.

3705.3.1.1Seismic design.Cabinets shall be braced for seismic activity in accordance with the Building Code.

3705.3.1.2Ventilation.Cabinets shall be mechanically ventilated in accordance with the Mechanical Code.

3705.3.2Ozone gas generator rooms.Ozone gas/generator rooms shall be mechanically ventilated in accordance with the Mechanical Code. Ozone gas generator rooms shall be equipped with a continuous gas detection system which will shut off the generator and sound a local audible and visible alarm when concentrations above the permissible exposure limit occur.

3705.3.2.1Warning sign.Ozone gas-generator rooms shall not be normally occupied, and such rooms shall be kept free of combustible and hazardous material storage. Room access doors shall display an approved sign stating: OZONE GAS GENERATOR-HIGHLY TOXIC-OXIDIZER.

3705.4Piping, valves and fittings.Piping, valves, fittings and related components used to convey ozone shall be in

accordance with Sections 3705.4.1 through 3705.4.3.

3705.4.1Piping.Piping shall be welded stainless steel piping or tubing.

Exceptions:

1. Double-walled piping.
2. Piping, valves, fittings and related components located in exhausted enclosures.

3705.4.2Materials.Materials shall be compatible with ozone and shall be rated for the design operating pressures.

3705.4.3Identification.Piping shall be identified with the following: OZONE GAS-HIGHLY TOXIC-OXIDIZER.

3705.5Automatic shutdown.Ozone gas generators shall be designed to shut down automatically under the following conditions:

1. When the dissolved ozone concentration in the water being treated is above saturation when measured at the point where the water is exposed to the atmosphere.
2. When the process using generated ozone is shut down.
3. When the gas detection system detects ozone.
4. Failure of the ventilation system for the cabinet or ozone-generator room.
5. Failure of the gas-detection system.

3705.6Manual shutdown.Manual shutdown controls shall be provided at the ozone gas generator and, when the generator is in a room, within 10 feet (3048 mm) of the main exit or exit access door.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 38: LIQUEFIED PETROLEUM GASES
SECTION FC 3801: GENERAL

NYC Administrative Code § 29-FC 3801

3801.1 Scope.

This chapter shall govern the manufacture, storage, handling and use of LPG and the installation and operation of LPG equipment relating to such systems.

Exceptions:

1. Use of LPG or LPG mixtures as a refrigerant in a refrigerating system regulated by the construction codes, including the Mechanical Code, and Section FC 606 of this code.
2. Storage and use of LPG in connection with special effects.
3. Outdoor storage and use for private, non-commercial barbecues within the lot line of a Group R-3 occupancy, as set forth in Section 307.

3801.2Permits.Permits shall be required as set forth in Section 105.6.

3801.2.1Deliveries.Distributors shall not deliver LPG containers to any location in quantities requiring a permit unless a permit for such installation, storage or use has been issued for that location by the commissioner.

3801.3Design and installation documents.Design and installation documents for LPG storage facilities and stationary installations shall be submitted to and approved by the commissioner in accordance with Section 105.4.

3801.4General.LPG shall be stored, handled and used, and devices, equipment and systems utilizing LPG shall be designed, installed, operated and maintained, in accordance with this chapter, the rules and NFPA 58.

3801.5Supervision.The storage, handling and use of LPG shall be supervised in accordance with Sections 3801.5.1 through 3801.5.8.

3801.5.1 Connecting and disconnecting of LPG containers. The connecting and disconnecting of LPG containers with a capacity greater than 16.4 ounces (0.465 kg) shall be conducted by a person holding a certificate of fitness.

3801.5.2 Tar kettles. The storage, handling and use of a tar kettle that requires a permit shall be under the personal supervision of a person holding a certificate of fitness.

3801.5.3 Torch operations. Torch operations using LPG containers with a capacity greater than 16.4 ounces (0.465 kg) LPG shall be performed by a person holding a certificate of fitness.

3801.5.4 Curing concrete, drying plaster and similar applications. The use of LPG for curing concrete, drying plaster and similar applications shall be under the personal supervision of a person holding a certificate of fitness.

3801.5.5 Manhole operations. The storage, handling and use of LPG at manhole operations shall be under the personal supervision of a person holding a certificate of fitness.

3801.5.6 Street festivals, fairs, bazaars, carnivals and similar outdoor events. The storage, handling and use of LPG at street festivals, fairs, bazaars, carnivals and similar outdoor events, including public gatherings, shall be under the personal supervision of a person holding a certificate of fitness.

3801.5.7 Hot air balloon tethering operation. The storage, handling and use of LPG for hot air balloon tethering operations shall be under the personal supervision of a person holding a certificate of fitness and a United States Federal Aviation Administration license, except as may otherwise be provided in the rules.

3801.5.8 General supervision. Except as otherwise provided in Sections 3801.5.1 through 3801.5.7, the storage and use of LPG in quantities requiring a permit shall be under the general supervision of a person holding a certificate of fitness.



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Chapter 38: LIQUEFIED PETROLEUM GASES

SECTION FC 3802: DEFINITIONS

NYC Administrative Code § 29-FC 3802

3802.1 Definition.

The following term shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

LIQUEFIED PETROLEUM GAS (LPG). A material which is composed predominantly of the following hydrocarbons or mixtures of them: propane, propylene, butane (normal butane or isobutane) and butylenes. Methylacetylene-propadiene mixtures (MAPP-gas) shall be deemed to be an LPG.



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Chapter 38: LIQUEFIED PETROLEUM GASES
SECTION FC 3803: INSTALLATION OF EQUIPMENT

NYC Administrative Code § 29-FC 3803

3803.1 General.

LPG equipment shall be installed in accordance with the construction codes, including the Fuel Gas Code, the rules and NFPA 58, except as otherwise provided in this chapter.

3803.2 Use of LPG containers in buildings. The use of LPG containers in buildings shall be in accordance with Sections 3803.2.1 and 3803.2.2.

3803.2.1 Portable containers. Portable LPG containers, as defined in NFPA 58, shall not be used in buildings except as authorized by the commissioner, NFPA 58 and Sections 3803.2.1.1 through 3803.2.1.7.

3803.2.1.1 Use in basement, pit or other area below grade. LPG containers shall not be used in a cellar, basement, pit or other area below grade where heavier-than-air gas might collect. LPG containers shall not be used in an above-grade underfloor space or basement unless such location is provided with an approved means of ventilation.

Exceptions:

1. Use with self-contained torch assemblies in accordance with Section 3803.2.1.6 and the rules.
2. Manhole operations in accordance with the rules.

3803.2.1.2 Construction site heating. Portable containers are allowed to be used in buildings or areas of buildings undergoing construction as set forth in Section 3.4.3 of NFPA 58, Sections 313.5 and 1403, and the rules.

3803.2.1.3 Group F occupancies. Portable LPG containers shall not be stored, handled or used indoors in Group F occupancies, except as the commissioner may authorize by rule.

3803.2.1.4 Group E and I occupancies. Portable LPG containers shall not be permitted inside Group E and I

occupancies, except as allowed in this section and the rules. In Group E and I occupancies, portable LPG containers are allowed to be used for research purposes. Such containers shall not be used in classrooms. Such containers shall not exceed 16.4 ounces (0.465 kg) of LPG. Where more than one such container is present in the same room, each container shall be separated from other containers by a distance of not less than 20 feet (6096 mm).

3803.2.1.5 Demonstration uses. Portable LPG containers are allowed to be used temporarily for demonstrations and public exhibitions. Except as otherwise authorized by the commissioner in connection with exhibitions and trade shows, such containers shall not exceed 16.4 ounces (0.465 kg) of LPG. Where more than one such container is present in the same room, each container shall be separated from other containers by a distance of not less than 20 feet (6096 mm). Storage and use of portable LPG containers shall be in accordance with the rules.

3803.2.1.6 Use with self-contained torch assemblies. Portable LPG containers are allowed to be used to supply approved self-contained torch assemblies. Such containers shall not exceed 16.4 ounces (0.465 kg) of LPG.

3803.2.1.7 Use for food preparation. Commercial food service appliances using LPG may be used only when authorized by this code or the rules.

3803.2.2 Industrial vehicles. Containers on industrial vehicles shall comply with the requirements of Section FC 309, Sections 8.3 and 8.4 of NFPA 58, and the rules.

3803.3 Location of equipment and piping. Equipment and piping shall not be installed in locations where such equipment and piping is prohibited by the construction codes, including the Fuel Gas Code, or the rules.



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Chapter 38: LIQUEFIED PETROLEUM GASES
SECTION FC 3805: PROHIBITED STORAGE, HANDLING AND USE OF LPG

NYC Administrative Code § 29-FC 3805

3805.1 Unapproved equipment.

LPG shall not be used for the purpose of operating any device, equipment or system unless such device, equipment or system is approved for use with LPG.

3805.2Release to the atmosphere.LPG shall not be released to the atmosphere except as authorized by the commissioner.

3805.3General prohibitions.It shall be unlawful to:

1. Store, handle or use LPG in any container with a capacity greater than 100 pounds (45.4 kg) of LPG.
2. Store, handle or use LPG in a basement, cellar or other below grade area, except as authorized by the commissioner.
3. Store LPG in any outdoor or indoor storage facility, or store, handle or use LPG for a stationary LPG installation that has not been approved.
4. Store, handle or use LPG without a permit when such storage, handling or use exceeds the quantities set forth in Section 105.6.
5. Store, handle or use in, or bring or allow into, any residential occupancy, or on any lot containing a building used for a residential occupancy, any LPG container with a capacity greater than 16.4 ounces (0.465 kg), except as authorized by the commissioner.
6. Store, handle or use in, or bring or allow into, any non-residential building, any LPG container with a capacity greater than 16.4 ounces (0.465 kg) LPG, except as authorized by the commissioner.

7. Store LPG containers on the roof of any building.
8. Handle or use on the roof of any building LPG containers with a capacity greater than 16.4 ounces (0.465 kg), except as authorized by the commissioner.
9. Store, handle or use LPG in or on motor vehicles, except as temporary storage incidental to transportation, or as a fuel for generating motive power for a motor vehicle, or as otherwise authorized by the commissioner.
10. Store, handle or use LPG for a stationary LPG installation in any area where access to piped natural gas from a public utility is available.
11. Store, handle or use LPG in any equipment used or previously used for natural gas, except as may be authorized by the commissioner on an emergency basis.
12. Store, handle or use LPG for space heating or water heating, except as authorized by the commissioner.
13. Store, handle or use LPG in or for any appliance that withdraws or utilizes LPG in a liquid form except as authorized by the commissioner.
14. Use non-metallic pipe, tubing and components for any installation, appliance or equipment using LPG, except as authorized by the commissioner.
15. Store LPG containers with a capacity greater than 16.4 ounces (0.465 kg) LPG indoors in any residential occupancy and in any building where an outside storage location for such LPG container is available.
16. Store or operate a floor maintenance machine utilizing LPG indoors.
17. Manufacture LPG.
18. Dispense LPG and fill LPG containers as set forth in Section FC 3806.



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Chapter 38: LIQUEFIED PETROLEUM GASES

SECTION FC 3806: DISPENSING AND FILLING

NYC Administrative Code § 29-FC 3806

3806.1 Dispensing and filling.

It shall be unlawful to dispense LPG, fill a container with LPG, or transfer LPG in any state from one container to another.



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Chapter 38: LIQUEFIED PETROLEUM GASES
SECTION FC 3807: SAFETY PRECAUTIONS AND DEVICES

NYC Administrative Code § 29-FC 3807

3807.1 Safety devices.

Safety devices on LPG containers, equipment and systems shall not be tampered with or rendered ineffective.

3807.2Smoking and other sources of ignition."No Smoking" signs complying with the requirements of Section 310 shall be posted when required by the commissioner. Smoking is prohibited in accordance with Chapter 3. Control of other sources of ignition shall comply with the requirements of Chapter 3, and Section 3.7 of NFPA 58.

3807.3Clearance to combustibles.LPG containers shall be kept a minimum of 10 feet (3048 mm) from vegetation, rubbish and other combustible waste and combustible materials.

3807.4Protecting containers from vehicles.Where exposed to vehicular damage due to proximity to alleys, driveways or parking areas or when required by the commissioner, LPG containers, regulators and piping shall be protected in accordance with Section 312.



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SECTION FC 3808: PORTABLE FIRE EXTINGUISHERS

NYC Administrative Code § 29-FC 3808

3808.1 Reserved.

3808.2 Portable fire extinguishers. Portable fire extinguishers complying with the requirements of Section 906 shall be provided as specified in NFPA 58 and the rules.



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SECTION FC 3809: STORAGE OF PORTABLE LPG CONTAINERS

NYC Administrative Code § 29-FC 3809

3809.1 General.

Storage of portable LPG containers shall comply with the requirements of Sections 3809.2 through 3809.14, and shall be approved by the commissioner.

Exceptions:

1. Containers that have not previously been filled with LPG.
2. Containers stored for use at construction sites.

3809.2Exposure hazards.Containers in storage shall be located in a manner which minimizes exposure to physical damage, tampering or excessive temperature rise.

3809.3Position.Containers in storage having individual capacity greater than 1 pound (0.454 kg) of LPG shall be positioned with the pressure relief valve in direct communication with the vapor space of the container.

3809.4Separation from means of egress.Containers shall not be stored or left unattended near exit access doors, exits, stairways, exit discharge areas, or other areas designed or used as a means of egress.

3809.5Quantity.Empty containers that have been in LPG service shall be considered as full containers for the purpose of determining the maximum quantities of LPG allowed in Sections 3809.9 and 3809.11.

3809.6Storage on roofs.Containers shall not be stored, or connected for use in a stationary LPG installation, on the roof of any building or structure.

3809.7Storage in basement, pit or other area below grade.LPG containers shall not be stored in a cellar, basement, pit or other area below grade.

3809.8 Protection of valves on containers in storage. Container valves shall be protected by screw-on-type caps or collars which shall be securely in place on all containers stored regardless of whether they are full, partially full or empty. Container outlet valves shall be closed. LPG containers with a capacity of 20 pounds (9 kg) of LPG shall also be provided with transportation plugs that secure gas tight the container's outlet valve connection.

3809.9 Storage within buildings accessible to the public. LPG containers constructed in accordance with the United States Department of Transportation (DOT) specifications with a maximum capacity of 16.4 ounces (0.465 kg) of LPG used in completely self-contained hand torches and similar devices are allowed to be stored for sale or displayed in a building accessible to the public. Buildings shall be protected by a sprinkler system in storage and display areas when quantities exceed permit amounts. The quantity of LPG shall not exceed 200 pounds (91 kg).

3809.10 Storage within buildings not accessible to the public. The quantity of LPG containers allowed in one storage location in buildings not accessible to the public, such as industrial buildings, shall not exceed a maximum capacity of 300 pounds (136 kg) of LPG. Where additional storage locations are required on the same floor within the same building, they shall be separated by a minimum of 300 feet (91 440 mm).

Exception: Storage of LPG at construction sites shall be in accordance with the rules.

3809.11 Reserved.

3809.12 Location of outdoor storage. Outdoor storage, including storage of containers for sale and containers connected for use, shall be located not less than 20 feet (6096 mm) from building openings, 20 feet (6096 mm) from any motor vehicle fuel dispenser and 10 feet (3048 mm) from any combustible material and, as applicable, in accordance with the Table 3809.12. Outdoor storage of LPG shall be limited to not more than 400 pounds (181.6 kg) of LPG and shall be located at or above grade level.

Exception: Storage of LPG at construction sites shall be in accordance with the rules.

3809.12.1 Proximity to hazards. Storage shall not be located where the stored LPG would be exposed to the following hazards in the event of the failure of their structure or containment systems:

1. Electric power lines.
2. Piping containing flammable or combustible liquids.
3. Piping containing flammable gases.

4. Piping containing oxidizing materials. 3] Table 3809.12 Distances from Outdoor LPG Storage Area to Exposures

Type of Outdoor Exposure	LPG Storage Area More Than 100 Pounds LPG up to Maximum 400 Pounds LPG	Minimum Distance to Exposure (feet)
1] Type of Outdoor Exposure	LPG Storage Area More Than 100 Pounds LPG up to Maximum 400 Pounds LPG	Minimum Distance to Exposure (feet)
2] Building or structure of combustible construction	10 Subway entrance, exit or other opening	25 Flammable and combustible liquids Aboveground-1,000 gallons or less
	10a Flammable and combustible liquids Aboveground-in excess of 1,000 gallons	20a Flammable and combustible liquids Below ground tank-1,000 gallons or less
	10a Flammable and combustible liquids Below ground tank-1,000 gallons or less	Vent or fill opening of tank
	15a Flammable and combustible liquids Below ground tank-in excess of 1,000 gallons	15a Flammable and combustible liquids Below ground tank-in excess of 1,000 gallons
	Vent or fill opening of tank	15a Flammable gas storage area, 1,500 SCF or less
	10a Flammable gas storage area, More than 1,500 SCF up to maximum 3,500 SCF	20a Oxygen storage-20,000 scf or less
	In accordance with NFPA 51a	Oxygen storage-in excess of 20,000 scf
	In accordance with NFPA 50a	Fast-burning solids, such as ordinary lumber, excelsior or paper
	10a	Slow-burning solids, such as heavy timber or coal
	10a	Air compressor intakes or inlets to heating, ventilating or air-conditioning equipment
	5 Group A occupancies and public gathering places	25 Public sidewalks and parked vehicles
	10 Public streets, private roads and lot lines	10a

4] For SI: 1 foot = 304.8 mm, 1 cubic foot = 0.02832 m³, 1

gallon = 3.785 L.a. The minimum required distances may be reduced to 5 feet when protective structures having a minimum fire-resistance rating of 2 hours interrupt the line of sight between the container and the exposure. The protective structure shall be at least 5 feet from the exposure. The configuration of the protective structure shall be designed to allow natural ventilation to prevent the accumulation of hazardous gas concentrations.

3809.13Protection of containers.Containers shall be stored within a suitable enclosure or otherwise protected against tampering. Vehicular protection shall be provided as required by the commissioner.

3809.14Separation from means of egress for containers located outside of buildings.Containers located outdoors shall not be located within 20 feet (6096 mm) of any exit access doors, exits, stairways or in areas normally designed or used as a means of egress.

3809.15Electrical equipment.Except as otherwise provided in NFPA 58, electrical equipment within 3 feet (914 mm) in any direction of an outdoor LPG storage area shall comply with the Class I, Division 2 wiring requirements of the Electrical Code for hazardous locations, unless electrical equipment is separated from such area by a wall or other solid partition having no openings.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 39: ORGANIC PEROXIDES
SECTION FC 3901: GENERAL

NYC Administrative Code § 29-FC 3901

3901.1 Scope.

This chapter shall govern the manufacture, storage, handling and use of organic peroxides.

3901.2Permits.Permits shall be required for organic peroxides as set forth in Section 105.6.

3901.3General.Organic peroxides shall be manufactured, stored, handled and used in accordance with this chapter and Chapter 27.

3901.4Prohibited manufacture, storage, handling and use.It shall be unlawful to manufacture, store, handle and/or use unclassified detonable organic peroxides except as specifically authorized by Chapter 33.

3901.5Supervision.The handling and use of organic peroxides in quantities requiring a permit shall be under the personal supervision of a certificate of fitness holder. The storage of organic peroxides in quantities requiring a permit shall be under the general supervision of a certificate of fitness holder.



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SECTION FC 3902: DEFINITIONS

NYC Administrative Code § 29-FC 3902

3902.1 Definition.

The following term shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

ORGANIC PEROXIDE. An organic compound having a double oxygen or peroxy (-O-O-) in its chemical structure. Organic peroxides can present an explosion hazard (detonation or deflagration), can be shock sensitive, can be susceptible to decomposition into various unstable compounds over an extended period of time and are classified as follows based upon their hazardous properties:

Class I. Organic peroxides that are capable of deflagration but not detonation.

Class II. Organic peroxides that burn very rapidly and that pose a moderate reactivity hazard.

Class III. Organic peroxides that burn rapidly and that pose a moderate reactivity hazard.

Class IV. Organic peroxides that burn in the same manner as ordinary combustibles and that pose a minimal reactivity hazard.

Class V. Organic peroxides that burn with less intensity than ordinary combustibles or do not sustain combustion and that pose no reactivity hazard.

Unclassified detonable. Organic peroxides that are capable of detonation and pose an extremely high-explosion hazard through rapid explosive decomposition.



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SECTION FC 3903: GENERAL REQUIREMENTS

NYC Administrative Code § 29-FC 3903

3903.1 Quantities not exceeding the maximum allowable quantity per control area.

The storage, handling and use of organic peroxides in amounts not exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Sections 2701, 2703, 3901, 3903 and 3906.

3903.1.1 Prohibited indoor storage, handling and use by occupancy. It shall be unlawful to store, handle or use Class I organic peroxides:

1. In Group A, E, I, R or U occupancies.
2. In offices in Group B, F, M or S occupancies, or any other areas of such occupancies that are accessible to the public.

3903.2 Quantities exceeding the maximum allowable quantity per control area. The storage, handling and use of organic peroxides in amounts exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Chapter 27 and this chapter.

3903.3 Multiple hazard sign. Where more than one class of organic peroxide formulations is stored in immediate proximity to one another, such area shall be provided with hazard identification signs pursuant to Chapter 27 for the most severe class present.

3903.4 Multiple class storage. Except as otherwise specifically provided in this code, where more than one class of organic peroxide is stored in the same control area, the maximum quantity allowed of each organic peroxide shall be limited as follows: the maximum quantity shall be reduced by multiplying the maximum allowable quantity for each such material by the proportional amount that such material bears to the total quantity of organic peroxide stored in the control area. The total of the proportional amounts shall not exceed 100 percent.

3903.5 Temperature sensitive material. Where the required storage temperature range, as specified by the

manufacturer, extends beyond normal ambient temperatures, high or low temperature limit switches, as applicable, shall be provided in addition to normal temperature controls. These limit switches shall actuate an alarm in a supervised area to ensure reporting to the fire department.



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SECTION FC 3904: STORAGE

NYC Administrative Code § 29-FC 3904

3904.1 Indoor storage.

Indoor storage of organic peroxides in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) shall be in accordance with Sections 2701, 2703, 2704 and this chapter.

3904.1.1 Detached storage. Storage of organic peroxides shall be in a detached building when required by Section 2703.8.2.

3904.1.2 Distance from detached storage buildings to exposures. In addition to the requirements of the Building Code, detached storage buildings shall be located in accordance with Table 3904.1.2.

3904.1.3 Liquid-tight floor. In addition to the requirements of Section 2704.12, floors of storage areas shall be of liquid-tight construction.

3904.1.4 Electrical wiring and equipment. In addition to the requirements of Section 2703.9.4, electrical wiring and equipment in storage areas for Class I or II organic peroxides shall comply with the requirements of the Electrical Code for electrical Class I, Division 2 locations.

3904.1.5 Smoke detection. An approved supervised smoke detection system in accordance with the construction codes, including the Building Code, shall be provided in rooms or areas where Class I, II or III organic peroxides are stored. Activation of the smoke detection system shall sound a local alarm.

Exception: A smoke detection system shall not be required in detached storage buildings equipped throughout with a fire extinguishing system.

3904.1.6 Maximum quantities. Maximum allowable quantities per building in a mixed occupancy building shall not exceed the amounts set forth in Table 2703.8.2. Maximum allowable quantities per building in a detached storage building shall not exceed the amounts specified in Table 3904.1.2.

3904.1.7Storage arrangement.Storage arrangements for organic peroxides shall be in accordance with Table 3904.2.4 and shall comply with the following requirements:

1. Containers and packages in storage areas shall be closed.
2. Bulk storage shall not be in piles or bins.
3. A minimum 2-foot (610 mm) clear space shall be maintained between storage and uninsulated metal walls.
4. Fifty-five-gallon (208 L) drums shall not be stored more than one drum high.

3904.1.8Location in building.The storage of Class I or II organic peroxides shall be on the ground floor. Class III organic peroxides shall not be stored in basements or other below grade areas.

3904.1.9Contamination.Organic peroxides shall be stored in their original DOTn shipping containers. Organic peroxides shall be stored in a manner to prevent contamination.

3904.1.10Explosion control.Indoor storage rooms, areas and buildings containing Class I organic peroxides shall be provided with explosion control in accordance with Section 911 and the construction codes, including the Building Code.

3904.1.11Emergency power.Emergency power in accordance with the construction codes, including the Building Code and Electrical Code, shall be provided for storage areas of Class I organic peroxides.

3904.1.12Smoke and heat venting.Storage areas for Class I organic peroxides shall be provided with smoke and heat venting in accordance with Section 910 and the construction codes, including the Building Code.

3904.2Outdoor storage.Outdoor storage of organic peroxides in amounts exceeding the maximum allowable quantities per control area indicated in Table 2703.1.1(3) shall be in accordance with Sections 2701, 2703, 2704 and this chapter.

3904.2.1Distance from storage to exposures.Outdoor storage areas for organic peroxides shall be located in accordance with Table 3904.1.2.

3904.2.2Electrical wiring and equipment.In addition to the requirements of Section 2703.9.4, electrical wiring and equipment in outdoor storage areas containing Class I or II organic peroxides shall comply with the requirements of the Electrical Code for electrical Class I, Division 2 locations.

3904.2.3Maximum quantities.Maximum allowable quantities of organic peroxides in outdoor storage shall be in accordance with Table 3904.1.2.

3904.2.4Storage arrangement.Storage arrangements shall be in accordance with Table 3904.2.4.

3904.2.5Separation.In addition to the requirements of Section 2703.9.8, outdoor storage areas for organic peroxides in amounts exceeding those specified in Table 2703.8.2 shall be located a minimum distance of 50 feet (15 240 mm) from other hazardous material storage.



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SECTION FC 3905: HANDLING AND USE

NYC Administrative Code § 29-FC 3905

3905.1 General.

Organic peroxides in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) or 2703.1.1(3) shall be handled and used in accordance with Sections 2701, 2703, 2705 and this chapter.



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SECTION FC 3906: MANUFACTURING RESTRICTIONS

NYC Administrative Code § 29-FC 3906

3906.1 Organic peroxides classified as a Class IV material.

Organic peroxides classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution may be utilized in manufacturing processes or other production in manufacturing districts only when authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution.

3906.1.1 Manufacture of organic peroxides classified as a Class IV material. It shall be unlawful to manufacture organic peroxides classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution.

3906.1.2 Storage of organic peroxides classified as a Class IV material. It shall be unlawful to store organic peroxides classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution, except that accessory storage authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution shall be allowed.



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Chapter 40: OXIDIZERS
SECTION FC 4001: GENERAL

NYC Administrative Code § 29-FC 4001

4001.1 Scope.

This chapter shall govern the manufacture, storage, handling and use of oxidizers, except for the display and storage of oxidizers in Group M and storage of oxidizers in Group S occupancies complying with the requirements of Section 2703.11.

4001.2Permits.Permits shall be required as set forth in Section 105.6.

4001.3General.Oxidizers shall be manufactured, stored, handled and used in accordance with this chapter and Chapter 27.

4001.3.1Oxidizing gases.Oxidizers that are compressed gases shall additionally comply with the requirements of Chapter 30.

4001.3.2Ammonium nitrate.Oxidizers containing ammonium nitrate shall additionally comply with the requirements of NFPA 490.

4001.3.3Bulk oxygen systems.Bulk oxygen systems at industrial and institutional consumer sites shall additionally comply with the requirements of NFPA 50.

4001.3.4Bulk nitrous oxide systems.Bulk nitrous oxide systems at industrial and institutional consumer sites shall additionally comply with the requirements of CGA G-8.1.

4001.4Supervision.The handling and use of oxidizers in quantities requiring a permit shall be under the personal supervision of a certificate of fitness holder. The storage of oxidizers in quantities requiring a permit shall be under the general supervision of a certificate of fitness holder.



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Chapter 40: OXIDIZERS
SECTION FC 4002: DEFINITIONS

NYC Administrative Code § 29-FC 4002

4002.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

BULK NITROUS OXIDE SYSTEM. A system comprised of stationary or portable nitrous oxide storage containers, pressure regulators, safety devices, vaporizers, manifolds, interconnecting piping and/or other devices or equipment, up to the point where nitrous oxide at service pressure first enters the supply line, that has a storage capacity of more than 28,000 SCF (793 m3) of nitrous oxide in liquid or gaseous state, including unconnected reserves in or at the same building, structure or premises.

BULK OXYGEN SYSTEM. A system comprised of stationary or portable oxygen storage containers, pressure regulators, safety devices, vaporizers, manifolds, interconnecting piping and/or other devices or equipment, up to the point where oxygen at service pressure first enters the supply line, that has a storage capacity of more than 20,000 SCF (566 m3) of oxygen in liquid or gaseous state, including unconnected reserves in or at the same building, structure or premises.

OXIDIZER. A material that readily yields oxygen or other oxidizing gas, such as bromine, chlorine and fluorine, or that readily reacts to promote or initiate combustion of combustible materials, classified as follows:

Class 1. An oxidizer whose primary hazard is that it slightly increases the burning rate but which does not cause spontaneous ignition when it comes in contact with combustible materials.

Class 2. An oxidizer that will cause a moderate increase in the burning rate or that causes spontaneous ignition of combustible materials with which it comes in contact.

Class 3. An oxidizer that will cause a severe increase in the burning rate of combustible materials with which it

comes in contact or that will undergo vigorous self-sustained decomposition caused by contamination or exposure to heat.

Class 4. An oxidizer that can undergo an explosive reaction due to contamination or exposure to thermal or physical shock and can cause spontaneous ignition of combustibles.

OXIDIZING GAS. A gas that can support and accelerate combustion of other materials.



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SECTION FC 4003: GENERAL REQUIREMENTS

NYC Administrative Code § 29-FC 4003

4003.1 Quantities not exceeding the maximum allowable quantity per control area.

The storage, handling and use of oxidizers in amounts not exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Sections 2701, 2703, 4001, 4003, and 4006 and with Chapter 30, as applicable.

4003.1.1 Prohibited indoor storage, handling and use by occupancy. It shall be unlawful to store, handle or use:

1. Class 4 oxidizers in Group A, E, I, R or U occupancies.
2. Class 4 liquid and solid oxidizers in offices or retail sales areas of Group B, F, M or S occupancies.
3. Oxidizing gases in portable containers exceeding an individual capacity of 250 SCF (7 m³) for maintenance purposes, patient care or operation of equipment in Group A, B, E, I, or R occupancies.

4003.1.2 Emergency shutoff. Compressed gas systems conveying oxidizer gases shall be provided with approved emergency shutoff valves that can be activated at each point of use and each source.

4003.1.3 Ignition source control. Ignition sources in areas containing oxidizing gases shall be controlled in accordance with Section 2703.7.

4003.2 Quantities exceeding the maximum allowable quantity per control area. The storage, handling and use of oxidizers in amounts exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Chapter 27 and this chapter.

4003.3 Multiple hazard sign. Where more than one class of oxidizer is stored in immediate proximity to one another, such area shall be provided with hazard identification signs pursuant to Chapter 27 for the most severe class present.

4003.4 Multiple class storage. Except as otherwise specifically provided in this code, where more than one class of oxidizer is stored in the same control area, the maximum quantity allowed of each oxidizer shall be limited as follows: the maximum quantity shall be reduced by multiplying the maximum allowable quantity for each such material by the proportional amount that such material bears to the total quantity of oxidizer stored in the control area. The total of the proportional amounts shall not exceed 100 percent.



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SECTION FC 4004: STORAGE

NYC Administrative Code § 29-FC 4004

4004.1 Indoor storage.

Indoor storage of oxidizers in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) shall be in accordance with Sections 2701, 2703, 2704 and this chapter.

4004.1.1 Detached storage. Storage of liquid and solid oxidizers shall be in a detached building when required by Section 2703.8.2.

4004.1.2 Distance from detached storage buildings to exposures. In addition to the requirements of the construction codes, including the Building Code, detached storage buildings shall be located in accordance with Table 4004.1.2.3] Table 4004.1.2 Oxidizer (Liquids and Solids)-Distance from Detached Storage Buildings and Outdoor Storage Areas to Exposures

Oxidizer Class	Weight (pounds)	Minimum Distance to Buildings, Lot Lines, Public Streets, Private Roads or Building Exits (feet)
1	Oxidizer Class Weight (pounds)	Minimum Distance to Buildings, Lot Lines, Public Streets, Private Roads or Building Exits (feet)
2	1 Note a Not Required	2 Note a 35
3	Note a 50	Up to 10 50
greater than 10	up to 100 75	greater than 100 up to 500 100 4
greater than 500	up to 1,000 125	greater than 1,000 up to 3,000 200
greater than 3,000	up to 5,000 300	greater than 5,000 up to 10,000 400
over 10,000	As required by the commissioner	For SI: 1 foot = 304.8 mm, 1 pound = 0.454 kg.

a. Any quantity over the amount required for detached storage in accordance with Section 2703.8.2, or over the outdoor maximum allowable quantity for outdoor control areas.

4004.1.3 Explosion control. Any room or other area in which Class 4 liquid or solid oxidizers are stored shall be provided with explosion control in accordance with Section 911 and the construction codes, including the Building Code.

4004.1.4 Sprinkler system. Solid and liquid oxidizer storage areas shall be protected by a sprinkler system in accordance with NFPA 430.

4004.1.5Liquid-tight floor.In addition to Section 2704.12, floors of storage areas for liquid and solid oxidizers shall be of liquid-tight construction.

4004.1.6Smoke detection.An approved supervised smoke detection system in accordance with the construction codes, including the Building Code shall be installed in liquid and solid oxidizer storage areas. Such smoke detection system shall be monitored by an approved central station.

Exception: Detached storage buildings protected by a fire extinguishing system.

4004.1.6.1Smoke and heat venting.Smoke and heat venting shall be provided in accordance with Section 910 and the construction codes, including the Building Code.

4004.1.7Storage conditions.The maximum quantity of oxidizers that may be stored in a detached storage buildings shall not exceed the quantities set forth in Tables 4004.1.7(1) through 4004.1.7(4).

4004.1.7.1Liquid and solid oxidizers.The storage configuration for liquid and solid oxidizers shall be as set forth in Tables 4004.1.7(1) through 4004.1.7(4).

4004.1.7.2Class 2 oxidizers.Class 2 oxidizers shall not be stored in basements, cellars or other below-grade areas, except when such storage is in stationary tanks.

4004.1.7.3Class 3 and 4 oxidizers.Class 3 and 4 oxidizers in amounts exceeding the maximum allowable quantity per control area set forth in Section 2703.1 shall be stored on the ground floor only.Table 4004.1.7(1) Storage Requirements for Class 1 Oxidizer (Liquids and Solids) in Combustible Containersa Storage Configuration Limits (feet) Piles

Maximum lengthNo Limit

Maximum width50

Maximum height20

Minimum distance to next pile3

Minimum distance to walls2 Maximum quantity per pileNo Limit Maximum quantity per buildingNo Limit For SI: 1 foot = 304.8 mm.a. Storage in noncombustible containers or in bulk in detached storage buildings is not limited as to quantity or arrangement.Table 4004.1.7(2) Storage Requirements for Class 2 Oxidizer (Liquids and Solids)a,b Storage Configuration Limits Segregated Storage Cutoff Storage Roomsc Detached Building Piles

Maximum width16 feet 25 feet 25 feet

Maximum height10 feet 12 feet 12 feet

Minimum distance to next pileNote d Note d Note d

Minimum distance to walls2 feet 2 feet 2 feet Maximum quantity per pile20 tons 50 tons 200 tons Maximum quantity per building200 tons 500 tons No Limit For SI: 1 foot = 204.8 mm, 1 ton = 0.907185 metric ton.a. Storage in noncombustible containers is not limited as to quantity or arrangement, except that piles shall be at least 2 feet from walls in buildings protected throughout by a sprinkler system and 4 feet from walls in buildings not protected throughout by a sprinkler system; the distance between piles shall not be less than the pile height.b. Quantity limits shall be reduced by 50 percent in buildings or portions of buildings used for retail sales.c. Cutoff storage rooms shall be separated from the remainder of the building by 2-hour fire barriers.d. Aisle width shall not be less than the pile height.Table 4004.1.7(3) Storage Requirements for Class 3 Oxidizer (Liquids and Solids)a,b Storage Configuration

Limits Segregated Storage Cutoff Storage Rooms Detached Building Piles

Maximum width 12 feet 16 feet 20 feet

Maximum height 8 feet 10 feet 10 feet

Minimum distance to next pile Note d Note d Note d

Minimum distance to walls 4 feet 4 feet 4 feet Maximum quantity per pile 20 tons 30 tons 150 tons Maximum quantity per building 100 tons 500 tons No Limit For SI: 1 foot = 204.8 mm, 1 ton = 0.907185 metric ton. a. Storage in noncombustible containers is not limited as to quantity or arrangement, except that piles shall be at least 2 feet from walls in sprinklered buildings and 4 feet from walls in nonsprinklered buildings; the distance between piles shall not be less than the pile height. b. Quantity limits shall be reduced by 50 percent in buildings or portions of buildings used for retail sales. c. Cutoff storage rooms shall be separated from the remainder of the building by 2-hour fire barriers. d. Aisle width shall not be less than the pile height. Table 4004.1.7(4) Storage Requirements for Class 4 Oxidizer (Liquids and Solids) Storage Configuration Limits (feet) Piles

Maximum length 10

Maximum width 4

Maximum height 8

Minimum distance to next pile 8 Maximum quantity per building No Limit For SI: 1 foot = 304.8 mm.

4004.1.8 Separation of Class 4 oxidizers from other materials. In addition to the requirements in Section 2703.9.8, Class 4 oxidizer liquids and solids shall be separated from other hazardous materials by not less than a 1-hour fire barrier or stored in hazardous materials storage cabinets. Detached storage buildings for Class 4 oxidizer liquids and solids shall be located a minimum of 50 feet (15 240 mm) from other hazardous materials storage.

4004.1.9 Contamination. Liquid and solid oxidizers shall not be stored on or against combustible surfaces. Liquid and solid oxidizers shall be stored in a manner to prevent contamination.

4004.2 Outdoor storage. Outdoor storage of oxidizers in amounts exceeding the maximum allowable quantities per control area set forth in Table 2703.1.1(3) shall be in accordance with Sections 2701, 2703, 2704 and this chapter.

4004.2.1 Distance from storage to exposures for liquid and solid oxidizers. Outdoor storage areas for liquid and solid oxidizers shall be located in accordance with Table 4004.1.2.

4004.2.2 Distance from storage to exposures for oxidizing gases. Outdoor storage areas for oxidizing gases shall be located in accordance with Table 4004.2.2. Table 4004.2.2 Oxidizing Gases-Distance from Storage to Exposures

Quantity of Gas Stored SCF	Distance to a Building Not Associated With the Manufacture or Distribution of Oxidizing Gases or Public Street, Private Road or Lot Line (feet)	Distance Between Storage Areas (feet)
greater than 3,000 up to 50,000	5	5
greater than 50,000 up to 100,000	10	10
greater than 100,000	15	15

For SI: 1 foot = 304.8 mm, 1 cubic foot = 0.02832 m³. a. The distances do not apply when protective structures having a minimum fire-resistance rating of 2 hours interrupt the line of sight between the storage container and the exposure. The protective structure shall be at least 5 feet from the exposure. The configuration of the protective structure shall be designed to allow natural ventilation to prevent the accumulation of hazardous gas concentrations.

4004.2.3 Storage configuration for liquid and solid oxidizers. Storage configuration for liquid and solid oxidizers shall be in accordance with Tables 4004.1.7(1) through 4004.1.7(4).

4004.2.4 Storage configuration for oxidizing gases. Storage configuration for oxidizing gases shall be in accordance

with Table 4004.2.2.



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TITLE 29: NEW YORK CITY FIRE CODE

CHAPTER 2 NEW YORK CITY FIRE CODE

Chapter 40: OXIDIZERS

SECTION FC 4005: HANDLING AND USE

NYC Administrative Code § 29-FC 4005

4005.1 Scope.

Oxidizers in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) or 2703.1.1(3) shall be handled and used in accordance with Sections 2701, 2703, 2705 and this chapter.



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TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 40: OXIDIZERS
SECTION FC 4006: MANUFACTURING RESTRICTIONS

NYC Administrative Code § 29-FC 4006

4006.1 Oxidizers classified as a Class IV material.

Oxidizers classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution may be utilized in manufacturing processes or other production in manufacturing districts only when authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution.

4006.1.1 Manufacture of oxidizers classified as a Class IV material. It shall be unlawful to manufacture oxidizers classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution.

4006.1.2 Storage of oxidizers classified as a Class IV material. It shall be unlawful to store oxidizers classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution, except that accessory storage authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution shall be allowed.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 4: EMERGENCY PLANNING AND PREPAREDNESS
SECTION FC 401: GENERAL

NYC Administrative Code § 29-FC 401

401.1 Scope.

The provisions of this chapter shall govern emergency reporting, planning and preparedness.

401.2 Approval. Where required by this code, fire safety and evacuation plans and emergency action plans shall be approved by the commissioner.

401.3 Emergency notification. Any owner, occupant or other person who becomes aware of a fire or explosion or any other emergency shall immediately report such emergency to the department. No owner or other person shall issue any directive or take any action to prevent or delay the reporting of a fire or other emergency to the department.

401.3.1 Reserved.

401.3.2 Reserved.

401.3.3 Fire drills and emergency action plan drills. Nothing in this section shall prohibit the sounding or other activation of a fire alarm signal for the purposes of conducting a fire drill or EAP drill in accordance with Section 405.

401.4 Reserved.

401.5 Reserved.

401.6 Supervision of fire safety and evacuation plans. The owner shall designate competent persons to act as FSP staff, train the FSP staff and conduct fire drills. Such persons shall possess such qualifications and/or hold such certificate of fitness as are required by this chapter or the rules. The owner shall ensure that adequate FSP staff is present on the premises during regular business hours, and at other times when the building is occupied, to perform the duties and responsibilities set forth in the fire safety and evacuation plan. The owners of the following buildings and occupancies shall additionally comply with the requirements set forth in Sections 401.6.1 through 401.6.8.

401.6.1 Group A occupancies. The FSP staff in Group A occupancies whose lawful use, occupancy or operation requires issuance of a license by the New York City Department of Consumer Affairs shall be organized and trained by a person holding a certificate of fitness for fire safety training.

401.6.2 Group B occupancy office buildings. Group B occupancy office buildings or parts thereof occupied or designed to be occupied by more than 500 persons on one or more floors, including street level, or by more than 100 persons on one or more floors other than street level, shall comply with the requirements of Sections 401.6.2.1 through 401.6.2.2.

Exception: Office buildings that have lawfully installed an interior fire alarm system, provided that the fire drills required by Section 405 are conducted by a person holding a certificate of fitness as fire drill conductor.

401.6.2.1 FSP staff. The fire safety and evacuation plan shall designate a fire safety director, deputy fire safety directors, fire safety building evacuation supervisors, fire safety wardens, deputy fire safety wardens, fire safety brigade members and searchers, with such authority, duties and qualifications as set forth in the rules.

401.6.2.2 Fire safety director. The fire safety director and deputy fire safety directors designated in the fire safety and evacuation plan shall hold a fire safety director certificate of fitness, and shall have the following duties and responsibilities and such other duties and responsibilities as prescribed by rule:

1. The fire safety director shall be present in the building during regular business hours. When the fire safety director is absent during such hours, a deputy fire safety director shall be present in the building and shall perform the duties of the fire safety director.

2. In the event of a fire, the fire safety director shall report to the fire command station or designated alternative location, and, if appropriate, implement the fire safety and evacuation plan in accordance with its terms and the provisions of the rules, and notify arriving emergency response personnel and incident commander of the fire and the building response thereto.

3. The fire safety director designated shall be fully familiar with the provisions of the fire safety and evacuation plan and shall conduct FSP staff training drills required by Section 406.

4. The fire safety director shall conduct the fire drills required by Section 405.

401.6.3 Buildings with class B or M occupancy fire alarm system. Buildings or parts thereof equipped with a fire alarm system with voice communication of the type required in Group B or M occupancies, regardless of whether such system is required in such building or part thereof, shall comply with the requirements of Section 401.6.2.

401.6.4 Group I-2 occupancies. FSP staff training drills required by Section 406 shall be conducted by a person holding a certificate of fitness for fire safety training.

401.6.5 Group R-1 occupancies. Group R-1 occupancy buildings or parts thereof shall be operated in accordance with Sections 401.6.5.1 through 401.6.5.2.

Exceptions:

1. Group R-1 college or school student dormitories occupied or designed to be occupied by 500 persons or less, and that are 6 stories or 75 feet (22 860 mm) in height from grade or less need not designate a fire safety director or deputy fire safety directors.

2. Homeless shelters operated in accordance with Section 401.6.8.

3. All other Group R-1 occupancies occupied by 30 or fewer lodgers, with not more than 15 lodgers above street

level; operated to accommodate no more than these numbers of lodgers; designed to contain 30 or fewer sleeping rooms, with not more than 15 sleeping rooms above street level; and in each instance not occupied or operated to be occupied by lodgers, or designed to contain sleeping rooms, on any floor more than 75 feet (22 860 mm) above street level.

401.6.5.1FSP staff.The fire safety and evacuation plan shall designate a fire safety director, and a sufficient number of deputy fire safety directors and fire safety brigade members, with such authority, duties and qualifications as set forth in the rules. The fire safety director and deputy fire safety directors designated shall be fully familiar with the provisions of the fire safety and evacuation plan.

401.6.5.2Fire safety director.The fire safety director and deputy fire safety directors designated in the fire safety and evacuation plan shall hold a fire safety director certificate of fitness, and shall have the following duties and responsibilities and such other duties and responsibilities as prescribed by rule:

1. The fire safety director shall be present in the building at all times. When the fire safety director is absent, a deputy fire safety director shall be present in the building and shall perform the duties of the fire safety director.
2. In the event of a fire, the fire safety director shall report to the fire command station or designated alternative location, and, if appropriate, implement the fire safety and evacuation plan in accordance with its terms and the rules, and notify arriving emergency response personnel and incident commander of the fire and the building response thereto.
3. The fire safety director and deputy fire safety directors designated shall be fully familiar with the provisions of the fire safety and evacuation plan, and when a fire brigade is required by Section 401.6.5.1, shall conduct fire brigade training drills required by Section 406.

4. The fire safety director shall conduct fire drills required by Section 405.

401.6.6Buildings or parts thereof with class R-1 occupancy fire alarm system.Buildings or parts thereof equipped with a fire alarm system with voice communication of the type required in R-1 occupancies, regardless of whether such system is required in such building or part thereof, shall comply with the requirements of Section 401.6.5.

401.6.7Group R-2 occupancies as set forth in Section 404.2.1(8). Group R-2 occupancies, occupied or operated to be occupied, as set forth in Section 404.2.1(8), in whole or in part, shall comply with the requirements of Section 401.6.5.

401.6.8Group R-1 homeless shelters.Group R-1 occupancy buildings or parts thereof occupied as a homeless shelter shall be in accordance with Sections 401.6.8.1 through 401.6.8.3.

401.6.8.1FSP staff.The fire safety and evacuation plan shall designate a fire safety coordinator and a sufficient number of deputy fire safety coordinators, with such authority, duties and qualifications as set forth in the rules.

401.6.8.2Fire safety coordinator.The fire safety coordinator and deputy fire safety coordinators designated in the fire safety and evacuation plan shall hold a fire safety coordinator certificate of fitness, and shall have the following duties and responsibilities and such other duties and responsibilities as prescribed by rule:

1. The fire safety coordinator shall be present in the building at all times while the building is occupied. When the fire safety coordinator is absent, a deputy fire safety coordinator shall be present in the building and shall perform the duties of the fire safety coordinator.
2. In the event of a fire, the fire safety coordinator shall report to the fire command station or designated alternative location, and, if appropriate, implement the fire safety and evacuation plan in accordance with its terms and the provisions of the rules, and notify arriving emergency response personnel and incident commander of the fire, the

building response thereto, and the building's fire protection systems.

3. The fire safety coordinator and deputy fire safety coordinators designated shall be fully familiar with the provisions of the fire safety and evacuation plan. The fire safety coordinator shall conduct fire drills required by Section 405.

401.6.8.3 Fire guard patrols. Buildings or parts thereof occupied or operated to be occupied by homeless persons shall be continuously patrolled by a person holding a certificate of fitness as fire guard. Every area of the building shall be patrolled at least once every hour.

401.7 Supervision of emergency action plan. The owner shall designate competent persons to act as EAP staff, train the EAP staff and conduct EAP drills. Such persons shall possess such qualifications and/or hold such certificate of fitness as set forth in this chapter or the rules. The owner shall ensure that adequate EAP staff is present on the premises during regular business hours, and other times when the building is occupied, to perform the duties and responsibilities as set forth in the emergency action plan. The owner shall additionally comply with the requirements set forth in Sections 401.7.1 and 401.7.2.

401.7.1 EAP staff. The emergency action plan shall designate a fire safety/EAP director, deputy fire safety/EAP directors, fire safety/EAP building evacuation supervisors, fire safety/EAP wardens, deputy fire safety/EAP wardens, fire safety/EAP brigade members and critical operation staff, with such authority, duties and qualifications as set forth in the rules.

401.7.2 Fire safety/EAP director. The fire safety/EAP director and deputy fire safety/EAP directors designated in the emergency action plan shall hold a fire safety/EAP director certificate of fitness, shall be the persons designated as the fire safety director and deputy fire safety director in the fire safety and evacuation plan, and shall have the following duties and responsibilities and such other duties and responsibilities as prescribed by rule:

1. The fire safety/EAP director shall be present in the building during regular business hours. When the fire safety/EAP director is required but absent, a deputy fire safety/EAP director shall be present in the building and shall perform the duties of the fire safety/EAP director.

2. In the event of an emergency requiring sheltering in place, in-building relocation, partial evacuation or evacuation, the fire safety/EAP director shall report to the fire command station or designated alternative location, and, if appropriate, implement the emergency action plan in accordance with its terms and the rules, and notify arriving emergency response personnel and incident commander of the emergency and the building response thereto.

3. The fire safety/EAP director shall be fully familiar with the provisions of the emergency action plan, and shall conduct EAP staff training drills required by Section 406.

4. The fire safety/EAP director shall conduct EAP drills required by Section 405.

401.8 Periodic inspection. Any occupancy, building, or part thereof required to have a fire safety and evacuation plan, emergency action plan and/or a public gathering site plan pursuant to the provisions of this chapter or the rules, shall be subject to periodic fire safety inspection by the department, including to ensure that the fire safety and evacuation plan, the emergency action plan and/or the public gathering site plan have been prepared and/or implemented in compliance with the requirements of this chapter.

401.9 Workplace exit inspections. In addition to any other inspection requirement imposed by law, rule or regulation, the department shall inspect Group M occupancies to determine whether workplace exits are locked in violation of Section BC 1001.3.1 of the Building Code. A minimum of 50 unannounced inspections shall be conducted each year. Such inspections shall include, but not be limited to, premises at which violations of such section are known or suspected to have occurred.



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Chapter 4: EMERGENCY PLANNING AND PREPAREDNESS
SECTION FC 402: DEFINITIONS

NYC Administrative Code § 29-FC 402

402.1 Definition.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

EAP DRILL. A training exercise by which building occupants are familiarized with and/or practice the procedures for safe, orderly and expeditious sheltering in place, in-building relocation, partial evacuation or evacuation, in accordance with the emergency action plan, and to evaluate the efficiency and effectiveness of the implementation of such plan.

EAP STAFF. The individuals identified in an emergency action plan as responsible for the implementation of such plan, including but not limited to the fire safety/EAP director, deputy fire safety/EAP director, fire safety/EAP building evacuation supervisor, fire safety/EAP wardens, deputy fire safety/EAP wardens and members of the fire safety/EAP brigade.

EMERGENCY ACTION PLAN. A written plan which sets forth the circumstances and procedures for the sheltering in place, in-building relocation, partial evacuation or evacuation of building occupants in response to an incident involving an explosion, a biological, chemical or nuclear incident or release, natural disaster or other emergency, or the threat thereof, or a declaration of emergency by a lawful authority.

FIRE DRILL. A training exercise by which building occupants are familiarized with and/or practice the procedures for the safe, orderly and expeditious in-building relocation, partial evacuation or evacuation, as applicable to the occupancy or building type, in accordance with the fire safety and evacuation plan, and to evaluate the efficiency and effectiveness of the implementation of such plan.

FIRE SAFETY AND EVACUATION PLAN. A written plan which sets forth the circumstances and procedures for the in-building relocation, partial evacuation or evacuation of building occupants, required or as appropriate for such

occupancy or building type, in response to a fire.

FSP STAFF. The individuals identified in a fire safety and evacuation plan as responsible for the implementation of such plan.

OFFICE BUILDING. A group B occupancy designed and arranged to provide offices and other areas for the conduct of business ordinarily conducted in offices.

REGULAR BUSINESS HOURS. Times of day and days of the week during which a building or occupancy is normally occupied and business is conducted, and any time when an office building is occupied by more than 500 persons on one or more floors, including street level, or by more than 100 persons on one or more floors other than street level.

UNDERGROUND BUILDING. A building or part thereof having a floor level for human use or occupancy more than 30 feet (9144 mm) below the lowest level of exit discharge, as that term is defined in the Building Code.



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SECTION FC 403: PUBLIC GATHERINGS

NYC Administrative Code § 29-FC 403

403.1 General.

The commissioner may establish by rule requirements to ensure fire safety at indoor and outdoor public gatherings, including arcades, bazaars, carnivals, displays, exhibits, street fairs and theaters. Such requirements may include preparation and submission to the department of a site plan; pre-event fire safety inspection; provision of fire guards or other qualified personnel; and provision and maintenance of fire apparatus access, and of aisles and other means of egress from the public gathering.

403.2 Overcrowding prohibited. Overcrowding shall not be caused, maintained or allowed in any indoor or outdoor area or space used for public gatherings.

403.3 Limitations on standing at public gatherings. Where the Building Code, certificate of occupancy or approved seating plan allows audience members to stand at performing arts or other indoor or outdoor events at which seating is provided for the audience, standing areas shall be maintained in accordance with Sections 403.3.1 through 403.3.4.

403.3.1 Standing areas to be indicated. The space to be occupied by standing audience members shall be separated from the space to be left clear for passage by a rope, tape or other thin material at a height of not less than 3 feet (914 mm) nor more than 4 feet (1219 mm) above the floor, supported by lightweight posts, all to be constructed and placed so as not to constitute an obstruction in case of panic or emergency. Such standing areas shall be clearly demarcated by durable markings on the floor indicating the boundaries of the standing area.

403.3.2 Standing in aisles. It shall be unlawful to stand, or allow any person to stand, in or at the head of an aisle.

403.3.3 Standing in passageways.

1. If the passageway is more than 6 feet (1829 mm) and less than 16 feet (4877 mm) deep, persons may stand therein, provided an unobstructed passageway of at least 6 feet (1829 mm) in depth is left open, and there are no more

than four rows of persons standing.

2. If the passageway is more than 16 feet (4877 mm) deep, any number of persons or rows of persons may stand therein, provided that an unobstructed passageway of at least 10 feet (3048 mm) in depth is left open.

3. In places of assembly having a passageway to the rear of the seats, 6 feet (1829 mm) or less in depth, and having in addition an outer passageway in the rear thereof, to which all aisle heads have straight and direct access, a maximum of two rows of persons may be permitted to stand in the passageway to the rear of such seats.

403.3.4 Standing in balconies. Only one row of persons shall be allowed to stand in balconies.

403.4 Announcements. In performing arts theaters or motion picture theaters, and in any other Group A occupancy in which there is a non-continuous performance or program, other than an occupancy regularly attended by the same audience, an audible announcement shall be made not more than 10 minutes prior to the start of each performance or program informing the occupants of the location of the exits to be used in the event of a fire or other emergency, provided, however, that in any theater the announcement may be projected upon a screen or other surface approved by the commissioner in a manner approved by the commissioner. Notwithstanding the foregoing, the commissioner may grant an exception from such requirement upon a determination that the occupancy has at least one exit clearly visible from every seat or standing area from which members of the audience are authorized to view the performance.

403.5 Trade shows. The owner of any Group A occupancy wherein a trade show or other similar temporary exhibition is to be conducted shall, at least one month before the date of such exhibition, submit to the department a written notice and a plan containing the following information and such other information and documentation as the commissioner may prescribe:

1. The dates, times, location, and nature of the trade show or other exhibition, and whether the event will be open to the public or restricted to the trade.

2. The design and arrangement of the trade show or other exhibition, including aisles, display booths, decorations and drapes, and equipment using any hazardous material or open flame.



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Chapter 4: EMERGENCY PLANNING AND PREPAREDNESS
SECTION FC 404: FIRE SAFETY AND EVACUATION PLANS AND EMERGENCY ACTION PLANS

NYC Administrative Code § 29-FC 404

404.1 General.

The owner of any premises subject to this section shall cause a fire safety and evacuation plan and an emergency action plan to be prepared for such premises in a form prescribed by the commissioner, and periodically reviewed and amended, in accordance with this section and the rules. The commissioner may prescribe by rule the qualifications of the person preparing such plans.

404.1.1 Existing buildings. For purposes of Section 102.2, the preparation of a fire safety and evacuation plan and an emergency action plan shall constitute an operational requirement. Owners of buildings and occupancies not required to have a fire safety and evacuation plan prior to the effective date of this code shall have one year from such effective date to prepare and, if required pursuant to Section 404.6, submit, such plan. Any owner of a building or occupancy that has an approved fire safety plan and an emergency action plan on the effective date of this code shall not be required to prepare and/or file new plans within such one-year period, but shall maintain the existing plans in compliance with the requirements of the laws, rules and regulations applicable to such plans prior to the effective date of this code and such additional or amended requirements as may be adopted after the effective date of this code, as applicable in accordance with the terms of such additional or amended requirements.

404.2 Where required. A fire safety and evacuation plan and/or emergency action plan is required for the occupancies and buildings as set forth in Sections 404.2.1 and 404.2.2.

404.2.1 Fire safety and evacuation plans. A fire safety and evacuation plan is required for the following occupancies and buildings:

1. Group A occupancies, other than Group A occupancies used exclusively for purposes of religious worship that have an occupant load less than 2,000.
2. Group B occupancy office buildings or parts thereof and other office buildings or parts thereof, occupied or

designed to be occupied by more than 500 persons on one or more floors, including street level, or by more than 100 persons on one or more floors other than street level.

3. Group B occupancy educational facilities.

4. Group E occupancy schools, educational facilities and day care facilities.

5. Group H occupancies, except buildings or parts thereof that have prepared one or more of the following plans in compliance with applicable requirements:

5.1. An emergency action plan in accordance with the regulations of the United States Department of Labor, as set forth in 29 CFR Section 1910.119.

5.2. A contingency plan and emergency procedures in accordance with the regulations of the New York State Department of Environmental Conservation, as set forth in 6 NYCRR Part 373.

5.3. A risk management plan in accordance with the rules of the New York City Department of Environmental Protection, as set forth in 15 RCNY § 41-08.

6. Group I occupancies.

7. Group M occupancies occupied or designed to be occupied by more than 500 persons on one or more floors, including street level, or by more than 100 persons on one or more floors other than street level, or in which more than 25 persons are employed.

8. Group R-1 occupancies, occupied by more than 30 lodgers, or more than 15 lodgers above street level, for a period of 90 days or less; and/or operated to accommodate such numbers of lodgers for such period of occupancy; and/or designed to contain a total of more than 30 sleeping rooms, or more than 15 sleeping rooms above the street level, for such period of occupancy; and/or occupied by one or more lodgers on a floor more than 75 feet (22 860 mm) above the street level, for such period of occupancy, or operated or designed for such lodging.

9. Group R-2 occupancies occupied by more than 30 lodgers, or more than 15 lodgers above street level, for a period of 90 days or less; and/or operated to accommodate such number of lodgers for such period of occupancy; and/or designed to contain a total of more than 30 sleeping rooms, or more than 15 sleeping rooms above the street level, for such period of occupancy; and/or occupied by one or more lodgers on a floor more than 75 feet (22 860 mm) above the street level, for such period of occupancy, or operated or designed for such lodging. All other Group R-2 occupancies shall comply with the requirements of Section 408.9.

10. Buildings or parts thereof equipped with a fire alarm system with voice communication of the type required in Class B, R-1 or M occupancies, regardless of whether such system is required in such building or part thereof.

11. Buildings with an atrium and containing a Group A, E or M occupancy.

12. Covered malls exceeding 50,000 square feet (4645 m²) in aggregate floor area.

13. Buildings that are greater than 6 stories or 75 feet (22 860 mm) in height, except Group R-2 occupancies.

14. Underground buildings occupied or designed to be occupied by more than 100 persons below street level.

15. Buildings occupied or designed to be occupied to provide emergency shelter for more than 15 homeless persons for more than 30 days in a year.

404.2.2 Emergency action plans. An emergency action plan is required in Group B occupancy office buildings or

parts thereof:

1. Greater than 6 stories in height; or
2. Greater than 75 feet (22 860 mm) in height; or
3. Occupied or designed to be occupied by more than 500 persons on one or more floors, including street level, or by more than 100 persons on one or more floors other than street level; or
4. Equipped with a fire alarm system with voice communication of the type required in Class B or M occupancies, regardless of whether such system is required in such building or space; or
5. Ordered by the department to comply with the requirements of this section, based upon a determination that compliance with this section is required in the interest of public safety given the location, use or occupancy of the building.

404.3Contents. Fire safety and evacuation plan and emergency action plan contents shall be in accordance with Sections 404.3.1 and 404.3.2.

404.3.1Fire safety and evacuation plans. A fire safety and evacuation plan shall include the following information and such other information and documentation as the commissioner may prescribe:

1. The procedures for notifying building occupants of a fire and reporting a fire to the department, including the preferred and any alternative means of notifying and reporting.
2. Whether the response to a fire emergency will require the occupants of the building to be completely evacuated, partial evacuation or relocated within the building, and the procedures for each such response.
3. Site plans indicating the following:
 - 3.1. Surrounding buildings and streets, including cross streets, and fire apparatus access roads.
 - 3.2. The location of building occupant assembly areas, if applicable.
4. Floor plans, with corresponding legend, identifying the locations of the following, as applicable:
 - 4.1. Exits.
 - 4.2. Evacuation routes.
 - 4.3. Fire barriers.
 - 4.4. Areas of refuge.
 - 4.5. Stairs with letter designation.
 - 4.6. Access and convenience stairways.
 - 4.7. Elevator bank letter and car number designations.
 - 4.8. Fire command station.
 - 4.9. Fire warden phones.

- 4.10. Manual fire alarm boxes.
 - 4.11. Standpipe hose outlets.
 - 4.12. Sprinkler and standpipe system riser diagrams and siamese connections.
 - 4.13. Sprinkler and standpipe system control valves.
 - 4.14. Any part of the building not protected by a sprinkler system.
 - 4.15. Emergency power generator and fuel supply.
 5. Permitted hazardous material and combustible material storage, handling or use at the premises.
 6. Identification of fire safety director or other building employees responsible for implementing the fire safety and evacuation plan, training FSP staff, or other duties related to the fire safety and evacuation plan.
 7. Identification and assignment of personnel responsible for operation of building fire protection, fire extinguishing and life safety systems, or other critical equipment.
 8. Procedures for employees who must operate critical equipment.
 9. Procedures for accounting for building employees and building occupants after such employees or occupants have been relocated or evacuated to a safe area.
 10. Identification and assignment of personnel responsible for implementing the plan.
 11. Identification of personnel available, if any, to provide emergency medical care.
 12. A description of the emergency voice/alarm communication system alert tone and preprogrammed voice messages, when approved.
 13. Procedures for identifying in advance building occupants who require assistance to participate in the plan because of an infirmity or disability or other special need, and approved procedures for providing for such assistance.
- 404.3.2 Emergency action plans. The commissioner shall promulgate rules establishing standards, procedures and requirements for the safety of occupants in any office building or part thereof in the event of an explosion, a biological, chemical or nuclear incident or release, natural disaster or other emergency, or the threat thereof, or a declaration of emergency by lawful authorities, including procedures for the orderly evacuation therefrom. Such rules may require the owner of such premises to develop a written emergency action plan that includes the following information, and such other information and documentation as the commissioner may prescribe:
1. Preparation of the emergency action plan, including the form and submission of such plan and supporting documentation.
 2. The responses to be taken in response to each type of emergency.
 3. The designation and qualifications of EAP staff, and their emergency action plan duties and responsibilities.
 4. Reporting of emergencies to the department.
 5. Communication with building occupants.
 6. Use of elevators and the operation of other building systems.

7. The conduct of EAP drills.

8. Recordkeeping requirements.

9. Obligations of building occupants and employers of building occupants.

10. Procedures for identifying in advance building occupants who require assistance to participate in the plan because of an infirmity or disability or other special need, and approved procedures for providing for such assistance.

404.4 Periodic review and revision. Fire safety and evacuation plans and emergency action plans shall be reviewed and updated as necessitated by changes in staff assignments, use or occupancy, or the design and arrangement of the premises, but at least annually. An entry shall be made in the log book required by Section 405.5 documenting such review, and indicating the general nature of any amendments to be made to such plan.

404.5 Maintenance on premises. A copy of the fire safety and evacuation plan and the emergency action plan shall be readily available on the premises during regular business hours. For buildings provided with a fire command station, the plans shall be maintained at such station, if practicable.

404.6 Submission of plans. Group B office building fire safety and evacuation plans and emergency action plans, fire safety and evacuation plans for Group R-1 occupancies and buildings with a fire alarm system with voice communication as set forth in Section 404.2.1(9), and such other fire safety and evacuation plans as may be specified by the commissioner by rule, shall be submitted to the commissioner for acceptance. Such plans shall be accompanied by a copy of the fire protection plan filed with the New York City Department of Buildings in accordance with the Building Code, unless already submitted to the department. A fire safety and evacuation plan and an emergency action plan, as applicable, shall be prepared, and, as applicable, accepted prior to occupancy of the building.

404.7 Building information card. The commissioner may require by rule the preparation of a building information card depicting and/or setting forth the relevant fire safety information for a building or occupancy for which a fire safety and evacuation plan is required to be submitted to the department pursuant to Section 404.6. A building information card, when required to be prepared, shall be maintained on the premises and made available upon request to any department representative.



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TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 4: EMERGENCY PLANNING AND PREPAREDNESS
SECTION FC 405: FIRE DRILLS AND EAP DRILLS

NYC Administrative Code § 29-FC 405

405.1 General.

Fire drills and EAP drills shall be conducted in occupancies and buildings set forth in Section 404.2, in accordance with Sections 405.2 and 405.3.

405.2 Frequency of fire drills. Required fire drills shall be conducted in the buildings set forth in Section 404.2, in accordance with Table 405.2. All building occupants, including the FSP staff, shall participate in fire drills. 3] Table 405.2 Fire Drill Frequency Occupancy or Building Type Frequency 1] Occupancy or Building Type Frequency 2] Group B colleges and universities In accordance with Section 405.2.1 Group B office buildings subject to compliance with Section 404.2.1(2) Quarterly Group E day care facilities Monthly Group E schools and educational facilities In accordance with Section 405.2.2 Group F Monthly in accordance with Section 405.2.3 Group I-1a In accordance with Section 405.2.4 Group R-1 college or school student dormitories In accordance with Section 405.2.2 Group R-1 homeless shelters Monthly on each shift Group R-2 occupancies subject to compliance with Section 404.2.1(8) Quarterly on each shift. Fire drills in residential care assisted living facilities shall include complete evacuation of the building in accordance with Section 408.5.5.b. The frequency may be reduced to semi-annually two years after the certificate of occupancy has been issued.

405.2.1 Group B occupancy colleges and universities fire drill frequency. In Group B colleges and university facilities, the frequency and timing of fire drills shall be in accordance with the New York State Education Law.

405.2.2 Group E occupancy schools and educational facility fire drill frequency. In Group E schools and educational facilities, including dormitories, the frequency and timing of fire drills shall be in accordance with New York State Education Law.

405.2.3 Group F occupancy fire drill frequency. Fire drills in Group F occupancies shall be conducted as required and in accordance with the New York City Board of Standards and Appeals Rules, as set forth in 2 RCNY § 9-01.

405.2.4 Group I-1 occupancy fire drill frequency. Fire drills in Group I-1 occupancies shall be conducted at least six times per year, two times per year on each shift. Twelve drills shall be conducted in the first year of operation.

405.3 EAP drills. The owner shall conduct EAP drills on a regular basis, during regular business hours, in accordance with this section and the rules.

405.3.1 Frequency of EAP drills. EAP drills shall be conducted on a regular basis, as follows:

1. At least two EAP drills shall be conducted within one year of the date of department acceptance of the building's initial emergency action plan, the first of which shall be conducted within six months of such date of acceptance.

2. Beginning one year from the date of department acceptance of the building's initial emergency action plan, an EAP drill shall be conducted on each floor of the building at least once a year.

405.3.2 Participation in EAP drills. All building occupants present on the affected floors at the time the EAP drill is conducted, including visitors, shall be required to participate in such drill.

405.3.3 Coordination with fire drills. EAP drills shall be conducted separately from fire drills required for the building, and shall highlight the differences between the building's fire safety and evacuation plan and emergency action plan, and the appropriate actions to be taken by building occupants upon implementation of each plan.

405.4 Time. Drills shall be conducted at varying times of day.

405.5 Recordkeeping. A written record of fire drills and EAP drills shall be maintained in a bound log book with consecutive numbered pages, or other form of approved electronic recordkeeping, and maintained on the premises for a period of 3 years for fire drills, and 5 years for EAP drills, and made available upon request of any department representative. An entry shall be made in such log book for each fire drill and EAP drill that is conducted in the building that includes the following information, and such other information and documentation as the commissioner may require:

1. The name and, if applicable, certificate of fitness number of the person conducting the drill.
2. Date and time of the drill.
3. Name and title of the FSP staff or EAP staff assisting in the conduct of the drill.
4. Number of occupants participating in the drill.
5. Evaluation of effectiveness of the drill, including any delays and deficiencies.
6. If evacuation was conducted, time required to accomplish evacuation.

405.6 Reserved.

405.7 Alarm activation. The fire alarm system shall be activated each time a fire drill is conducted to initiate the drill and familiarize building occupants with the alarm tones.

405.8 Accounting for occupants. Occupants in a building shall be accounted for in accordance with Sections 405.8.1 and 405.8.2.

405.8.1 Educational occupancies. When occupants are evacuated and directed to an assembly area, school administrators shall account for all students present in the building prior to the drill.

405.8.2 Office buildings. In office buildings, all areas of the building to be evacuated shall be searched to ensure that

all occupants have participated in the drill.



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SECTION FC 406: FIRE SAFETY AND EVACUATION PLAN AND EMERGENCY ACTION PLAN STAFF
TRAINING

NYC Administrative Code § 29-FC 406

406.1 General.

FSP staff and EAP staff shall be trained in the performance of their duties in accordance with the fire safety and evacuation plan and emergency action plan, respectively.

406.2Frequency.FSP staff and EAP staff shall receive initial training in the contents of the fire safety and evacuation plan and emergency action plan upon commencement of their authority and duties in the building. Such staff shall participate in training sessions designed to familiarize them with their duties pursuant to the plan in accordance with the frequency set forth in Tables 406.2(1) and 406.2(2), as applicable. A written record of such staff training shall be maintained in a bound log book with consecutive numbered pages, or other form of approved recordkeeping, and maintained on the premises for a period of 3 years and made available for inspection by department representatives. An entry shall be made in such log book for each training session conducted.

Table 406.2(1) FSP Staff Training Drills	Occupancy or Building Type	Refresher Training Duration and Frequency
Group A	1 hour quarterly	Group I-130 minutes every 2 months
Group I-2	Monthly in accordance with Section 406.2.1	Group R-11 hour quarterly on each shift
Buildings with a fire alarm system with communication as set forth in Section 404.2.1(9)	1 hour quarterly	yaAll other occupancies or building types1 hour annually

ya. The commissioner may require participation of building occupants in the training drill, depending upon the nature of the occupancy in which such fire alarm system is installed. Training drills shall be conducted on a semi-annual basis beginning two years after the certificate of occupancy has been issued.

406.2.1Group I-2 occupancy FSP staff training drills.In Group I-2 occupancies, FSP staff training drills may be conducted throughout the entire occupancy or in specific areas thereof, but training shall be conducted in each and every area of the occupancy over the period of 1 year. Such training shall be conducted at least once each month for a total of not less than twelve training drills per year, distributed among the three shifts as follows:

1. Day shift-at least three training drills.

2. Evening shift-at least six training drills.

3. Night shift-at least three training drills.

Table 406.2(2) EAP Staff Training Drills	
EAP Staff Member	Initial Training Duration
Deputy fire safety/EAP directors	3 hours
Fire safety/EAP building evacuation supervisors	3 hours
Fire safety/EAP wardens	2 hours
Deputy fire safety/EAP warden	2 hours
Fire safety/EAP brigade	2 hours

Training Duration and Frequency	
Deputy fire safety/EAP directors	Fire safety/EAP building evacuation supervisors
1 hour semi-annually	1 hour semi-annually
1 hour annually	1 hour annually
1 hour annually	1 hour annually
1 hour annually	1 hour annually
1 hour annually	1 hour annually



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Chapter 4: EMERGENCY PLANNING AND PREPAREDNESS
SECTION FC 408: USE AND OCCUPANCY-RELATED REQUIREMENTS

NYC Administrative Code § 29-FC 408

408.1 General.

The premises used or occupied for the purposes set forth in this section shall additionally comply with the requirements of this section, as applicable.

408.2 Group A occupancies. All Group A occupancies shall comply with the requirements of Sections 408.2.1.

408.2.1 Seating plan. A copy of the seating plan for Group A occupancies required by the Building Code shall be submitted to the department prior to occupancy.

408.3 Group B occupancies. Group B occupancy office buildings or parts thereof, occupied or designed to be occupied by more than 500 persons on one or more floors, including street level, or by more than 100 persons on one or more floors other than street level, shall be operated and maintained in compliance with the additional emergency preparedness and planning requirements set forth in the rules.

408.4 Group H-5 occupancies. Group H-5 occupancies shall comply with the requirements of Sections 408.4.1 through 408.4.4.

408.4.1 Plans and diagrams. In addition to the requirements of Section 404 and Section 407.6, plans and diagrams shall be maintained in an approved location on the premises indicating the plan for each area, the amount and type of HPM stored, handled and used, locations of shutoff valves for HPM supply piping, emergency telephone locations and locations of exits.

408.4.2 Periodic review and revision. The plans and diagrams required by Section 408.4.1 shall be maintained up to date and the commissioner shall be notified of all changes in use or occupancy, and design and arrangement of the premises.

408.4.3 Emergency response team. Responsible persons shall be designated the on-site emergency response team

and trained to be liaison personnel for the department. These persons shall aid the department in preplanning emergency responses, identifying locations where HPM is stored, handled and used, and be familiar with the chemical nature of such material. An adequate number of personnel for each work shift shall be designated.

408.4.4 Emergency drills. Emergency drills of the on-site emergency response team shall be conducted on a regular basis but not less than once every three months. Records of emergency drills conducted shall be maintained in the same manner as records of fire drills.

408.5 Group I-1 occupancies. Group I-1 occupancies shall comply with the requirements of Sections 408.5.1 through 408.5.5.

408.5.1 Fire safety and evacuation plan. The fire safety and evacuation plan required by Section 404 shall include special FSP staff actions, including fire protection procedures necessary for residents, and shall be revised upon admission of any resident with special needs.

408.5.2 Reserved.

408.5.3 Resident training. Residents capable of assisting in their own evacuation shall be trained in the proper actions to take in the event of a fire. The training shall include actions to take if the primary escape route is blocked. Where the resident is given rehabilitation or habilitation training, training in fire prevention and actions to take in the event of a fire shall be a part of the rehabilitation training program. Residents shall be trained to assist each other in case of fire to the extent their physical and mental abilities permit them to do so without additional personal risk.

408.5.4 Reserved.

408.5.5 Resident participation. Fire drills shall involve the actual evacuation of all residents to a selected assembly area.

408.6 Group I-2 occupancies. Group I-2 occupancies shall comply with the requirements of Sections 408.6.1 and 408.6.2.

408.6.1 Evacuation not required. During fire drills, the movement of patients to safe areas or to the exterior of the building is not required.

408.6.2 Coded alarm signal. When fire drills are conducted after visiting hours or when patients or residents are expected to be asleep, a coded announcement is allowed instead of audible alarms.

408.7 Group I-3 occupancies. Group I-3 occupancies shall comply with the requirements of Sections 408.7.1 through 408.7.4.

408.7.1 FSP staff training content. FSP staff shall be instructed in the proper use of portable fire extinguishers and other manual fire suppression equipment.

408.7.2 Staffing. In Group I-3 occupancies, FSP staff shall be in the building at all times, and within three floors or 300 feet (91 440 mm) horizontal distance of the access door of each resident housing area. When movement of occupants from one smoke compartment to another or egress from the building is impeded by staff-controlled manual releases, the FSP staff responsible for controlling such movement or egress must be continuously available to initiate emergency procedures within 2 minutes of an alarm.

Exception: FSP staff shall not be required to be located within three floors or 300 feet (9144 mm) of areas in which all locks may be unlocked automatically in accordance with Section 408.4 of the Building Code.

408.7.3 Notification. Provision shall be made to promptly notify FSP staff of an emergency.

408.7.4Keys.Keys necessary for unlocking doors installed in a means of egress shall be individually identifiable by both touch and sight.

408.8Group R-1 occupancies.Group R-1 occupancies shall comply with the requirements of Sections 408.8.1 and 408.8.3.

408.8.1Evacuation diagrams.A diagram depicting two evacuation routes shall be posted on or immediately adjacent to every required egress door from each hotel guest room, motel guest room, or dormitory room. The diagram shall indicate the following:

1. A visual representation of the number of doors opening onto the public corridor which must be passed to reach each exit stair.
2. Location of the fire alarm pull stations.
3. Procedures to be followed in the event of a fire alarm or smoke detector alarm.
4. A written description or visual representation of the procedures to be followed in the event of fire or smoke conditions.

408.8.2Reserved.

408.8.3Signage.Group R-1 occupancies shall comply with the additional signage and such other emergency preparedness and planning requirements set forth in the rules.

408.9Group R-2 occupancies.Group R-2 occupancy buildings or parts thereof with 3 or more dwelling units, including apartment houses, apartment buildings, apartment hotels and other residential buildings or parts thereof that are occupied for the shelter and sleeping accommodations of individuals on a month to month or longer-term basis shall comply with the requirements of Sections 408.9.1 through 408.9.4 and the rules. Such buildings or parts thereof shall not be required to comply with the supervision requirements of Sections 401, and the requirements of Sections 404, 405 and 406.

Exception: Group R-2 occupancy buildings or parts thereof required to prepare a fire safety and evacuation plan as set forth in Section 404.2.1(8). Such buildings or parts thereof shall be operated and maintained in compliance with the additional emergency preparedness and planning requirements set forth in the rules.

408.9.1Residential fire safety guide and notices.The owner of any premises containing a Group R-2 occupancy shall cause a fire safety guide to be prepared for such premises, and periodically reviewed, amended and distributed in accordance with this section and the rules.

408.9.1.1Fire safety guide.The residential fire safety guide shall serve to inform building occupants and building service employees as to the building's construction, fire safety systems, means of egress, and evacuation and other procedures to be followed in the event of fire in the building.

408.9.1.2Fire safety notices.The fire safety notice shall serve to inform building occupants, building service employees and visitors as to the evacuation and other procedures to be followed in the event of fire in the building. Such notice shall be in such form as prescribed by the commissioner by rule and shall be posted within each dwelling unit and such other locations as set forth in the rules.

408.9.2Periodic review and revision.Fire safety guides and notices shall be reviewed prior to each distribution and posting, and shall be revised within 60 days of any material change in the building's fire safety systems, means of egress or other building condition required to be included in such fire safety guide or notice.

408.9.3 Distribution and posting. A copy of the fire safety guide and fire safety notice shall be distributed to building occupants, and fire safety notices shall be posted as set forth in this section and the rules.

408.9.3.1 Cooperative or condominium. In Group R-2 occupancies with a cooperative or condominium form of ownership and management, the board of directors, condominium association or other party generally responsible for maintenance of common areas shall be responsible for the preparation and distribution of the fire safety guide, the posting and maintenance of fire safety notices in common areas, and the preparation and distribution to individual dwelling unit owners or proprietary lessees of fire safety notices for dwelling unit doors, including instructions and the means for affixing the notice. The owners or proprietary lessees of the individual units in such residential buildings or parts thereof shall be responsible for the posting and maintenance of the fire safety notice on their respective dwelling unit doors.

408.9.4 Floor numbering list. The commissioner shall promulgate rules establishing requirements for the electronic submission of floor numbering lists to the department by owners of buildings or parts thereof classified in Group R-2 occupancies that are 150 feet (45 720 mm) or more in height, and such other occupancies as the commissioner may designate by rule. Such rules shall provide that each owner of a building with non-sequential or nonstandard floor numbering, as defined by rule, submit a floor numbering list indicating the floor numbers assigned to each floor, and submit an amended floor numbering list within 2 business days of a change in any floor numbering designation.

408.10 Group R-1 occupancy school and college dormitories. Group R-1 school and college dormitories shall prepare an FSP, or prepare and distribute a fire safety guide and notice, as prescribed by the commissioner by rule.

408.11 Covered mall buildings. Covered mall buildings shall comply with the requirements of Sections 408.11.1 through 408.11.3.

408.11.1 Floor plan. The floor plan required by Section 404.3.1(4) shall additionally include the following information:

1. Each occupancy, including identification of tenant.
2. Exits from each tenant space.

408.11.2 Tenant identification. Each occupied tenant space provided with a secondary exit to the exterior or exit corridor shall be provided with tenant identification by business name and/or address. Letters and numbers shall be conspicuously posted on the exterior or exit corridor side of the door, be plainly legible and shall contrast with their background.

408.11.3 Maintenance. Unoccupied tenant spaces shall be:

1. Kept free from the storage of any combustible materials.
2. Kept separate from other tenant spaces and areas of the mall by maintaining any fire separation requirement of the Building Code during the period of time that the space remains unoccupied or under reconstruction.
3. Periodically inspected on at least a weekly basis to ensure that the space is being maintained in accordance with this section. Doors to spaces shall be secured from entry by keeping all doors locked at all times when the space is unoccupied.
4. Kept free from rubbish and other combustible waste.

408.12 Buildings with Class B or M fire alarm systems. Buildings or parts thereof equipped with a fire alarm system with voice communication of the type required in Class B or M occupancies, regardless of whether such system is required in such building or space, shall be operated and maintained in compliance with the requirements of Section

408.3.

408.13 Buildings with Class R-1 fire alarm systems. Buildings or parts thereof equipped with a fire alarm system with voice communication of the type required in Group R-1 occupancies, regardless of whether such system is required in such building or space, shall be operated and maintained in compliance with the requirements of Section 408.8.3.

408.14 Fire emergency reporting. In a conspicuous location in every lobby or entrance hall of a commercial or public building, the owner shall post a sign indicating the method of transmitting a fire alarm. Such signs shall conform to the following format and the owner shall insert all information necessary to complete the instructions contained therein: Fire alarm box at | and | Fire alarm box at

(Name of street)

(Name of street)

or

To report a fire by telephone dial "911" or, depending upon the borough in which the property is located, insert one of the following telephone numbers: Bronx properties (718) 999-3333 Brooklyn properties (718) 999-4444 Manhattan properties (212) 999-2222 Queens properties (718) 999-5555 Staten Island properties (718) 999-6666

Exception: This section shall not apply to educational facilities where fire drills are conducted in accordance with Section FC 405.

408.14.1 Fire emergency reporting signs. Signs required by this section shall be of such size and contain such lettering as the commissioner may prescribe by rule.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 41: PYROPHORIC MATERIALS
SECTION FC 4101: GENERAL

NYC Administrative Code § 29-FC 4101

4101.1 Scope.

This chapter shall govern the manufacture, storage, handling and use of pyrophoric materials.

4101.2Permits.Permits shall be required as set forth in Section 105.6.

4101.3General.Pyrophoric materials shall be manufactured, stored, handled and used in accordance with this chapter. Pyrophoric materials that are compressed gases shall additionally comply with the requirements of Chapter 30.

4101.4Prohibitions.It shall be unlawful to:

1. Manufacture, store, handle and/or use detonable pyrophoric materials, except as specifically authorized in compliance with the requirements of Chapter 33.

2. Compress any pyrophoric material that is a gas.

4101.5Supervision.The handling and use of pyrophoric materials in quantities requiring a permit shall be under the personal supervision of a certificate of fitness holder. The storage of pyrophoric materials in quantities requiring a permit shall be under the general supervision of a certificate of fitness holder.



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Chapter 41: PYROPHORIC MATERIALS
SECTION FC 4102: DEFINITIONS

NYC Administrative Code § 29-FC 4102

4102.1 Definition.

The following term shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

PYROPHORIC MATERIAL. A material with an autoignition temperature in air, at or below a temperature of 130(degrees)F (54(degrees)C).



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Chapter 41: PYROPHORIC MATERIALS
SECTION FC 4103: GENERAL REQUIREMENTS

NYC Administrative Code § 29-FC 4103

4103.1 Quantities not exceeding the maximum allowable quantity per control area.

The storage, handling and use of pyrophoric materials in amounts not exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Sections 2701, 2703, 4101, 4103 and 4107.

4103.1.1 Emergency shutoff. Compressed gas systems conveying pyrophoric gases shall be provided with approved emergency shutoff valves that can be activated at each point of use and each source.

4103.2 Quantities exceeding the maximum allowable quantity per control area. The storage, handling and use of pyrophoric materials in amounts exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Chapter 27 and this chapter.



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Chapter 41: PYROPHORIC MATERIALS
SECTION FC 4104: STORAGE

NYC Administrative Code § 29-FC 4104

4104.1 Indoor storage.

Indoor storage of pyrophoric materials in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1), shall be in accordance with Sections 2701, 2703, 2704 and this chapter. The storage of silane gas and gas mixtures with a silane gas concentration of 2 percent or more by volume, shall be in accordance with Section 4106.

4104.1.1 Liquid-tight floor. In addition to the requirements of Section 2704.12, floors of storage areas containing pyrophoric liquids shall be of liquid-tight construction.

4104.1.2 Pyrophoric solids and liquids. Storage of pyrophoric solids and liquids shall be limited to a maximum area of 100 square feet (9.3 m²) per pile. Storage shall not exceed 5 feet (1524 mm) in height. Individual containers shall not be stacked. Aisles between storage piles shall be a minimum of 10 feet (3048 mm) in width. Individual tanks or containers shall not exceed 500 gallons (1893 L) in capacity.

4104.1.3 Pyrophoric gases. Storage of pyrophoric gases shall be in detached buildings where required by Section 2703.8.2.

4104.1.4 Separation from incompatible materials. In addition to the requirements of Section 2703.9.8, indoor storage of pyrophoric materials shall be isolated from incompatible hazardous materials by 1-hour fire barriers with openings protected in accordance with the construction codes, including the Building Code.

Exception: Storage in approved hazardous materials storage cabinets constructed in accordance with Section 2703.8.7.

4104.2 Outdoor storage. Outdoor storage of pyrophoric materials in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(3) shall be in accordance with Sections 2701, 2703, 2704 and this

chapter. The storage of silane gas, and gas mixtures with a silane gas concentration of 2 percent or more by volume, shall be in accordance with Section 4106.

4104.2.1 Distance from storage to exposures. The separation of pyrophoric solids, liquids and gases from buildings, lot lines, public streets, private roads or means of egress shall be in accordance with the following:

1. Solids and liquids. Two times the separation required by Chapter 34 for Class IB flammable liquids.
2. Gases. The location and maximum amount of pyrophoric gas per storage area shall be in accordance with Table 4104.2.1.

4104.2.2 Fire protection. When overhead construction is provided for sheltering outdoor storage areas of pyrophoric materials, the storage areas shall be protected throughout by a fire extinguishing system.



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Chapter 41: PYROPHORIC MATERIALS
SECTION FC 4105: HANDLING AND USE

NYC Administrative Code § 29-FC 4105

4105.1 General.

Pyrophoric materials in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) or 2703.1.1(3) shall be handled and used in accordance with Sections 2701, 2703, 2705 and this chapter.

4105.2 Fire protection. When overhead construction is provided for sheltering of outdoor use areas of pyrophoric materials, the use areas shall be protected throughout by a fire extinguishing system.

4105.3 Silane gas. The handling and use of silane gas, and gas mixtures with a silane gas concentration of 2 percent or more by volume, shall be in accordance with Section 4106.



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SECTION FC 4106: SILANE GAS

NYC Administrative Code § 29-FC 4106

4106.1 General requirements.

The storage, handling and use of silane gas and gas mixtures with a silane gas concentration of 2 percent or more by volume, in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) or 2703.1.1(3), shall be in accordance with this section.

4106.1.1 Building construction. Indoor storage, handling and use of silane gas shall be within a room or building conforming to the construction codes, including the Building Code.

4106.1.2 Flow control. Compressed gas containers, cylinders and tanks containing silane gas, and gas mixtures with a silane gas concentration of 2 percent or more by volume, shall be equipped with reduced flow valves equipped with restrictive flow orifices not exceeding 0.010 inch (0.254 mm) in diameter. The presence of the restrictive flow orifice shall be indicated on the valve and on the container, cylinder or tank by means of a label placed by the manufacturer at a prominent location.

Exceptions:

1. Manufacturing and filling facilities where silane gas is produced or mixed and stored prior to sale.
2. Outdoor installations consisting of permanently mounted cylinders connected to a manifold, provided that the outlet connection from the manifold is equipped with a restrictive flow orifice not exceeding 0.125 inch (3.175 mm) in diameter and the setback distance to exposures is not less than 40 feet (12 192 mm). Footnote a of Table 4104.2.1 shall not apply.

4106.1.3 Valves. Container, cylinder and tank valves shall be constructed of stainless steel or other approved materials. Valves shall be equipped with outlet fittings in accordance with CGA V-1.

4106.2 Indoor storage. Indoor storage of silane gas, and gas mixtures with a silane gas concentration of 2 percent or

more by volume, shall be in accordance with Section 4104.1 and Sections 4106.2.1 through 4106.2.3.

4106.2.1 Fire protection. Whenever a fire extinguishing system is required, a sprinkler system shall be provided.

4106.2.2 Exhausted enclosures or gas cabinets. When provided, exhausted enclosures and gas cabinets shall be constructed as follows:

1. Exhausted enclosures and gas cabinets shall be in accordance with Sections 2703.8.5 and 2703.8.6.
2. Exhausted enclosures and gas cabinets shall be internally protected by a sprinkler system.
3. The velocity of ventilation across unwelded fittings and connections on the piping system shall not be less than 200 linear feet per minute (102 m/s).
4. The average velocity at the face of the access ports or windows in the gas cabinet shall not be less than 200 linear feet per minute (102 m/s) with a minimum velocity of 150 linear feet per minute (76 m/s) at any point of the access port or window.

4106.2.3 Emergency power. The ventilation system shall be provided with an automatic emergency power source in accordance with Section 604 and designed to operate at full capacity.

4106.3 Outdoor storage. Outdoor storage of silane gas, and gas mixtures with a silane gas concentration of 2 percent or more by volume, shall be in accordance with Section 4104.2 and Sections 4106.3.1 through 4106.3.3.

4106.3.1 Volume. The maximum volume for each nest shall not exceed 10,000 cubic feet (283.2 m³) of gas.

4106.3.2 Aisles. Storage nests shall be separated by aisles a minimum of 6 feet (1829 mm) in width.

4106.3.3 Separation. Storage shall be located a minimum of 25 feet (7620 mm) from lot lines, public streets, private roads, means of egress and buildings.

4106.3.4 Weather protection. The clear height of overhead construction provided for sheltering of outdoor storage shall not be less than 12 feet (3658 mm).

4106.4 Indoor handling and use. The indoor handling and use, including dispensing, of silane gas and gas mixtures with a silane gas concentration of 2 percent or more by volume, in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) shall be in accordance with Sections 4105 and this section.

4106.4.1 Exhausted enclosures or gas cabinets. When provided, exhausted enclosures and gas cabinets shall be installed in accordance with Section 4106.2.2.

4106.4.2 Remote manual shutdown. Remote manual shutdown of process gas flow shall be provided outside each gas cabinet.

4106.4.3 Emergency power. The ventilation system shall be provided with an approved automatic emergency power source in accordance with Section 604 and designed to operate at full capacity.

4106.4.4 Purge panels. Automated purge panels shall be provided.

4106.4.4.1 Purge gases. Purging of piping and controls located in gas cabinets or exhausted enclosures shall only be performed using a dedicated inert gas supply that is designed to prevent silane gas from entering the inert gas supply. The use of nondedicated systems or portions of piping systems is allowed on portions of the venting system that are continuously vented to atmosphere. Devices that could interrupt the continuous flow of purge gas to the atmosphere

shall be prohibited.

Exception: Manufacturing and filling facilities where silane gas is produced or mixed.

4106.4.4.2 Venting. Gas vent headers or individual purge panel vent lines shall have a continuous flow of inert gas. The inert gas shall be introduced upstream of the first vent or exhaust connection to the header.

4106.4.4.3 Purging operations. Purging operations shall be performed by means ensuring complete purging of the piping and control system before the system is opened to the atmosphere.

4106.5 Outdoor handling and use. The outdoor handling and use, including dispensing, of silane gas, and gas mixtures with a silane gas concentration of 2 percent or more by volume, exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(3) shall be in accordance with Sections 4105, 4106.4 and 4106.5.1.

4106.5.1 Fire protection. When overhead construction is provided for sheltering outdoor use areas containing silane gas, or gas mixtures with a silane gas concentration of 2 percent or more by volume, the use areas shall be protected throughout by a fire extinguishing system.



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SECTION FC 4107: MANUFACTURING RESTRICTIONS

NYC Administrative Code § 29-FC 4107

4107.1 Pyrophoric materials classified as a Class IV material.

Pyrophoric materials classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution may be utilized in manufacturing processes or other production in manufacturing districts only when authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution.

4107.1.1 Manufacture of pyrophoric materials classified as a Class IV material. It shall be unlawful to manufacture pyrophoric materials classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution.

4107.1.2 Storage of pyrophoric materials classified as a Class IV material. It shall be unlawful to store pyrophoric materials classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution, except accessory storage authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 42: PYROXYLIN PLASTICS
SECTION FC 4201: GENERAL

NYC Administrative Code § 29-FC 4201

4201.1 Scope.

This chapter shall govern the manufacture, storage, handling and use of pyroxylin plastic, except cellulose nitrate motion picture film, which shall comply with the requirements of Section 306.

4201.2Permits.Permits shall be required as set forth in Section 105.6.

4201.3General.Pyroxylin plastics shall be manufactured, stored, handled and used in accordance with this chapter.

4201.4Prohibitions.It shall be unlawful to:

1. Manufacture raw pyroxylin plastics.
2. Store raw pyroxylin plastics, except accessory storage authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution.

4201.5Supervision.The handling and use of raw pyroxylin plastics in quantities requiring a permit shall be under the personal supervision of a certificate of fitness holder. The storage of raw pyroxylin plastics in quantities requiring a permit shall be under the general supervision of a certificate of fitness holder.



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SECTION FC 4202: DEFINITIONS

NYC Administrative Code § 29-FC 4202

4202.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

FINISHED PYROXYLIN PLASTIC PRODUCTS. Any product to which a pyroxylin plastic has been applied that does not require further manufacturing with respect to the application of such pyroxylin plastic or any further application of pyroxylin plastic.

PYROXYLIN PLASTIC. Any plastic substance, material or compound, other than cellulose nitrate film, that has soluble cotton or similar cellulose nitrate as a base, by whatever name known, in the form of blocks, sheets, tubes or other fabricated shapes, including raw pyroxylin plastics and finished pyroxylin plastic products.

RAW PYROXYLIN PLASTIC. Any pyroxylin plastic in the form of blocks, slabs, rods tubes or other shapes, that is to be used in a manufacturing process.



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SECTION FC 4203: GENERAL REQUIREMENTS

NYC Administrative Code § 29-FC 4203

4203.1 Displays.

Finished pyroxylin plastic products displayed in areas to which the public has access shall be placed on tables not more than 3 feet (914 mm) wide and 10 feet (3048 mm) long. Tables shall be spaced at least 3 feet (914 mm) apart. Where articles are displayed on counters, they shall be arranged in a like manner.

4203.2Space under tables. Spaces underneath tables on which finished pyroxylin plastic products are displayed shall be kept free from storage of any kind and accumulation of rubbish or other combustible waste or any other combustible material.

4203.3Location. Tables on which finished pyroxylin plastic products are displayed shall be so located that in the event of a fire at the table, the table will not interfere with any means of egress.

4203.4Lighting. Lighting shall not be located directly above pyroxylin plastics, unless provided with a suitable guard to prevent heated particles or broken bulb elements from falling.



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SECTION FC 4204: STORAGE, HANDLING AND USE

NYC Administrative Code § 29-FC 4204

4204.1 Pyroxylin plastics in Group F buildings.

Pyroxylin plastics in a Group F building shall be stored, handled and used in accordance with Sections 4204.1.1 through 4204.1.7.

4204.1.1 Storage of incoming material. Where raw pyroxylin plastics in excess of 25 pounds (11 kg) are received in a building or fire area, an approved vented cabinet or approved vented vault protected by a sprinkler system shall be provided for the storage of material.

4204.1.2 Capacity limitations. Storage in any one workroom shall not exceed 1,000 pounds (454 kg) of raw pyroxylin plastics. A storage cabinet shall not contain more than 500 pounds (227 kg). Each compartment shall not contain more than 250 pounds (114 kg).

4204.1.3 Storage of additional material. Raw pyroxylin plastics in excess of that allowed by Section 4204.1.2 shall be kept in vented vaults not exceeding 1,500-cubic-foot capacity (43 m³) of total vault space, and with construction, venting and sprinkler system protection approved by the commissioner.

4204.1.4 Heat sources. Pyroxylin plastics shall not be stored within 2 feet (610 mm) of heat-producing appliances, steam pipes, radiators or chimneys.

4204.1.5 Accumulation of material. In factories manufacturing pyroxylin plastic products, approved vented cabinets, vaults or storage rooms protected by a sprinkler system shall be provided to prevent the accumulation in workrooms of raw pyroxylin plastics in process and finished pyroxylin plastic products.

4204.1.6 Operators. In workrooms of factories manufacturing finished pyroxylin plastic products, operators shall not be stationed closer together than 3 feet (914 mm), and the amount of material per operator shall not exceed one-shift's supply and shall be limited to the capacity of three tote boxes, including material awaiting removal or use.

4204.1.7Waste material.Waste pyroxylin plastics, such as shavings, chips, turnings, sawdust, edgings and trimmings, shall be kept under water in metal receptacles until removed from the premises.

4204.2Fire protection.The storage, handling or use of pyroxylin plastic in quantities exceeding 100 pounds (45 kg) shall be located in a building or part thereof protected throughout by a sprinkler system, except for storage exclusively of finished pyroxylin plastic products in a quantity not exceeding 6,000 pounds (2724 kg).

4204.3Sources of ignition.Sources of ignition shall not be located in rooms in which pyroxylin plastics in excess of 25 pounds (11 kg) are stored, handled or used.

4204.4Heating.Rooms in which pyroxylin plastics are handled or stored shall be heated by low-pressure steam or hot water radiators. Radiators shall be not less than 4 inches (102 mm) above the floor. All steam pipes and risers within 6 feet (1828 mm) of the floor shall be protected with non-combustible pipe covering. All heating radiators, coils, boilers, pipes and other heating apparatus situated so as to come in contact with any combustible material, including the tops of radiators, shall be protected with 1/4-inch (6 mm) mesh galvanized steel of No. 20 U.S. gauge or equivalent. The tops of such guards shall slope so as to prevent their use as a shelf.

4204.5Prohibitions.It shall be unlawful to store, handle or use raw pyroxylin plastics as follows:

1. In any building situated within 50 feet (15 240 mm) of the nearest wall of a building occupied as a school, hospital, or Group A occupancy.
2. In any Group R occupancy.
3. In any building of combustible construction as defined in Section 602 of the Building Code.



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SECTION FC 4205: MANUFACTURING RESTRICTIONS

NYC Administrative Code § 29-FC 4205

4205.1 Raw pyroxylin plastics.

Raw pyroxylin plastics shall be treated as a Class IV material as defined in Section 42-272 of the Zoning Resolution. Raw pyroxylin plastics may be utilized in manufacturing processes or other production in manufacturing districts only when authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution.



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Chapter 43: UNSTABLE (REACTIVE) MATERIALS
SECTION FC 4301: GENERAL

NYC Administrative Code § 29-FC 4301

4301.1 Scope.

This chapter shall govern the manufacture, storage, handling and use of unstable (reactive) materials, except for the display and storage of unstable (reactive) materials in Group M and storage of unstable (reactive) materials in Group S occupancies complying with the requirements of Section 2703.11.

4301.2 Permits. Permits shall be required as set forth in Section 105.6.

4301.3 General. Unstable (reactive) materials shall be manufactured, stored, handled and used in accordance with this chapter. Unstable (reactive) materials that are compressed gases shall additionally comply with the requirements of Chapter 30.

4301.4 Prohibited manufacture, storage, handling and use. It shall be unlawful to manufacture, store, handle and/or use detonable unstable (reactive) materials except as specifically authorized by Chapter 33.

4301.5 Supervision. The handling and use of unstable (reactive) materials in quantities requiring a permit shall be under the personal supervision of a certificate of fitness holder. The storage of unstable (reactive) materials in quantities requiring a permit shall be under the general supervision of a certificate of fitness holder.



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SECTION FC 4302: DEFINITIONS

NYC Administrative Code § 29-FC 4302

4302.1 Definition.

The following term shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

UNSTABLE (REACTIVE) MATERIAL. A material, other than an explosive, which in the pure state or as commercially produced, will vigorously polymerize, decompose, condense or become self-reactive and undergo other violent chemical changes, including explosion, when exposed to heat, friction or shock, or in the absence of an inhibitor, or in the presence of contaminants, or in contact with incompatible materials. Unstable (reactive) materials shall be classified as follows:

Class 1. Materials that in themselves are normally stable but which can become unstable at elevated temperatures and pressure.

Class 2. Materials that in themselves are normally unstable and readily undergo violent chemical change but do not detonate. This class includes materials that can undergo chemical change with rapid release of energy at normal temperatures and pressures, and that can undergo violent chemical change at elevated temperatures and pressures.

Class 3. Materials that in themselves are capable of detonation or of explosive decomposition or explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation. This class includes materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures.

Class 4. Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures. This class includes materials that are sensitive to mechanical or localized thermal shock at normal temperatures and pressures.



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SECTION FC 4303: GENERAL REQUIREMENTS

NYC Administrative Code § 29-FC 4303

4303.1 Quantities not exceeding the maximum allowable quantity per control area.

The storage, handling and use of unstable (reactive) materials in amounts not exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Sections 2701, 2703, 4301, 4303 and 4306.

4303.1.1 Prohibited indoor storage, handling and use by occupancy. It shall be unlawful to store, handle or use:

1. Class 3 and 4 unstable (reactive) materials in Group A, E, I, R or U occupancies.
2. Class 3 and 4 unstable (reactive) materials in offices in Group B, F, M or S occupancies, or any other areas of such occupancies that are accessible to the public.

4303.2 Quantities exceeding the maximum allowable quantity per control area. The storage, handling and use of unstable (reactive) materials in amounts exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Chapter 27 and this chapter.

4303.3 Multiple hazard sign. Where two or more classes of unstable (reactive) materials are stored in immediate proximity to one another, such area shall be provided with hazard identification signs pursuant to Chapter 27 for the most severe class present.

4303.4 Multiple class storage. Except as otherwise specifically provided in this code, where more than one class of unstable (reactive) materials is stored in the same control area, the maximum quantity allowed of each unstable (reactive) material shall be limited as follows: the maximum quantity shall be reduced by multiplying the maximum allowable quantity for each such material by the proportion that such material bears to the total quantity of unstable (reactive) material stored in the control area. The total of the proportional amounts shall not exceed 100 percent.

4303.5 Temperature sensitive material. Where the required storage temperature range, as specified by the

manufacturer, extends beyond normal ambient temperatures, high or low temperature limit switches, as applicable, shall be provided in addition to normal temperature controls. These limit switches shall activate an alarm in a supervised area to ensure reporting to the fire department.



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SECTION FC 4304: STORAGE

NYC Administrative Code § 29-FC 4304

4304.1 Indoor storage.

Indoor storage of unstable (reactive) materials in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) shall be in accordance with Sections 2701, 2703, 2704 and this chapter.

4304.1.1 Detached storage. Storage of unstable (reactive) materials shall be in a detached building when required in Section 2703.8.2.

4304.1.2 Explosion control. Indoor storage rooms, areas and buildings containing Class 3 or 4 unstable (reactive) materials shall be provided with explosion control in accordance with Section 911 and the construction codes, including the Building Code.

4304.1.3 Liquid-tight floor. In addition to Section 2704.12, floors of storage areas for liquids and solids shall be of liquid-tight construction.

4304.1.4 Storage configuration. Unstable (reactive) materials stored in quantities greater than 500 cubic feet (14 m³) shall be separated into piles, each not larger than 500 cubic feet (14 m³). Aisle width shall not be less than the height of the piles or 4 feet (1219 mm), whichever is greater.

Exception: Materials stored in tanks.

4304.1.5 Location. Unstable (reactive) materials shall not be stored in basements or other below grade areas.

4304.1.6 Smoke and heat venting. Smoke and heat venting shall be provided in accordance with Section 910 and the construction codes, including the Building Code.

4304.2 Outdoor storage. Outdoor storage of unstable (reactive) materials in amounts exceeding the maximum allowable quantities per control area indicated in Table 2703.1.1(3) shall be in accordance with Sections 2701, 2703,

2704 and this chapter.

4304.2.1 Distance from storage to exposures. Outdoor storage of unstable (reactive) material that can deflagrate shall not be within 75 feet (22 860 mm) of buildings, lot lines, public streets, private roads or means of egress. Outdoor storage of nondeflagrating unstable (reactive) materials shall not be within 20 feet (6096 mm) of buildings, lot lines, public streets, private roads or means of egress. A 2-hour fire barrier wall without openings or penetrations extending not less than 30 inches (762 mm) above and to the sides of the storage is allowed in lieu of such distance. The wall shall either be an independent structure, or the exterior wall of the building adjacent to the storage area.

4304.2.2 Storage configuration. Piles of unstable (reactive) materials shall not exceed 1,000 cubic feet (28 m³).

4304.2.3 Aisle widths. Aisle widths between piles shall not be less than one-half the height of the pile or 10 feet (3048 mm), whichever is greater.



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SECTION FC 4305: HANDLING AND USE

NYC Administrative Code § 29-FC 4305

4305.1 General.

Unstable (reactive) materials in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) or 2703.1.1(3) shall be handled and used in accordance with Sections 2701, 2703, 2705 and this chapter.



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SECTION FC 4306: MANUFACTURING RESTRICTIONS

NYC Administrative Code § 29-FC 4306

4306.1 Unstable (reactive) material classified as a Class IV material.

Unstable (reactive) material classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution may be utilized in manufacturing processes or other production in manufacturing districts only when authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution.

4306.1.1 Manufacture of unstable (reactive) material classified as a Class IV material. It is unlawful to manufacture unstable (reactive) material classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution.

4306.1.2 Storage of unstable (reactive) materials classified as a Class IV material. It shall be unlawful to store unstable (reactive) material classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution, except that accessory storage authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution shall be allowed.



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Chapter 44: WATER-REACTIVE SOLIDS AND LIQUIDS
SECTION FC 4401: GENERAL

NYC Administrative Code § 29-FC 4401

4401.1 Scope.

This chapter shall govern the manufacture, storage, handling and use of waterreactive solids and liquids, except for the display and storage of water-reactive solids and liquids in Group M occupancies complying with the requirements of Section 2703.11, and storage of water-reactive solids and liquids in Group S occupancies complying with the requirements of Section 2703.11.

4401.2Permits.Permits shall be required as set forth in Section 105.6.

4401.3General.Water-reactive solids and liquids shall be manufactured, stored, handled and used in accordance with this chapter.

4401.4Prohibited manufacture, storage, handling and use.It shall be unlawful to manufacture, store, handle or use detonable water-reactive solids and liquids, except as specifically authorized by Chapter 33.

4401.5Supervision.The handling and use of water-reactive solids and liquids in quantities requiring a permit shall be under the personal supervision of a certificate of fitness holder. The storage of water-reactive solids and liquids in quantities requiring a permit shall be under the general supervision of a certificate of fitness holder.



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SECTION FC 4402: DEFINITIONS

NYC Administrative Code § 29-FC 4402

4402.1 Definition.

The following term shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

WATER-REACTIVE MATERIAL. A material that explodes, violently reacts, produces flammable, toxic or other hazardous gases, and/or generates enough heat to cause self-ignition or ignition of nearby combustibles upon exposure to water or moisture. Water-reactive materials are classified as follows:

- Class 1. Materials that may react with water with some release of energy, but not violently.
- Class 2. Materials that may form potentially explosive mixtures with water.
- Class 3. Materials that react explosively with water without requiring heat or confinement.



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SECTION FC 4403: GENERAL REQUIREMENTS

NYC Administrative Code § 29-FC 4403

4403.1 Quantities not exceeding the maximum allowable quantity per control area.

The storage, handling and use of water-reactive solids and liquids in amounts not exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Sections 2701, 2703, 4401, 4403 and 4406.

4403.1.1 Prohibited indoor storage, handling and use by occupancy. It shall be unlawful to store, handle or use:

1. Class 3 water-reactive solids and liquids in Group A, E, I, R or U occupancies.
2. Class 3 water-reactive solids and liquids in offices or in retail sales portions of Group B, F, M or S occupancies.

4403.2 Quantities exceeding the maximum allowable quantity per control area. The storage, handling and use of water-reactive solids and liquids in amounts exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Chapter 27 and this chapter.

4403.3 Multiple hazard sign. Where more than one class of water-reactive solids and liquids is stored in immediate proximity to one another, such area shall be provided with hazard identification signs pursuant to Chapter 27 for the most severe class present.

4403.4 Multiple class storage. Except as otherwise specifically provided in this code, where more than one class of water-reactive solids and liquids is stored in the same control area, the maximum quantity allowed of each water-reactive solid or liquid shall be limited as follows: the maximum quantity shall be reduced by the maximum allowable quantity for each such solid or liquid by the proportion that such solid or liquid bears to the total quantity of water-reactive solid and liquid stored in the control area. The total of the proportional amounts shall not exceed 100 percent.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 44: WATER-REACTIVE SOLIDS AND LIQUIDS
SECTION FC 4404: STORAGE

NYC Administrative Code § 29-FC 4404

4404.1 Indoor storage.

Indoor storage of water-reactive solids and liquids in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1), shall be in accordance with Sections 2701, 2703, 2704 and this chapter.

4404.1.1 Detached storage. Storage of water-reactive solids and liquids shall be in a detached building when required by Section 2703.8.2.

4404.1.2 Liquid-tight floor. In addition to the provisions of Section 2704.12, floors in storage areas for water-reactive solids and liquids shall be of liquid-tight construction.

4404.1.3 Waterproof room. Rooms or areas used for the storage of water-reactive solids and liquids shall be constructed in a manner which resists the penetration of water through the use of waterproof materials. Piping carrying water for other than sprinkler systems shall not be within such rooms or areas.

4404.1.4 Water-tight containers. When Class 2 and/or Class 3 water-reactive solids and liquids are stored in areas protected by a sprinkler system, the materials shall be stored in closed water-tight containers.

4404.1.5 Storage configuration. Water-reactive solids and liquids stored in quantities greater than 500 cubic feet (14 m³) shall be separated into piles, each not larger than 500 cubic feet (14 m³). Aisle widths between piles shall not be less than the height of the pile or 4 feet (1219 mm), whichever is greater.

Exception: Water-reactive solids and liquids stored in tanks.

4404.1.5.1 Class 2 storage in basements or other areas below grade. Class 2 water-reactive solids and liquids shall not be stored in basements or other areas below grade unless such materials are stored in closed water-tight containers or tanks.

4404.1.5.2 Class 3 storage in basements or other areas below grade. Class 3 water-reactive solids and liquids shall not be stored in basements or other areas below grade.

4404.1.5.3 Storage with flammable liquids. Class 2 or Class 3 water-reactive solids and liquids shall not be stored with flammable liquids.

4404.1.6 Explosion control. Indoor storage rooms, areas and buildings containing Class 2 or Class 3 water-reactive solids and liquids shall be provided with explosion control in accordance with Section 911 and the construction codes, including the Building Code.

4404.1.7 Smoke and heat venting. Rooms or areas for the storage of water-reactive solids and liquids shall be provided with smoke and heat venting in accordance with Section 910 and the construction codes, including the Building Code.

4404.2 Outdoor storage. Outdoor storage of water-reactive solids and liquids in quantities exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(3) shall be in accordance with Sections 2701, 2703, 2704 and this chapter.

4404.2.1 General. Outdoor storage of water-reactive solids and liquids shall be within tanks or closed water-tight containers and shall be in accordance with Sections 4404.2.2 through 4404.2.5.

4404.2.2 Class 3 distance to exposures. Outdoor storage of Class 3 water-reactive solids and liquids shall not be within 75 feet (22 860 mm) of buildings, lot lines, public streets, private roads or means of egress.

4404.2.3 Class 1 and Class 2 distance to exposures. Outdoor storage of Class 1 and Class 2 water-reactive solids and liquids shall not be within 20 feet (6096 mm) of buildings, lot lines, public streets, private roads or means of egress. A 2-hour fire barrier wall without openings or penetrations, and extending not less than 30 inches (762 mm) above and to the sides of the storage area, is allowed in lieu of such distance. The wall shall either be an independent structure, or the exterior wall of the building adjacent to the storage area.

4404.2.4 Storage conditions. Class 3 water-reactive solids and liquids shall be limited to piles not greater than 500 cubic feet (14 m³).

4404.2.4.1 Class 1 and Class 2 piles. Class 1 and Class 2 water-reactive solids and liquids shall be limited to piles not greater than 1,000 cubic feet (28 m³).

4404.2.4.2 Aisle widths. Aisle widths between piles shall not be less than one-half the height of the pile or 10 feet (3048 mm), whichever is greater.

4404.2.5 Containment. Secondary containment shall be provided in accordance with Section 2704.2.2.



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SECTION FC 4405: HANDLING AND USE

NYC Administrative Code § 29-FC 4405

4405.1 General.

Water-reactive solids and liquids in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) or 2703.1.1(3) shall be handled and used in accordance with Sections 2701, 2703, 2705 and this chapter.



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SECTION FC 4406: MANUFACTURING RESTRICTIONS

NYC Administrative Code § 29-FC 4406

4406.1 Water-reactive solids and liquids classified as a Class IV material.

Water-reactive solids and liquids classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution may be utilized in manufacturing processes or other production in manufacturing districts only when authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution.

4406.1.1 Manufacture of water-reactive solids and liquids classified as a Class IV material. It shall be unlawful to manufacture water-reactive solids and liquids classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution.

4406.1.2 Storage of water-reactive solids and liquids classified as a Class IV material. It shall be unlawful to store water-reactive solids and liquids classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution, except that accessory storage authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution shall be allowed.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 45: REFERENCED STANDARDS
SECTION FC 4501: GENERAL

NYC Administrative Code § 29-FC 4501

4501.1 Scope.

This chapter lists the standards that are referenced in this code.

4501.2Edition. The edition of each standard referenced in this code shall be as indicated by the standard reference number.

4501.3Relationship with code and rules. The application of the referenced standards and their relationship with the provisions of this code and the rules shall be as set forth in Section 102.6. ANSI4502LIST OF REFERENCED STANDARDS



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 5: FIRE OPERATIONS FEATURES
SECTION FC 501: GENERAL

NYC Administrative Code § 29-FC 501

501.1 Scope.

This chapter shall govern buildings, structures and premises with respect to requirements designed to ensure safe and effective firefighting operations.

501.2 Reserved.

501.3 Design and installation documents. The commissioner may require that design and installation documents for proposed fire apparatus access roads, showing their location, dimensions and specifications, and design and installation documents for private fire hydrant systems, including hydraulic calculations, be submitted to the department for review and approval prior to installation.

501.4 Timing of installation. When fire apparatus access roads or a water supply for fire protection is required to be installed, such protection shall be installed and made serviceable prior to and during the time of construction except when approved alternative methods of protection are provided. Temporary street signs shall be installed at each street intersection when construction of new roadways allows passage by vehicles in accordance with Section 505.2.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 5: FIRE OPERATIONS FEATURES
SECTION FC 502: DEFINITIONS

NYC Administrative Code § 29-FC 502

502.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

AREAWAY. A space below grade, adjacent to a building, open to the outdoors and enclosed by walls.

CITYWIDE STANDARD KEY. A key of special or controlled design approved by the commissioner which serves to operate elevator emergency recall and emergency in-service operation service switches and other devices or locks as required by the construction codes, including the Building Code, this code or the rules.

DEVELOPMENT. A development includes the construction of a new building on a zoning lot, the relocation of an existing building to another zoning lot, or the use of a tract of land for a new use.

FIRE APPARATUS ACCESS ROAD. A road that serves to provide access for fire apparatus from a public street to the frontage space of one or more buildings in a development. A fire apparatus access road includes any road that serves such purpose whether denominated as a fire lane, private street, private road, driveway or parking lot lane.

FIRE COMMAND CENTER. The principal attended or unattended location where the status of the detection, alarm communications and control systems is displayed, and from which the system(s) can be manually controlled.

FIRE DEPARTMENT STANDARD KEY. A key of special or controlled design, also known as a "1620" key, for the use of department personnel and others specifically authorized by the commissioner, which serves to operate all switches, locks and other devices required to be operable by a citywide standard key.

FIRE LANE. A road or other passageway developed to allow the passage of fire apparatus. It may also serve as a secondary means of access to a private road.

FRONTAGE SPACE. A street or an open space outside of a building that is within 30 feet (9144 mm) of the main front entrance to the building and not less than 30 feet (9144 mm) in any dimension. It shall be accessible from a public street or fire apparatus access road. It shall be designed and constructed to allow operation of department apparatus on the front side of the building and shall be maintained free of obstructions that may interfere with its use by the department.

KEY BOX. A secure, tamperproof device with a lock operable only by a fire department standard key, and containing building entry keys and other keys that may be required for access in an emergency.

PRIVATE ROAD. A road or other passageway to two or more buildings or structures in a development that serves to provide access from a public street and which may serve as a fire apparatus access road. Private road does not include a public street.

PUBLIC STREET. All streets mapped or dedicated for public use, including mapped streets, record streets, marginal streets and restricted use streets.



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Chapter 5: FIRE OPERATIONS FEATURES
SECTION FC 503: FIRE APPARATUS ACCESS ROADS

NYC Administrative Code § 29-FC 503

503.1 Where required.

Fire apparatus access roads shall be designed, installed and maintained in accordance with this section.

503.1.1 Fire apparatus access roads. Buildings or structures shall be accessible to department fire apparatus by way of a public street or an approved fire apparatus access road with an asphalt, concrete or other approved driving surface installed in accordance with the standards of the New York City Department of Transportation and capable of supporting the imposed load of department apparatus weighing at least 75,000 pounds (34 050 kg) and the operational load of department aerial apparatus outrigger support 48,000 pounds (21 792 kg) over a 2 foot (610 mm) by 2 foot (610 mm) area). When fire apparatus access roads are required by this section, such roads shall provide access from a public street to the frontage space of each building or structure in a development in accordance with this section.

503.1.2 Additional access. The commissioner may require more than one means of fire apparatus access based on the potential for impairment of a single road by vehicle congestion, condition of terrain, climatic conditions or other factors that could limit access.

503.1.3 High-piled storage. Fire apparatus access roads to buildings used for high-piled combustible storage shall additionally comply with the applicable requirements of Chapter 23.

503.2 Specifications. Fire apparatus access roads to one or more buildings in a development shall comply with the requirements of this code and the standards established by the New York City Department of Transportation and shall be designed and installed in accordance with Sections 503.2.1 through 503.2.7.

503.2.1 Dimensions. Fire apparatus access roads shall have an unobstructed width of not less than 38 feet (11 582 mm) and an unobstructed vertical clearance of not less than 14 feet (4267 mm).

Exceptions. A fire apparatus access road may be less than 38 feet (11 582 mm) in width provided that it satisfies the

following requirements:

1. The fire apparatus access road has an unobstructed width of not less than 34 feet (10 363 mm) and satisfies the requirements of Section 26-21 of the Zoning Resolution; or
2. The fire apparatus access road has an unobstructed width of not less than 30 feet (9144 mm) and satisfies the requirements of Section 119-214 of the Zoning Resolution; or
3. It is not less than 30 feet (9144 mm) wide, provides access to not more than 5 dwelling units, and all buildings to which the private road provides access are protected throughout by a sprinkler system.

503.2.2 Authority. The commissioner may require an increase in the minimum access widths where circumstances arising from site conditions or the design of the development render such widths inadequate for fire or other emergency response operations.

503.2.3 Surface. Fire apparatus access roads shall comply with the requirements of the New York City Department of Transportation and shall be designed and maintained to support the imposed loads of fire apparatus, as set forth in Section 503.1.1, and shall be surfaced so as to provide all-weather driving capabilities.

503.2.4 Turning radius. The required turning radius of a fire apparatus access road shall be determined by the commissioner.

503.2.5 Dead ends. Dead-end fire apparatus access roads more than 150 feet (45 720 mm) in length, as measured from the curb line of the nearest public street which is not itself a dead-end, shall be provided with an approved turnaround area for fire apparatus in accordance with Table 503.2.5. Such roads more than 150 feet (45 720 mm) and up to and including 400 feet (121 920 mm) in length shall not require a turnaround if all buildings served by the road are protected throughout by a sprinkler system. Dead-end fire apparatus roads shall not exceed 400 feet (121 920 mm) in length unless approved by the commissioner.

Table 503.2.5 Requirements for Dead-End Fire Apparatus Access Roads

Length (feet)	Width (feet)	Turnarounds Required
0-150	38	None required
150 and ;le 400	a 38 90-foot hammerhead, or 70-foot-diameter unobstructed cul-de-sac or other approved means.	c;mt 400 Only where approved by the commissioner

For SI: 1 foot = 304.8 mm.

a. A turnaround may not be required if all buildings served by the road are protected throughout by a sprinkler system.

b. Except as otherwise provided in Section 503.2.1.c. See Figure 503.2.5 [SEE graphical material in printed version]

a. 70-Foot-Diameter Cul-de-Sac

b. 90-Foot Hammerhead

FIGURE 503.2.5 DEAD-END FIRE APPARATUS ACCESS ROAD TURNAROUND

503.2.6 Bridges and elevated surfaces. Where a bridge or an elevated surface is part of a fire apparatus access road, the bridge shall be constructed and maintained in accordance with the standards established by the New York City Department of Transportation. Bridges and elevated surfaces shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. Vehicle load limits shall be posted at both entrances to bridges when required by the commissioner. Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces which are not designed for such use, approved barriers, approved signs or both shall be installed and maintained when required by the commissioner.

503.2.7Grade. The grade of the fire apparatus access road shall not exceed 10 percent unless approved by the commissioner.

503.3Marking. Where required by the commissioner, approved signs shall be provided for fire apparatus access roads, in conspicuous locations, to identify such roads or prohibit the obstruction thereof. A posted sign shall not be defaced, obscured, removed, mutilated or otherwise rendered illegible.

503.4Obstruction of fire apparatus access roads. Fire apparatus access roads shall not be obstructed in any manner. Vehicles shall not be parked on fire apparatus access roads, except in authorized parking locations. The minimum widths and clearances established in Section 503.2.1 shall be maintained at all times.

503.5Required gates or barricades. The commissioner may require the installation and maintenance of gates or other approved barricades across fire apparatus access roads, trails or other accessways, excluding public streets.

503.5.1Secured gates and barricades. When required, gates and barricades shall be secured in an approved manner. Roads, trails and other accessways that have been closed and obstructed in the manner prescribed by Section 503.5 shall not be trespassed on or used unless authorized by the owner and the commissioner.

Exception: The restriction on use shall not apply to government officials in conjunction with their official duties.

503.6Fire apparatus access road gates. The installation of gates across a fire apparatus access road shall be approved by the commissioner. Gates and appurtenances shall not reduce the approved width of a fire apparatus access road. Where gates are installed, they shall have an approved means of emergency operation. The emergency operation of such gate shall be maintained in good working order at all times.

Gates securing a fire apparatus access road shall comply with the following requirements:

1. The minimum gate width shall be not less than that approved for the fire apparatus access road.
2. Gates shall be of the swinging or sliding type.
3. Design and installation of manually operated gates shall allow for operation by one person.
4. The gates shall be maintained in good working order at all times and replaced or repaired when defective.
5. An approved opening device for emergency access by firefighters or other emergency response personnel shall be provided for electrically operated gates.
6. Manually operated gates shall not be locked with a padlock or chain and padlock unless they are capable of being opened by standard tools such as bolt cutters.
7. Only approved locking devices shall be used.

503.7Signs. Fire apparatus access roads subject to parking restrictions shall be marked with permanent NO PARKING-FIRE ACCESS ROAD signs complying with Figure 503.7. Signs shall have a minimum dimension of 12 inches (305 mm) wide by 18 inches (457 mm) high and have red letters on a white reflective background. Signs shall be posted on the sides of the fire apparatus access road upon which parking is prohibited.
[SEE graphical material in printed version]

503.8Public streets. Access to buildings on public streets shall comply with the requirements of Sections 503.8.1 through 503.8.3.

503.8.1Dead ends. Dead end public streets in excess of 150 feet (45 720 mm) in length, as measured from the curb

line of the nearest public street that is not a dead-end, shall be provided with an approved turnaround area for fire apparatus that meets the requirements of Section 503.2.

Exception: A turnaround shall not be required for dead end public streets more than 150 feet (45 720 mm) in length if all new buildings on such street are protected throughout by a sprinkler system.

503.8.2Substandard width.Except as otherwise approved, buildings on public streets that have an unobstructed width of less than 38 feet (11 582 mm) shall be protected throughout by a sprinkler system.



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SECTION FC 504: ACCESS TO BUILDINGS AND ROOFS

NYC Administrative Code § 29-FC 504

504.1 Building access.

Exterior doors and openings required by this code or the construction codes, including the Building Code, shall be maintained in a manner that affords access by firefighting personnel in accordance with the requirements of this section, Chapter 10, and the Building Code. An approved access walkway leading from fire apparatus access roads to exterior openings shall be provided when required by the commissioner.

504.1.1 Frontage space obstructions. Obstructions, such as planters, fences and bollards, shall not be placed in the required frontage space unless they have been approved by the Commissioner of Buildings, the Commissioner of Transportation, or the commissioner, as applicable.

504.2 Maintenance of exterior doors and openings. Exterior doors and their function shall not be eliminated without prior approval of the New York City Department of Buildings. Exterior doors that have been rendered nonfunctional and that retain a functional door exterior appearance shall have a sign affixed to the exterior side of the door with the words THIS DOOR BLOCKED. The sign shall consist of letters having a principal stroke of not less than 0.75 inch (19.1 mm) wide and at least 6 inches (152 mm) high on a contrasting background. Required department access doors shall not be obstructed or eliminated. Exit and exit access doors shall comply with the requirements of Chapter 10 and the construction codes, including the Building Code. Access doors for high-piled combustible storage shall comply with the requirements of Section 2306.6.1.

504.3 Stairway access to roof. Stairway access to the roof shall be in accordance with Chapter 10 and the construction codes, including the Building Code. Such stairway shall be marked at street and floor levels with a sign indicating that the stairway continues to the roof. Where roofs are used for roof gardens or for other lawful purposes, stairways shall be provided as required for such occupancy classification.

504.4 Rooftop access and obstructions. The rooftops of buildings 100 feet (30 480 mm) or less in height, except rooftops with a slope exceeding 20(degrees) from the horizontal, shall be maintained in a manner that avoids or

minimizes obstructions to access for firefighting operations. For purposes of this section only, "rooftop" shall include rooftops of building setbacks, and "obstruction" shall mean any fixture or other item that is not readily movable by a person without the use of tools or equipment, including air conditioning systems, billboards and other signs, cellular antenna equipment, cooling towers, fuel oil storage tanks, generators, heating systems, planters, solar panels, ventilation system ducts, intakes and exhausts, and window cleaning equipment, but shall not include non-metallic decking.

504.4.1 Rooftop access. Access to building rooftops shall be provided as follows:

1. For each 12 linear feet (3658 mm) of building perimeter accessible from the frontage space of the building and from any other exposure accessible to fire apparatus, a minimum clearance of 6 feet (1829 mm) in width and 6 feet (1829 mm) in depth from any obstruction shall be provided at the parapet wall or other perimeter of the rooftop. Where such building perimeter is 24 linear feet (7315 mm) or greater, but less than 36 linear feet (10 973 mm), the required clearance openings shall be separated by a distance of not less than 12 linear feet (3658 mm). Where such building perimeter is 36 linear feet (10 973 mm) or greater, the required clearance openings may be contiguous, provided, however, that such contiguous openings shall not exceed 12 linear feet (3658 mm) and shall be separated from other required clearance openings by a distance of not less than 12 linear feet (3658 mm). Each exposure accessible by fire apparatus may be treated separately for purposes of locating clearance openings and otherwise complying with the requirements of this provision.

2. A minimum clearance of 6 feet (1829 mm) in all directions shall be provided from each door opening onto a rooftop from a dwelling unit, stairway, bulkhead, or other occupied space or means of egress, as measured from the door hinge.

3. A minimum clearance of 3 feet (914 mm) in all directions shall be provided from any fire escape or rooftop access ladder, as measured from each side of the ladder or landing.

504.4.2 Rooftop obstructions. Unobstructed space shall be provided on rooftops sufficient to allow firefighting operations, as follows:

1. A clear path of not less than 6 feet (1829 mm) horizontal width and 9 feet (2743 mm) in height shall be provided from the front of the building to the rear of the building and from one side of the building to the other, except that a conduit or pipe in compliance with the requirements of this section may cross such path. Such clear path shall be accessible from each point of the rooftop access from which clearance is required pursuant to Section 504.4.1.

2. To the maximum extent practicable, conduits, including cable trays, and piping, shall be installed on the rooftop side of the parapet wall. If such installation is not practicable, conduits and piping shall be installed along the periphery of the rooftop, in order to minimize rooftop obstructions. Steps or ramps constructed of non-combustible material and equipped with railings shall be provided in the clear paths for any conduits or piping installations that exceed 1 foot (305 mm) in height above the rooftop. All conduits and piping installations shall be color coded with continuous, durable and weatherproof reflective or luminescent markings as follows:

2.1. High voltage wiring-Red.

2.2. Low voltage wiring-Orange.

2.3. Natural gas piping-Yellow.

2.4. Other compressed gas piping-Yellow, labeled at regular intervals with the type of gas.

2.5. Fuel oil piping-Yellow with black stripes.

504.4.3 Telecommunications installations. Telecommunications installations on building rooftops, including cellular

antenna installations, shall additionally comply with the following requirements:

1. Transmitting antennas shall be identified by affixing to the antenna, the antenna mounting, or a conspicuous location near the antenna, continuous, durable and weatherproof reflective or luminescent markings and 3 inch (76.2 mm) lettering that reads, "TRANSMITTER."

2. A durable sign shall be conspicuously posted on or near any equipment closet, roof base station or similar telecommunications antenna installation, identifying the owner of the installation, providing a 24 hour/7 day per week telephone number by which such owner can be contacted, and identifying the installation by number or other unique designation.

504.4.4 Existing installations. Existing telecommunications conduit and piping installations shall comply with the operational requirements for marking and signage set forth in this section within one year of the effective date of this code.

504.5 Parking lots on developments. Parking lot lanes between rows of parking spaces shall have a width of at least 24 feet (7315 mm). A minimum aisle space of at least 24 inches (610 mm) between vehicles shall be provided.



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SECTION FC 505: PREMISES IDENTIFICATION

NYC Administrative Code § 29-FC 505

505.1 Address numbers.

All buildings and structures shall have their lawful address numbers, building numbers or approved building identification placed at a location on or near a building that allows such building identification to be plainly discernible from the public street or frontage space. These numbers shall contrast with their background. Address numbers shall be Arabic numerals or alphabet letters. Numbers shall be a minimum of 4 inches (102 mm) high with a minimum stroke width of 0.5 inch (12.7 mm).

505.1.1 Developments. Buildings within developments shall be identified in compliance with the requirements of Section 505.1. Where required by the commissioner, additional signage shall be provided in new developments which is clearly visible at the intersection of the public street and any fire apparatus access road that provides access to buildings in the development. The additional signage shall indicate the addresses of all buildings in the development served by the fire apparatus access road.

505.2 Street or road signs. Streets and roads within developments shall be identified with approved signs in accordance with the requirements of the New York City Department of Transportation. Temporary signs shall be installed at each street intersection when construction of new roadways allows passage by vehicles. Signs shall be of an approved size, weather resistant and be maintained until replaced by permanent signs.



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SECTION FC 506: KEY BOXES

NYC Administrative Code § 29-FC 506

506.1 Where required.

Where access to or within a structure or an area is restricted because of secured openings or where immediate access is necessary for life-saving or firefighting purposes, the commissioner may require a key box operable by a fire department standard key or other approved key to be installed in an approved location. The key box shall be of an approved type and shall contain keys to gain necessary access as required by the commissioner.

506.1.1 Locks. An approved lock operable by a fire department standard key shall be installed on gates or similar barriers when required by the commissioner.

506.2 Key box maintenance. The owner of the building shall immediately notify the commissioner and provide the new key when a lock is changed or rekeyed. The key to such lock shall be secured in the key box.



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SECTION FC 507: HAZARDS TO EMERGENCY RESPONDERS

NYC Administrative Code § 29-FC 507

507.1 Hoistway and shaftway protection.

The doors and/or gates to hoistways, freight elevator shafts, trap doors and other means used to provide access to vertical openings, shall be kept closed and secured, or otherwise protected, except when being used to provide access, and shall be closed, secured or protected, as applicable, at the end of each work day.

507.2 Shaftway markings. Vertical shafts shall be identified as required by this section.

507.2.1 Exterior access to shaftways. Outside openings accessible to the department and which open directly on a hoistway or shaftway communicating between two or more floors in a building shall be plainly marked with the word SHAFTWAY in red letters at least 6 inches (152 mm) high on a white background. Such warning signs shall be placed so as to be readily discernible from the outside of the building.

507.2.2 Interior access to shaftways. Door or window openings to a hoistway or shaftway from the interior of the building shall be plainly marked with the word SHAFTWAY in red letters at least 6 inches (152 mm) high on a white background. Such warning signs shall be placed so as to be readily discernible.

Exception: Marking shall not be required on shaftway openings which are readily discernible as openings onto a shaftway by the construction or arrangement.

507.3 Pitfalls. Installations designed to disable, injure, maim or kill intruders are prohibited. No person shall install and use firearms, sharp or pointed objects, razor wire, explosives, flammable or combustible liquid containers, or dispensers containing highly toxic, toxic, irritant, piercing sounds or other hazardous materials in a manner which may passively or actively disable, injure, maim or kill a firefighter or other emergency responders who enters a building or premises, forcibly or otherwise, for the purpose of controlling or extinguishing a fire, rescuing trapped occupants or rendering other emergency assistance.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 5: FIRE OPERATIONS FEATURES
SECTION FC 508: FIRE PROTECTION WATER SUPPLIES

NYC Administrative Code § 29-FC 508

508.1 Required water supply.

For premises requiring the installation of private fire hydrant systems or yard hydrant systems, an approved water supply capable of supplying the required design capacity for fire protection shall be provided.

508.2Type of water supply.A water supply shall consist of pressure tanks, elevated tanks, water mains or other approved fixed systems capable of providing the required design capacity.

508.2.1Private fire service mains.Private fire service mains and appurtenances shall be installed in accordance with NFPA 24 and the requirements of the New York City Department of Environmental Protection.

508.2.2Water tanks.Water tanks for private hydrant systems and yard hydrant systems shall be installed in accordance with NFPA 22.

508.2.3Yard hydrant systems.Outdoor amusement and exhibition places, bulk plants or terminals, lumber yards, trailer camps, industrial parks, and similar occupancies shall be provided with a yard hydrant system installed in conformance with the requirements of the construction codes, including the Building Code, this section and Section 914. Yard hydrants shall be installed such that the entire area may be reached by 250 feet (76.2 m) of hose from a yard hydrant or a street hydrant supplied from a direct connection to a city water main or other approved water supply.

508.3Design capacity.The design capacity of the water supply shall be determined by an approved method.

508.4Water supply test.Upon completion of the installation of a private fire hydrant system and yard hydrant system, a flow test shall be conducted to verify that the system provides the minimum design capacity required by Section 508.3. Certification of the water supply test shall be submitted to the commissioner by a registered design professional.

508.5Private fire hydrant systems.Private fire hydrant systems shall comply with the requirements of Sections

508.5.1 through 508.5.6.

508.5.1 Where required. Where the front entrance of a building is more than 250 feet (76.2 m) from a hydrant on a public street, as measured by an approved route, private fire hydrants and mains shall be provided as required by the commissioner.

508.5.2 Inspection, testing and maintenance. Private fire hydrant systems shall be subject to periodic tests as required by the commissioner. Private fire hydrant systems shall be maintained in good working order at all times and shall be repaired when defective. Additions, repairs, alterations and servicing shall comply with approved standards.

508.5.2.1 Department flow tests. The department may periodically inspect and test private fire hydrant systems, at the risk of the owner, for proper operation and unobstructed flow of such hydrant system.

508.5.3 Private fire service mains and water tanks. Private fire service mains and water tanks shall be periodically inspected, tested and maintained in accordance with NFPA 25 at the following intervals:

1. Private fire hydrants (all types): Inspection annually and after each operation; flow test and maintenance annually.
2. Fire service main piping: Inspection of exposed, annually; flow test every 5 years.
3. Fire service main piping strainers: Inspection and maintenance after each use.

508.5.4 Obstructions. Posts, fences, vegetation, rubbish containers, vehicles and other items shall not be installed, planted, placed, parked or stored near fire hydrants, fire department inlet connections or fire protection system control valves in a manner that would obscure the location of such fire hydrants, connections or valves, or that would hinder immediate access thereto by firefighting personnel.

508.5.5 Clear space around hydrants. A 3-foot (914 mm) radius clear space shall be maintained around the circumference of fire hydrants to allow unobstructed operation of the hydrant operating nut, except as otherwise required or approved.

508.5.6 Physical protection. Where fire hydrants are subject to impact by motor vehicles, posts that comply with the requirements of the New York City Department of Environmental Protection shall be installed. Notwithstanding the requirements of Section 508.5.5, these posts may be installed no less than 2 feet (610 mm) from the hydrant if they do not obstruct the use of a 24-inch (610-mm) wrench on the hydrant operating nut.



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Chapter 5: FIRE OPERATIONS FEATURES

SECTION FC 509: FIRE COMMAND CENTER

NYC Administrative Code § 29-FC 509

509.1 Installation and maintenance.

Where required by this code or the construction codes, including the Building Code, a fire command center for department operations shall be provided. The location and accessibility of the fire command center shall be approved by the department. The fire command center shall be installed according to the construction codes, including the Building Code. A layout of the fire command center and all operational features shall be submitted for approval prior to installation. The fire command center shall be maintained in accordance with NFPA 72.



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Chapter 5: FIRE OPERATIONS FEATURES
SECTION FC 510: FIRE DEPARTMENT ACCESS TO EQUIPMENT

NYC Administrative Code § 29-FC 510

510.1 Identification.

Fire protection equipment shall be identified in an approved manner. Rooms containing controls for air-conditioning systems, sprinkler risers and valves, or other fire detection, suppression or control elements shall be identified for the use of the department. Approved signs required to identify fire protection equipment and equipment location, shall be constructed of durable materials, permanently installed and conspicuously posted.

510.2 Safe access. Fire protection devices, equipment and systems, including fire detection systems and fire extinguishing systems, shall be readily accessible for inspection, operation and maintenance. Sprinkler and standpipe system control valves located at a height of 7 feet (2134 mm) or more above the floor shall be provided with permanent ladders, chains and wheels, or other approved means to provide ready access.

510.3 Natural gas shutoff tools. Natural gas utilities shall provide the department with suitable tools for the operation of outdoor gas service line valves for a building or structure or other outdoor emergency shutoff device or equipment. The number of such tools required to supply the department's needs shall be determined by the commissioner.



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TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 6: BUILDING SERVICES AND SYSTEMS
SECTION FC 601: GENERAL

NYC Administrative Code § 29-FC 601

601.1 Scope.

This chapter shall govern the design, installation, operation and maintenance of fuel-fired appliances, devices, equipment and systems, emergency power systems, electrical systems and equipment, refrigerating systems, elevator recall, stationary lead-acid battery systems and commercial cooking exhaust hoods.

601.2 Permits. Permits shall be required as set forth in Section 105.6.

601.3 General. Fuel-fired appliances, devices, equipment and systems, emergency and standby power systems, electrical systems and equipment, refrigerating systems, elevator recall, stationary lead-acid battery systems and commercial cooking exhaust hoods shall be designed, installed, operated and maintained in accordance with this chapter.



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Chapter 6: BUILDING SERVICES AND SYSTEMS
SECTION FC 602: DEFINITIONS

NYC Administrative Code § 29-FC 602

602.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

BATTERY, LEAD ACID. A group of electrochemical cells interconnected to supply a nominal voltage of DC power to a suitably connected electrical load. The number of cells connected in series determines the nominal voltage rating of the battery. The size of the cells determines the discharge capacity of the entire battery.

BATTERY, VALVE-REGULATED LEAD-ACID (VRLA). A lead-acid battery consisting of sealed cells furnished with a valve that opens to vent the battery whenever the internal pressure of the battery exceeds the ambient pressure by a set amount. In VRLA batteries, the liquid electrolyte in the cells is immobilized in an absorptive glass mat (AGM cells or batteries) or by the addition of a gelling agent (gel cells or gelled batteries).

BATTERY, VENTED (FLOODED) LEAD-ACID. A lead-acid battery consisting of cells that have electrodes immersed in liquid electrolyte. Flooded lead-acid batteries have a provision for the user to add water to the cell and are equipped with a flame-arresting vent which permits the escape of hydrogen and oxygen gas from the cell in a diffused manner such that a spark, or other ignition source, outside the cell will not ignite the gases inside the cell.

BATTERY SYSTEM, STATIONARY LEAD ACID. A system which consists of three interconnected subsystems:

1. A lead-acid battery.
2. A battery charger.
3. A collection of rectifiers, inverters, converters, and associated electrical equipment as required for a particular application.

CERTIFICATE OF QUALIFICATION. A written statement issued by the commissioner certifying that the person to whom it is issued has passed an examination as to his or her qualifications to direct, control and supervise the operation of a refrigerating system, for which such certificate is required by this code or the rules.

CITYWIDE-STANDARD KEY. See Section 502.1.

COMMERCIAL COOKING APPLIANCES. Appliances used in a commercial food service establishment for heating or cooking food and which produce grease vapors, steam, fumes, smoke or odors that are required to be removed through a local exhaust ventilation system. Such appliances shall include deep fat fryers; upright broilers; griddles; broilers; steam-jacketed kettles; hot-top ranges; under-fired broilers (charbroilers); ovens; barbecues; rotisseries; and similar appliances. For the purpose of this definition, a food service establishment shall include any building, structure or portion thereof used for the preparation and serving of food, other than commercial cooking appliances in carts or other mobile stands operated by street vendors.

HOOD. An air-intake device used to capture by entrapment, impingement, adhesion or similar means, grease and similar contaminants before they enter a duct system.

Type I. A kitchen hood for collecting and removing grease vapors and smoke.

REFRIGERANT. The fluid used for heat transfer in a refrigerating system; the refrigerant absorbs heat and transfers it at a higher temperature and a higher pressure, usually with a change of state.

REFRIGERATING SYSTEM. A combination of interconnected refrigerant-containing parts constituting one closed refrigerant circuit in which a refrigerant is circulated for the purpose of extracting then expelling heat.



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Chapter 6: BUILDING SERVICES AND SYSTEMS
SECTION FC 603: FUEL-FIRED APPLIANCES AND EQUIPMENT

NYC Administrative Code § 29-FC 603

603.1 Installation.

Nonportable fuel-fired appliances, devices, equipment and systems shall be designed, installed, operated and maintained in accordance with the construction codes, including the Fuel Gas Code and the Mechanical Code.

603.1.1 Manufacturer's instructions. In addition to the requirements of this code and other applicable laws, rules and regulations, the installation shall be made in accordance with the manufacturer's instructions. Where it becomes necessary to change, modify, or alter a manufacturer's instructions in any way, written approval shall first be obtained from the manufacturer.

603.1.2 Approval. The design, construction and installation of fuel-fired appliances, devices, equipment and systems shall be in accordance with the construction codes, including the Fuel Gas Code and the Mechanical Code.

603.1.3 Electrical wiring and equipment. Electrical wiring and equipment used in connection with oil-burning equipment shall be installed and maintained in accordance with Section 605 and the Electrical Code.

603.1.4 Fuel oil. The grade of fuel oil used in a burner shall be that for which the burner is approved and as stipulated by the burner manufacturer and approved by the Department of Buildings. Oil containing gasoline shall not be used. Waste crankcase oil shall not be used, except when such waste oil is mixed with number six fuel oil in bulk or waste oil recovery plants, the resultant mixture meets the minimum specifications for number six fuel oil set forth in the Building Code, and the use of such waste oil complies with all laws, rules and regulations relating to smoke and other emissions and is approved by the Department of Environmental Protection.

603.1.5 Access. The installation shall be readily accessible for cleaning hot surfaces; removing burners; replacing motors, controls, air filters, chimney connectors, draft regulators, and other working parts; and for adjusting, cleaning and lubricating parts.

603.1.6Testing, diagrams and instructions.After installation of the oil-burning equipment, operation and combustion performance tests shall be conducted to determine that the burner is in proper operating condition and that all accessory equipment, controls, and safety devices function properly in accordance with the requirements of the Department of Buildings and the Department of Environmental Protection.

603.1.6.1Diagrams.Contractors installing industrial oil-burning systems shall furnish not less than two copies of diagrams showing the main oil lines and controlling valves, one copy of which shall be posted at the oil-burning equipment and another at an approved location that will be accessible in case of emergency.

603.1.6.2Instructions.After completing the installation, the installer shall instruct the owner or operator in the proper operation of the equipment. The installer shall also furnish the owner or operator with the name and telephone number of persons to contact for technical information or assistance and routine or emergency services.

603.1.7Clearances.Working clearances between oil-fired appliances and electrical panelboards and equipment shall be in accordance with the Electrical Code. Clearances between oil-fired equipment and oil supply tanks shall be in accordance with the construction codes, including the Building Code and the Mechanical Code.

603.1.8Supervision of operation.Every stationary oil-fired device, equipment or system that is not fully automatic or requires preheating of the oil shall be operated by or under the personal supervision of a person holding a certificate of fitness or a person holding a high pressure boiler operating engineer's license issued by the Department of Buildings. In addition to providing personal supervision, such person shall be present at the device, equipment or system during startup. A stationary oil-fired device, equipment or system that is subject to annual inspection pursuant to Section 28-303.1 of the Building Code may be operated under the general supervision of a certificate of fitness holder or a high pressure boiler operating engineer license holder.

603.2Chimneys.Masonry chimneys shall be constructed in accordance with the construction codes, including the Building Code. Factory-built chimneys shall be installed in accordance with the construction codes, including the Mechanical Code. Metal chimneys shall be constructed and installed in accordance with the construction code, including the Building Code and the Mechanical Code.

603.3Fuel oil storage systems.Fuel oil storage and piping systems shall be installed in accordance with the construction codes, including the Mechanical Code. Fuel oil storage shall be subject to the permit requirements set forth in Section 105.6.

603.4Reserved.

603.5Heating appliances and equipment.Heating appliances and equipment shall be listed and shall comply with the requirements of this section.

603.5.1Protection of heating element.The heating element or combustion chamber shall have a permanent device to prevent accidental contact by persons or material.

603.5.2Heating appliance and equipment installation.Heating appliances and equipment shall be installed in accordance with the manufacturer's instructions, the Electrical Code, and the construction codes, including the Building Code, the Mechanical Code and the Fuel Gas Code.

603.6Chimney installation.Chimneys, smokestacks or similar devices for conveying smoke or hot gases to the outer air and the incinerators, stoves, furnaces, fireboxes or boilers to which such devices are connected, shall be maintained so as not to create a fire hazard.

603.6.1Masonry chimneys.Masonry chimneys that, upon inspection, are found to have open mortar joints which will permit smoke or gases to be discharged into the building or structure, or which are cracked as to be dangerous, shall

be repaired or relined with a listed chimney liner system installed in accordance with the manufacturer's installation instructions or a flue lining system installed in accordance with the construction codes, including the Building Code and the Mechanical Code and appropriate for the intended class of chimney service.

603.6.2Metal chimneys.Metal chimneys which are corroded or improperly supported shall be repaired or replaced.

603.6.3Decorative shrouds.Decorative shrouds installed at the termination of factory-built chimneys shall be removed except where such shrouds are listed and labeled for use with the specific factory-built chimney system and are installed in accordance with the chimney manufacturer's installation instructions.

603.6.4Factory-built chimneys.Existing factory-built chimneys that are damaged, corroded or improperly supported shall be repaired or replaced.

603.6.5Connectors.Existing chimney and vent connectors that are damaged, corroded or improperly supported shall be repaired or replaced.

603.6.6Incinerator requirements.Incinerators shall be maintained and operated in accordance with Sections 603.6.6.1 and 603.6.6.2.

603.6.6.1Spark arrestor.Incinerators shall be equipped with an effective means for arresting sparks.

603.6.6.2Time of burning.Burning shall take place only during approved hours.

603.6.7Discontinuance.The commissioner may require the operation of an incinerator or other device connected to a chimney to be discontinued immediately upon a determination that the use of the incinerator or other device constitutes an undue fire hazard because of conditions in the surrounding environment.

603.7Discontinuing operation of unsafe heating appliances and equipment.The commissioner may order that measures be taken to prevent the operation of any existing stove, oven, furnace, incinerator, boiler or any other heat-producing appliance, device, equipment or system found to be defective or in violation of code requirements for existing appliances, devices, equipment or systems after giving notice to this effect to any person, owner, firm or agent or operator in charge of the same. The commissioner may take measures to prevent the operation of any appliance, device, equipment or system without notice upon a determination of the existence of an immediate fire hazard or imminent peril to public safety. The defective appliance, device, equipment or system shall remain out of service until all necessary repairs or alterations have been made.

603.7.1Unauthorized operation.It shall be a violation of this code for any person, user, firm or agent to continue the utilization of any appliance, device, equipment or system (the operation of which has been discontinued or ordered discontinued in accordance with Section 603.7), unless written authority to resume operation is given by the department. Removing or breaking the means by which operation of the appliance, device, equipment or system is prevented shall be a violation of this code.

603.8Reserved.

603.9Gas meters.Aboveground gas meters, regulators and piping subject to damage shall be protected by a barrier complying with the requirements of Section 312 or otherwise protected in an approved manner.



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Chapter 6: BUILDING SERVICES AND SYSTEMS
SECTION FC 604: EMERGENCY POWER SYSTEMS

NYC Administrative Code § 29-FC 604

604.1 Installation.

Emergency power systems shall be designed, installed, operated and maintained in accordance with the Electrical Code and the construction codes, including the Building Code.

604.2Where required.Emergency power systems shall be maintained in accordance with NFPA 110 and NFPA 111 such that the system is capable of supplying service within the time specified for the type and duration of emergency power required by the Electrical Code and the construction codes, including the Building Code.

604.3Maintenance.Emergency power systems shall be maintained such that the system is capable of supplying service within the time specified for the type and duration of emergency power required by the Electrical Code and the construction codes, including the Building Code.

604.3.1Schedule.Inspection, testing and other maintenance of emergency power systems shall be conducted in accordance with an approved schedule established upon completion and approval of the system installation.

604.3.2Written record.Written records of the inspection, testing and other maintenance of emergency power systems shall include the date of service, name of the servicing technician, a summary of conditions noted and a detailed description of any conditions requiring correction and what corrective action was taken. Such records shall be kept on the premises served by the emergency power system and be available for inspection by any representative of the department.

604.3.3Switch maintenance.Emergency power system transfer switches shall be included in the maintenance schedule required by Section 604.3.1. Transfer switches shall be maintained free from accumulated dust and dirt. Inspection shall include examination of the transfer switch contacts for evidence of deterioration. When evidence of contact deterioration is detected, the contacts shall be replaced in accordance with the transfer switch manufacturer's instructions.

604.4 Operational inspections and testing. Emergency power systems, including all appurtenant components, shall be inspected and tested under load in accordance with NFPA 110 and NFPA 111.

Exception: Where the emergency power system is used for standby power or peak load shaving, such use shall be recorded and may substitute for scheduled testing of the emergency power system, provided that appropriate records are maintained of such use.

604.4.1 Transfer switch test. The test of the transfer switch shall consist of electrically operating the transfer switch from the normal position to the alternate position and then returning back to the normal position.

604.5 Supervision. Inspection, testing and other maintenance shall be conducted under the personal supervision of a person who possesses the required knowledge and training to conduct such maintenance, and who has at least one of the following qualifications:

1. An electrician licensed by the Department of Buildings.
2. An electrician holding a special license issued by the Department of Buildings.
3. A person holding a stationary engineer license, or high-pressure boiler operating engineer's license, issued by the Department of Buildings.
4. A person holding a certificate of qualification for refrigerating system operating engineer.
5. A person holding a certificate of fitness as fire safety director.
6. A registered design professional.



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SECTION FC 605: ELECTRICAL EQUIPMENT, WIRING AND HAZARDS

NYC Administrative Code § 29-FC 605

605.1 Abatement of electrical hazards.

Defective devices, equipment or systems shall not be used and the hazardous conditions shall be corrected or the device, equipment or system shall be removed from the premises. Electrical wiring, devices and other equipment that is damaged or otherwise constitutes an electrical or fire hazard shall not be used, and the hazardous condition shall be corrected or the equipment removed from the premises.

605.2 Illumination. Illumination shall be provided for service equipment areas, motor control centers and electrical panelboards.

605.3 Working space and clearance. A working space of not less than 30 inches (762 mm) in width, 36 inches (914 mm) in depth and 78 inches (1981 mm) in height shall be provided in front of electrical service equipment. Where the electrical service equipment is wider than 30 inches (762 mm), the working space shall not be less than the width of the equipment. No storage of any materials shall be located within the designated working space.

Exceptions:

1. Where other dimensions are required or allowed by the Electrical Code.
2. Access openings into attics or under-floor areas which provide a minimum clear opening of 22 inches (559 mm) by 30 inches (762 mm).

605.3.1 Labeling. Doors into electrical control panel rooms shall be marked with a plainly visible and legible sign stating ELECTRICAL ROOM or similar approved wording. The disconnecting means for each service, feeder or branch circuit originating on a switchboard or panelboard shall be legibly and durably marked to indicate its purpose unless such purpose is clearly evident.

605.4 Multiplug adapters. Multiplug adaptors, such as cube adaptors, unfused plug strips or any other device not

complying with the requirements of the Electrical Code shall be prohibited.

605.4.1Power tap design.Relocatable power taps shall be of the polarized or grounded type, equipped with overcurrent protection, and shall be listed.

605.4.2Power supply.Relocatable power taps shall be directly connected to a permanently installed receptacle.

605.4.3Installation.Relocatable power tap cords shall not extend through walls, ceilings, floors, under doors or floor coverings, or be subject to environmental or physical damage.

605.5Extension cords.Extension cords and flexible cords shall not be a substitute for permanent wiring. Extension cords and flexible cords shall not be affixed to buildings or structures, extended through walls, ceilings or floors, or under doors or floor coverings, nor shall such cords be subject to environmental damage or physical impact. Extension cords shall be used only with portable devices.

605.5.1Power supply.Extension cords shall be plugged directly into an approved receptacle, power tap or multiplug adapter and, except for approved multiplug extension cords, shall serve only one portable device.

605.5.2Ampacity.The ampacity of the extension cords shall not be less than the rated capacity of the portable appliance supplied by the cord.

605.5.3Maintenance.Extension cords shall be maintained in good condition without splices, deterioration or damage.

605.5.4Grounding.Extension cords shall be grounded when serving grounded portable devices.

605.6Unapproved conditions.Open junction boxes and open-wiring splices shall be prohibited. Approved covers shall be provided for all switch and electrical outlet boxes.

605.7Electrical devices and equipment.Electrical devices and equipment shall be listed or labeled and installed in accordance with the construction codes and the Electrical Code.

605.8Electrical motors.Electrical motors shall be maintained free from excessive accumulations of oil, dirt, waste and debris.

605.9Temporary wiring.Temporary wiring for electrical power and lighting installations is allowed for a period not to exceed 90 days. Temporary wiring methods shall meet the applicable provisions of the Electrical Code.

Exception: Temporary wiring for electrical power and lighting installations is allowed during periods of construction, remodeling, repair or demolition of buildings, structures, equipment or similar activities.

605.9.1Attachment to structures.Temporary wiring attached to a building or structure shall be attached in an approved manner.



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SECTION FC 606: REFRIGERATING SYSTEMS

NYC Administrative Code § 29-FC 606

606.1 General.

Refrigerating systems shall be designed, installed, operated and maintained in accordance with this code and the construction codes, including the Mechanical Code.

606.1.1Supervision.It shall be unlawful to operate any refrigerating system for which a permit is required and which is a system described in Table 606.1.1, unless such operation is under either the personal supervision or general supervision, as set forth in Table 606.1.1, of a person who has obtained a certificate of qualification for refrigerating system operating engineer. For purposes of this section, personal supervision shall mean that such person is present in the building at all times while the system is in operation and that the operation of such system is under his or her personal direction and control, and general supervision shall mean that such person is responsible at all times for the safe operation of such system when such system is in operation and that such system is operated under his or her general direction and control. Persons providing general or personal supervision as required by this section shall register their work location with the department.

606.1.2Operator inspection after repairs.After any repairs are made to a refrigerating system the operation of which requires supervision by a certificate of qualification holder, the certificate of qualification holder shall check the repairs, together with the functioning of all control devices and the positioning of all valves. Such certificate of qualification holder shall also be present when the system is restarted after repairs.

606.1.3Operator logbook.A logbook or other form of approved recordkeeping shall be maintained for all refrigerating systems whose operation requires either personal or general supervision by a certificate of qualification holder. For systems requiring personal supervision the logbook shall, at a minimum, contain an entry for each shift the system is in operation. For systems requiring general supervision the logbook shall, at a minimum, contain an entry for each day during which the system is in operation.

606.1.3.1Logbook entries.The logbook shall provide information relevant to the operation of the system, including

any operating problems or deficiencies and required periodic tests. The signature of the certificate of qualification holder shall appear next to each entry.

606.2Refrigerants.The use and purity of new, recovered, and reclaimed refrigerants shall be in accordance with the construction codes, including the Mechanical Code.

606.3Refrigerant classification.Refrigerants shall be classified in accordance with the construction codes, including the Mechanical Code.

606.4Change in refrigerant type.Any change in the type of refrigerant in a refrigerating system shall be made in accordance with the construction codes, including the Mechanical Code.

606.5Access.Refrigerating systems having a refrigerant circuit containing more than 200 pounds (91 kg) of Group A1 or 30 pounds (14 kg) of any other group refrigerant shall be accessible to the department at all times as required by the commissioner. Refrigerating systems requiring a permit shall be accessible at all times, and shall, where practicable, be made accessible for department inspection without the use of portable ladders or other portable equipment.

606.6Testing of equipment.Refrigerating equipment and systems having a refrigerant circuit containing more than 200 pounds (91 kg) of Group A1 or 30 pounds (14 kg) of any other group refrigerant shall be subject to periodic testing in accordance with Section 606.6.1. A written record of required testing shall be maintained on the premises. Tests of emergency devices or systems required by this chapter shall be conducted by a person holding a certificate of qualification.

606.6.1Periodic testing.The following emergency devices or systems shall be tested at least monthly in accordance with the manufacturer's instructions.

1. Treatment and flaring systems.
2. Valves and appurtenances necessary to the operation of emergency refrigerating system control boxes.
3. Fans and associated equipment intended to operate emergency ventilation systems.
4. Detection and alarm systems.

606.7Emergency signs.Emergency signs shall be provided in accordance with the construction codes, including the Mechanical Code.

606.8Refrigerant detector.Machinery rooms shall contain a refrigerant detector with an audible and visual alarm as required by the construction codes, including the Mechanical Code for the refrigerant classification.

606.9Remote controls.Remote control of the mechanical equipment and appliances located in the machinery room and the emergency ventilation system shall be provided in accordance with the construction codes, including the Mechanical Code.

606.9.1Reserved.

606.9.2Reserved.

606.9.3Emergency control box.Emergency control boxes shall be provided for refrigerating systems required to be equipped with a treatment system, flaring system or ammonia diffusion system.

606.9.3.1Location.Emergency control boxes shall be located outside of the building at an approved accessible location. All portions of the emergency control box shall be 6 feet (1829 mm) or less above the adjoining grade.

606.9.3.2Construction. Emergency control boxes shall be of iron or steel not less than 0.055 inch (1.4 mm) in thickness and provided with a hinged cover and lock.

606.9.3.3Operating procedure. Valves and switches shall be identified in an approved manner as to the sequential procedure to be followed in the event of an emergency.

606.9.3.4Identification. Emergency control boxes shall be provided with a permanent label on the outside cover reading: FIRE DEPARTMENT USE ONLY-REFRIGERANT CONTROL BOX, and including the name of the refrigerant in the system. Hazard identification in accordance with NFPA 704 shall be posted inside and outside of the control box.

606.9.3.5Instructions. Written instructions and information shall be provided and located in the emergency control box designating the following information:

1. Instructions for shutting down and securing the operation of the system in the event of an emergency.
2. The name, address and emergency telephone numbers to obtain emergency service.
3. The location and operation of emergency discharge systems.

606.10Storage, handling and use. Flammable liquids, combustible liquids, combustible materials and combustible waste, except for quantities of combustible liquids below permit amounts, spare parts, tools, and incidental materials necessary for the safe and proper operation and maintenance of the system, shall not be stored in machinery rooms for refrigerating systems. Storage, use or handling of extra refrigerant or refrigerant oils shall be as required by Chapters 27, 30, 32 and 34 and the Mechanical Code.

606.11Termination of relief devices. Pressure relief devices, fusible plugs and purge systems for refrigerating systems containing more than 6.6 pounds (3 kg) of Group A2 or B2 refrigerants, as classified in the Mechanical Code, shall be provided with an approved discharge system as required by Sections 606.11.1, 606.11.2 and 606.11.3. Discharge piping and devices connected to the discharge side of a fusible plug or rupture member shall have provisions to prevent plugging the pipe in the event of the fusible plug or rupture member functions. The location for the relief valve discharge from systems containing Group A3 or B3 refrigerants shall be approved.

606.11.1Flammable refrigerants. Systems containing flammable refrigerants having a density equal to or greater than the density of air shall discharge vapor to the atmosphere only through an approved treatment system in accordance with Section 606.11.4 or a flaring system in accordance with Section 606.11.5. Systems containing flammable refrigerants having a density less than the density of air shall be permitted to discharge vapor to the atmosphere provided that the point of discharge is located outside of the structure and not less than 20 feet (6096 mm) above the adjoining grade level and not less than 20 feet (6096 mm) from any window, ventilation opening or exit.

606.11.2Toxic and highly toxic refrigerants. Systems containing toxic or highly toxic refrigerants shall discharge vapor to the atmosphere only through an approved treatment system in accordance with Section 606.11.4 or a flaring system in accordance with Section 606.11.5.

606.11.3Ammonia refrigerant. Systems containing ammonia refrigerant shall discharge vapor to the atmosphere through an approved treatment system in accordance with Section 606.11.4, a flaring system in accordance with Section 606.11.5, or through an approved ammonia diffusion system in accordance with Section 606.11.6, or by other approved means.

Exceptions:

1. Ammonia/water absorption systems containing less than 22 pounds (10 kg) of ammonia and for which the

ammonia circuit is located entirely outdoors.

2. When the commissioner determines, on review of an engineering analysis prepared in accordance with Section 104.7.2, that a fire, health or environmental hazard would not result from discharging ammonia directly to the atmosphere.

606.11.4 Treatment systems. Treatment systems shall be designed to reduce the allowable discharge concentration of the refrigerant gas to not more than 50 percent of the IDLH at the point of exhaust. Treatment systems shall be in accordance with Chapter 37.

606.11.5 Flaring systems. Flaring systems for incineration of flammable refrigerants shall be designed to incinerate the entire discharge. The products of refrigerant incineration shall not pose health or environmental hazards. Incineration shall be automatic upon initiation of discharge, shall be designed to prevent blowback, and shall not expose structures or materials to threat of fire. Emergency power shall have the capacity to operate for one and one-half the required time for complete incineration of refrigerant in the system.

606.11.6 Ammonia diffusion systems. Ammonia diffusion systems shall include a tank containing 1 gallon of water for each pound of ammonia (4 L of water for each 1 kg of ammonia) that will be released in 1 hour from the largest relief device connected to the discharge pipe. The water shall be prevented from freezing. The discharge pipe from the pressure relief device shall distribute ammonia in the bottom of the tank, but no lower than 33 feet (10 058 mm) below the maximum liquid level. The tank shall contain the volume of water and ammonia without overflowing.

606.12 Discharge location for refrigerating system machinery room ventilation. Exhaust from mechanical ventilation systems serving refrigerating machinery rooms capable of exceeding 25 percent of the LFL or 50 percent of the IDLH shall be equipped with approved treatment systems to reduce the discharge concentrations of flammable, toxic or highly toxic refrigerants to those values or lower.

606.13 Notification of refrigerant discharges. The commissioner shall be notified immediately when a discharge becomes reportable under state, federal or local regulations in accordance with Section 2703.3.1.

606.14 Records. A written record shall be kept of refrigerant quantities brought into and removed from the premises. Such records shall be available for inspection by any representative of the department.

606.15 Electrical equipment. Where refrigerants of Groups A2, A3, B2 and B3, as defined in the Mechanical Code, are used, refrigerating system machinery rooms shall conform to the Class I, Division 2 hazardous location classification requirements of the Electrical Code.

Exception: Ammonia machinery rooms that are provided with ventilation in accordance with Section 1106.3 of the Mechanical Code.

606.16 Use of Group A3 and B3 refrigerants. Nothing contained in this section shall be construed to authorize the use of Group A3 or B3 refrigerants, as classified in the Mechanical Code, if otherwise prohibited by the construction codes, including the Mechanical Code.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 6: BUILDING SERVICES AND SYSTEMS
SECTION FC 607: ELEVATORS IN READINESS

NYC Administrative Code § 29-FC 607

607.1 Phase I emergency recall and Phase II emergency in-service operation.

Elevators intended to serve the needs of emergency personnel for firefighting or rescue purposes shall be provided with Phase I emergency recall operation and Phase II emergency in-car operation in accordance with the Building Code.

607.2 Emergency signs. All required signage for elevators shall be provided in accordance with the construction codes, including the Building Code.

607.3 Elevator keys. Keys for the elevator car doors and firefighter service keys shall be kept in an approved location for immediate use by the department. Firefighter service key switches shall be operable by citywide-standard key.

607.4 Elevators in readiness. Elevators in every building 75 feet (22 860 mm) or more in height shall be kept ready for immediate use by the department during all hours of the night and day including holidays and weekends. There shall be a competent building attendant available to operate such elevators, except that no attendant shall be required for buildings between 75 and 150 feet (22 860 and 45 720 mm) in height having elevators with Phase I emergency recall and Phase II emergency in-service operation.

607.5 Emergency elevator operation and maintenance. All elevators equipped with Phase I emergency recall and Phase II emergency in-service operation shall be maintained in proper working order such that the emergency elevator operations are operable at all times. All elevators with Phase I emergency recall shall be subjected, at least monthly, to a Phase I recall test. All elevators with Phase II emergency in-service operation shall be subjected, at least monthly, to a minimum of a one-floor operation II test. A written record of the operational status of the elevator shall be made and kept on the premises and made available for inspection by any representatives of the department.



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TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 6: BUILDING SERVICES AND SYSTEMS
SECTION FC 608: STATIONARY LEAD-ACID BATTERY SYSTEMS

NYC Administrative Code § 29-FC 608

608.1 Scope.

Stationary lead-acid battery systems using vented (flooded) lead-acid batteries having an electrolyte capacity of more than 50 gallons (189 L) used for facility standby power, emergency power, or uninterrupted power supplies shall be designed, installed, operated and maintained in accordance with this section. Valve-regulated lead-acid batteries are not subject to the requirements of this section, but shall comply with the requirements of Section 609.

608.2 Safety venting. Batteries shall be provided with safety venting caps.

608.3 Room design and construction. Enclosure of stationary lead-acid system rooms shall comply with the requirements of the construction codes, including the Building Code. The battery systems are permitted to be in the same room with the equipment they support.

608.4 Spill control and neutralization. An approved method and materials for the control and neutralization of a spill of electrolyte shall be provided. The method and materials shall be capable of controlling and neutralizing a spill from the largest lead-acid battery to a pH between 7.0 and 9.0.

608.5 Ventilation. Ventilation shall be provided in accordance with the construction codes, including the Mechanical Code, and the following:

1. The ventilation system shall be designed to limit the maximum concentration of hydrogen to 1.0 percent of the total volume of the room; or

2. Continuous ventilation shall be provided at a rate of not less than 1 cubic foot per minute per square foot (1 cfm/ft²) [(0.0051 m³/(s·m²))] of floor area of the room.

608.6 Signs. Doors into rooms or buildings containing stationary lead-acid battery systems shall be provided with approved signs. The signs shall state that the room contains lead-acid battery systems, that the battery room contains

energized electrical circuits, and that the battery electrolyte solutions are corrosive liquids.

608.7Seismic protection.The battery systems shall be seismically braced in accordance with the Building Code.

608.8Smoke detection.An approved automatic smoke detection system shall be installed in battery rooms in accordance with the construction codes, including the Building Code.



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Chapter 6: BUILDING SERVICES AND SYSTEMS
SECTION FC 609: VALVE-REGULATED LEAD-ACID (VRLA) BATTERY SYSTEMS

NYC Administrative Code § 29-FC 609

609.1 Scope.

Valve-regulated lead-acid (VRLA) battery systems having an electrolyte capacity of more than 50 gallons (189 L) used for facility standby power, emergency power or uninterrupted power supply (UPS), shall be designed, installed, operated and maintained in accordance with this section.

609.2 Safety vents. VRLA batteries shall be equipped with self-resealing flame-arresting safety vents.

609.3 Thermal runaway. VRLA battery systems shall be provided with a listed device or other approved method to preclude, detect and control thermal runaway.

609.4 Room design and construction. Enclosure of VRLA battery system rooms shall comply with the requirements of the Building Code. The battery systems are permitted to be in the same room with the equipment they support. When VRLA battery systems are installed in a separate equipment room accessible only to authorized personnel, they shall be allowed to be installed on an open rack for ease of maintenance. When a VRLA battery system is situated in an occupied work center, it shall be housed in a noncombustible cabinet or other enclosure to prevent access by unauthorized personnel.

609.5 Neutralization. An approved manual method and materials for the neutralization of a release of electrolyte shall be provided. The method and materials shall be capable of controlling and neutralizing a release of 3 percent of the capacity of the largest VRLA cell or block in the room to a pH between 7.0 and 9.0.

609.6 Room ventilation. Ventilation shall be provided to limit the maximum concentration of hydrogen to 1 percent of the total volume of the room during the worst-case event of simultaneous "boost" charging of all batteries in the room. Where calculations are not provided to substantiate the ventilation rate, continuous ventilation at a rate of not less than 1 cubic foot per minute per square foot (1 ft³/min/ft²) [(0.0051 m³/(sm²))] of floor area of the room shall be provided. The ventilation shall be either mechanically or naturally induced.

609.7Cabinet ventilation. Where VRLA batteries are installed inside a cabinet, the cabinet shall be vented. The cabinet ventilation shall limit the maximum concentration of hydrogen to 1 percent of the total volume of the cabinet during the worst-case event of simultaneous "boost" charging of all batteries in the cabinet. Where calculations are not provided to substantiate the ventilation rate, continuous ventilation at a rate of not less than 1 cubic foot per minute per square foot (1 ft³/min/ft²) [0.0051m³/(sm²)] of floor area covered by the cabinet shall be provided. The ventilation shall be either mechanically or naturally induced. The room in which the cabinet is installed shall also be ventilated as required in Section 609.6.

609.8Signs. Doors into electrical equipment rooms containing VRLA battery systems shall be provided with approved signs. The signs shall state that the room contains lead-acid battery systems and contains energized electrical circuits. Where VRLA batteries are contained in cabinets in occupied work centers, the cabinet enclosures shall be located within 10 feet (3048 mm) of the equipment that they support. The cabinets shall have exterior labels that identify the manufacturer and model number of the system and electrical rating (voltage and current) of the contained battery system. Within the cabinet there shall be signs that indicate the relevant electrical, chemical and fire hazards.

609.9Seismic protection. The battery systems shall be seismically braced in accordance with the Building Code.

609.10Smoke detection. An approved automatic smoke detection system shall be installed in rooms containing VRLA battery systems in accordance with the Building Code.



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Chapter 6: BUILDING SERVICES AND SYSTEMS
SECTION FC 610: COMMERCIAL COOKING EXHAUST HOODS

NYC Administrative Code § 29-FC 610

610.1 General.

Commercial cooking exhaust hoods shall be designed, installed, operated and maintained in accordance with the construction codes, including the Building Code and the Mechanical Code. Type 1 hoods shall be operated and maintained in accordance with Chapter 9 of this code.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION FC 701: GENERAL

NYC Administrative Code § 29-FC 701

701.1 Scope.

This chapter shall govern the maintenance of fire-resistance-rated construction.

701.2 General. Fire-resistance-rated construction shall be maintained in accordance with this chapter.



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Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION

SECTION FC 702: DEFINITIONS

NYC Administrative Code § 29-FC 702

702.1 Terms defined in Chapter 2.

Terms used in this chapter, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown in Chapter 2 or elsewhere in this code.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 7: FIRE-RESISTANCE-RATED CONSTRUCTION
SECTION FC 703: FIRE-RESISTANCE-RATED CONSTRUCTION

NYC Administrative Code § 29-FC 703

703.1 Maintenance.

The required fire-resistance rating of fire-resistance-rated construction (including walls, fire stops, shaft enclosures, partitions and floors) shall be maintained. Such elements shall be properly repaired, restored or replaced when damaged, altered, breached or penetrated. Openings made therein for the passage of pipes, electrical conduit, wires, ducts, air transfer openings, and holes made for any reason shall be protected with approved methods capable of resisting the passage of smoke and fire. Openings through fire-resistance-rated assemblies shall be protected by self-closing or automatic-closing doors of approved construction meeting the fire protection requirements for the assembly.

703.1.1 Fireblocking and draftstopping. Required fireblocking and draftstopping in combustibles concealed spaces shall be maintained to provide continuity and integrity of the construction.

703.1.2 Smoke barriers. Required smoke barrier partitions shall be maintained to prevent the passage of smoke and all openings protected with approved smoke barrier doors or leakage-rated (smoke) dampers.

703.2 Maintenance of openings. Fire doors and fire windows shall be maintained in good working order in accordance with NFPA 80. Fire doors and smoke barrier doors shall not be blocked or obstructed or otherwise made inoperable. Fusible links shall be replaced promptly whenever fused, damaged or otherwise rendered inoperable. Fire door assemblies shall not be modified.

703.2.1 Signs. Where required by the commissioner, a sign shall be permanently displayed on or near each fire door in letters not less than 1 inch (25 mm) high to read as follows:

1. For doors designed to normally be kept open: FIRE DOOR-DO NOT BLOCK.
2. For doors designed to normally be kept closed: FIRE DOOR-KEEP CLOSED.

703.2.2 Hold-open devices and closers. Hold-open devices and automatic door closers, where provided, shall be

maintained. During the period that such device is out of service for repairs, the door it operates shall remain in the closed position.

703.2.3Door operation.Swinging fire doors shall close from the full-open position and latch automatically. The door closer shall exert enough force to close and latch the door from any partially open position.

703.3Ceilings.The hanging of decorative material, merchandise displayed for sale or other display items from acoustical ceiling systems that are part of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be prohibited.

703.4Testing.Horizontal and vertical sliding and rolling fire doors shall be inspected and tested annually to confirm proper operation and full closure. A written record shall be maintained and be made available for inspection by any representative of the department.



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SECTION FC 704: FLOOR OPENINGS AND SHAFTS

NYC Administrative Code § 29-FC 704

704.1 Enclosures.

Interior vertical shafts, including stairways, elevator hoistways, service and utility shafts, that connect two or more stories of a building shall be enclosed or protected as specified in the construction codes, including the Building Code. When openings are required to be protected by the construction codes, including the Building Code, openings into such shafts shall be maintained self-closing or automatic-closing by smoke detection. Existing fusible-linktype automatic door-closing devices are permitted if the fusible link rating does not exceed 135(degrees)F (57(degrees)C).



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 8: INTERIOR FURNISHINGS, DECORATIONS AND SCENERY
SECTION FC 801: GENERAL

NYC Administrative Code § 29-FC 801

801.1 Scope.

This chapter shall govern furnishings, decorative vegetation, decorations and scenery in buildings and structures.

801.2 General. The furnishings, decorative vegetation, decorations and scenery governed by this chapter shall be designed, stored, handled and used in accordance with this chapter.

801.3 Flame-retardant treatments. When a material or item is treated with a flame-retardant chemical to meet the requirements of this chapter for a flame-resistant material, such chemical and its method of application shall be approved. Flame-retardant treatments shall be maintained so as to retain the effectiveness of the treatment under conditions encountered in actual use.

801.4 Fire-retardant coating. When a material or item is coated with a fire-retardant coating to meet the requirements of this chapter for a flame-resistant material, such coating and its method of application shall be approved. Flame-retardant coatings shall be maintained so as to retain the effectiveness of the coating under conditions encountered in actual use.

801.5 Prohibited decorative vegetation, decorations and scenery. It shall be unlawful in Group A, E, I-1, I-2 nursing homes and hospitals, I-3 and I-4 day care facility occupancies to store or use decorative vegetation, decorations or scenery that consists of or is coated with pyroxylin or similarly hazardous base.

801.6 Obstructions. The required width of any portion of a means of egress shall not be obstructed by any furnishing, decorative vegetation, decoration or scenery nor shall such furnishing, decorative vegetation, decoration or scenery obstruct any exit or the visibility thereof.

801.7 Supervision. When a material or item is treated with a flame retardant chemical to meet the requirements of this chapter for a flame-resistant material, the application of the chemical shall be conducted by or under the personal

supervision of a certificate of fitness holder.

801.8Certificate of approval.Any flame-retardant chemical used to render a material flameresistant to meet the requirements of this chapter shall be of a type for which a certificate of approval has been issued in accordance with Section FC 112 and the rules.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 8: INTERIOR FURNISHINGS, DECORATIONS AND SCENERY
SECTION FC 802: DEFINITIONS

NYC Administrative Code § 29-FC 802

802.1 Definitions.

The following terms shall, for the purposes of this chapter and used elsewhere in this code, have the meanings shown herein.

CONIFER. Any tree, plant or shrub containing pitch, including hemlock, balsam, pine and fir.

DECORATION. Any item that is used for aesthetic or artistic enhancement of interior space, including draperies, hangings, artwork and decorative greens.

FIRE-RETARDANT COATING. An approved coating that, when applied to the surface of scenery in an approved manner, imparts flame resistance and reduces flame spread.

FLAME-RETARDANT TREATMENT. An approved chemical that, when applied to a material in an approved manner, imparts flame resistance to a material.

FLAME-RESISTANT MATERIAL. Material that meets the criteria for flame-resistance as set forth in NFPA 701, either because it is inherently flame-resistant or because it has been subjected to a flame-retardant treatment.

FURNISHING. Furniture or items other than structural elements, building service equipment or interior finishes that are installed or placed in a building for the human comfort or other use of the occupants.

INTERIOR FINISH. Construction materials that form the exposed interior surfaces of a building and that are part of or affixed to walls, fixed or folding partitions, ceilings, and other construction elements.

NATURAL DECORATIVE GREEN. A bough of a natural tree or part thereof.

NATURAL TREE. Any live tree, plant or shrub, including conifer, that is rooted in soil.

SCENERY. Any or all of those devices ordinarily used on a stage in the presentation of a theatrical, artistic, musical or other similar live performance, such as back drops, side tabs, teasers, borders or scrim, rigid flats, set pieces, and all properties, except costumes.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 8: INTERIOR FURNISHINGS, DECORATIONS AND SCENERY
SECTION FC 803: FURNISHINGS

NYC Administrative Code § 29-FC 803

803.1 Reserved

803.2

Group A occupancies. The requirements in Sections 803.2.1 and 803.2.2 shall apply to Group A occupancies.

803.2.1 Foam plastics. Exposed foam plastic materials and unprotected materials containing foam plastic used for decorative purposes or exhibit booths shall have a maximum heat release rate of 100 kilowatts (kW) when tested in accordance with UL 1975, except individual foam plastic item or items containing foam plastic where the foam does not exceed 1 pound (0.45 kg) in weight.

803.2.2 Motion picture screens. Motion picture screens and supporting construction shall comply with the requirements of Section 306.3.

803.3 Group E occupancy educational facilities. The requirements in Sections 803.3.1 and 803.3.2 shall apply to Group E occupancy educational facilities.

803.3.1 Storage in corridors and lobbies. Clothing and personal effects shall not be stored in corridors and lobbies.

Exceptions:

1. Corridors protected throughout by a sprinkler system, provided the minimum required egress width is maintained.

2. Storage in metal lockers, provided the minimum required egress width is maintained.

803.3.2 Artwork. Artwork and educational materials shall be limited on the walls of corridors to not more than 20 percent of the wall area.

803.4 Group I-4 occupancy day care facilities. The requirements in Sections 803.4.1 and 803.4.2 shall apply to Group I-4 day care facilities.

803.4.1 Storage in corridors and lobbies. Clothing and personal effects shall not be stored in corridors and lobbies.

Exceptions:

1. Corridors protected throughout by a sprinkler system, provided the minimum required egress width is maintained.
2. Storage in metal lockers, provided the minimum required egress width is maintained.

803.4.2 Artwork. Artwork and educational materials shall be limited on walls of corridors to not more than 20 percent of the wall area.

803.5 Group I-2 occupancy nursing homes and hospitals. The requirements in Sections 803.5.1 through 803.5.4 shall apply to Group I-2 nursing homes and hospitals.

803.5.1 Upholstered furniture. New or used upholstered furniture placed in a Group I-2 nursing home or hospital on or after the effective date of this code shall be shown to resist ignition by cigarettes as determined by tests conducted in accordance with NFPA 261 and shall have a char length not exceeding 1.5 inches (38 mm).

Exceptions:

1. Upholstered furniture owned by the patient in sleeping rooms of a nursing home, provided that a smoke detector is installed in such rooms in accordance with the construction codes, including the Building Code.
2. Upholstered furniture in rooms or spaces protected throughout by a sprinkler system.

803.5.2 Upholstered furniture heat release rate. New or used upholstered furniture placed in a Group I-2 nursing home or hospital on or after the effective date of this code shall have limited rates of heat release when tested in accordance with ASTM E 1537 or NFPA 266.

1. The peak rate of heat release for the single upholstered furniture item shall not exceed 250 kW, except upholstered furniture in rooms or spaces protected throughout by a sprinkler system.
2. The total energy released by the single upholstered furniture item during the first 5 minutes of the test shall not exceed 40 megajoules (MJ), except upholstered furniture in rooms or spaces protected throughout by a sprinkler system.

803.5.3 Mattresses, heat-release rate. New or used mattresses placed in a Group I-2 occupancy nursing home or hospital on or after the effective date of this code shall have limited rates of heat release when tested in accordance with ASTM E 1590 or NFPA 267.

1. The peak rate of heat release for the mattress shall not exceed 250 kW, except mattresses in rooms or spaces protected throughout by a sprinkler system.
2. The total energy released by the mattress during the first 5 minutes of the test shall not exceed 40 MJ, except mattresses in rooms or spaces protected throughout by a sprinkler system.

803.5.4 Identification. Upholstered furniture shall bear the label of an approved agency, confirming compliance with the requirements of Sections 803.5.1 and 803.5.2.

803.6 Group I-1 occupancy board and care facilities. The requirements in Sections 803.6.1 through 803.6.3 shall apply to Group I-1 occupancy board and care facilities.

803.6.1 Upholstered furniture. New or used upholstered furniture placed in a Group I-1 board and care facility on or after the effective date of this code shall meet the requirements for Class I when tested in accordance with NFPA 260, except upholstered furniture in rooms or spaces protected throughout by a sprinkler system.

803.6.2 Mattresses. New or used mattresses placed in a Group I-1 board and care facility on or after the effective date of this code shall have a char length not exceeding 2 inches (51 mm) when tested in accordance with DOC 16 CFR Part 1632, except upholstered furniture in rooms or spaces protected throughout by a sprinkler system.

803.6.3 Mattresses, heat-release rate. New or used mattresses placed in a Group I-1 occupancy board and care facility on or after the effective date of this code shall have limited rates of heat release when tested in accordance with ASTM E 1590 or NFPA 267.

1. The peak rate of heat release for the mattress shall not exceed 250 kW, except mattresses in rooms or spaces protected by a sprinkler system.

2. The total energy released by the mattress during the first 5 minutes of the test shall not exceed 40 MJ, except mattresses in rooms or spaces protected throughout by a sprinkler system.

803.7 Group I-3 occupancy detention and correction facilities. The requirements in Sections 803.7.1 through 803.7.6 shall apply to Group I-3 occupancy detention and correction facilities.

803.7.1 Upholstered furniture classification. New or used upholstered furniture placed in a Group I-3 occupancy detention and correction facility on or after the effective date of this code shall meet the requirements for Class I when tested in accordance with NFPA 260, except upholstered furniture in rooms or spaces protected throughout by a sprinkler system.

803.7.2 Upholstered furniture heat release rate. New or used upholstered furniture placed in a Group I-3 occupancy detention and correction facility on or after the effective date of this code shall have limited rates of heat release, as follows:

1. The peak rate of heat release for the single upholstered furniture item shall not exceed 250 kW.

Exceptions:

1. In Use Condition I, II and III occupancies, as defined in the Building Code, upholstered furniture in rooms or spaces protected by approved smoke detectors that initiate, without delay, an alarm that is audible in that room or space.

2. Upholstered furniture in rooms or spaces protected throughout by a sprinkler system.

2. The total energy released by the single upholstered furniture item during the first 5 minutes of the test shall not exceed 40 MJ, except upholstered furniture in rooms or spaces protected throughout by a sprinkler system. .

803.7.3 Mattresses, char length. New or used mattresses placed in a Group I-3 occupancy detention and correction facility on or after the effective date of this code shall have a char length not exceeding 2 inches (51 mm) when tested in accordance with DOC 16 CFR Part 1632, except mattresses in rooms or spaces protected throughout by a sprinkler system.

803.7.4 Mattresses, heat release rate. New or used mattresses placed in a Group I-3 occupancy detention and correctional facility on or after the effective date of this code shall have limited rates of heat release when tested in accordance with ASTM E 1590 or NFPA 267, as follows:

1. The peak rate of heat release for the mattress shall not exceed 250 kW, except mattresses in rooms or spaces protected throughout by a sprinkler system.

2. The total energy released by the mattress during the first 5 minutes of the test shall not exceed 40 MJ, except mattresses in rooms or spaces protected throughout by a sprinkler system.

803.7.5Wastebaskets.Wastebaskets and other waste containers shall be of noncombustible or other approved materials.

803.7.6Wastebasket lids.Waste containers with a capacity of more than 20 gallons (76 L) shall be provided with a lid of noncombustible or other approved material.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 8: INTERIOR FURNISHINGS, DECORATIONS AND SCENERY
SECTION FC 804: DECORATIVE VEGETATION

NYC Administrative Code § 29-FC 804

804.1 Natural trees and cut natural trees.

Natural trees and cut natural trees shall be stored, sold, displayed and maintained in accordance with Sections 804.1.1 through 804.1.6.

804.1.1 Indoor display of cut natural trees. Cut natural trees may be displayed in a building, except in Group A, B, E, I-1, I-2, I-3, I-4, M, R-1 and R-2 occupancies and any building or structure used for a public gathering. Notwithstanding the foregoing occupancy restrictions, cut natural trees may be displayed in houses of worship and dwelling units in Group R-2 apartment house occupancies.

804.1.2 Indoor storage of cut natural trees. It shall be unlawful to store cut natural trees in any building, except in connection with a display permitted under Section 804.1.1.

804.1.3 Indoor storage and display of natural trees. Natural trees, except conifers, may be stored and displayed in a building, provided they are maintained in a healthy condition and are not allowed to become dry. It shall be unlawful to store or display natural trees that are conifers in any building.

804.1.4 Support devices. Cut natural trees for display in any building shall have the trunk bottoms cut off at least 0.5 inch (12.7 mm) above the original cut and shall be placed in a support device. The support device shall be of a type that is stable, holds the tree in an upright position and meets all of the following criteria:

1. The device shall hold the tree securely and be of adequate size to avoid tipping over of the tree.
2. The device shall be capable of containing a minimum 2-day supply of water.
3. The water level, when full, shall cover the tree stem at least 2 inches (51 mm). The water level shall be maintained above the fresh cut and checked at least once daily.

804.1.5Dryness.Natural trees and cut natural trees shall be removed from the building whenever the needles or leaves fall off readily when a tree branch is shaken or if the needles are brittle and break when bent between the thumb and index finger. Trees shall be checked daily for dryness.

804.1.6Retail sale of cut natural trees.Merchants of cut natural trees, including Christmas trees, shall, at the time of retail sale of each such tree, attach to the tree a printed tag containing appropriate instructions for its safe and lawful display and disposal.

804.2Reserved.

804.3Open flames.Candles and other open flames shall not be used or maintained on or near decorative vegetation. Natural cut trees shall be kept a distance at least equal to the height of the tree from heat vents and any open-flame or heat-producing devices.

804.3.1Electrical fixtures and wiring.It shall be unlawful to use, allow or maintain unlisted electrical lighting, wiring or other items on decorative vegetation.

804.4Artificial vegetation.Artificial decorative vegetation, including artificial trees, shall be flame resistant or flame retardant. Such flame resistance or flame retardance shall be certified by a testing laboratory, or by the manufacturer in an approved manner. Documentation of such certification shall be submitted to the department upon request and as required by the rules.

804.4.1Electrical fixtures and wiring.It shall be unlawful to use, allow or maintain unlisted electrical lighting, wiring or other items on decorative vegetation. The use of electrical wiring and lighting on metal artificial trees is prohibited.

804.5Natural decorative greens.Natural decorative greens shall be stored and displayed in a building in accordance with Sections 804.5.1 through 804.5.4.

804.5.1Storage.It shall be unlawful to store natural decorative greens in any building, except merchandise for sale or displayed for sale which does not contain conifers.

804.5.2Display.Natural decorative greens may be displayed in buildings on a temporary basis. The display of natural decorative greens in Group A, E, I, and M occupancies, in common areas of Group R-1, R-2 and B occupancies, and any building or structure used for a public gathering, except display of works of art in museums and houses of worship, shall comply with the restrictions set forth in Section 804.5.3.

804.5.3Restrictions on display.It shall be unlawful to display in any building natural decorative greens that:

1. Contain pitch, such as hemlock, balsam, pine or Spanish moss.
2. Are displayed at a location less than 3 feet (914 mm) from stuffed furniture, rugs, or other combustible material or contain combustible decorations.
3. Are on a combustible framework or displayed in conjunction with combustible material unless such material is flame resistant.

804.5.4Dryness.Any natural decorative green shall be removed from the building at the first sign of deterioration or dryness. Natural decorative greens shall be checked at least daily for dryness.



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SECTION FC 805: DECORATIONS AND SCENERY

NYC Administrative Code § 29-FC 805

805.1 Decorations.

Except as otherwise specifically provided for in this chapter, in Group A, E, I, M occupancies, common areas in Group R-1, R-2 and B occupancies, and any building or structure used as a place for public gathering, curtains, draperies, hangings and decorations shall be flame resistant in accordance with Section 805.1.3 and NFPA 701. In Groups I-1 and I-2 occupancies, decorations shall be flame resistant unless the decorations are so limited in number or size that the hazard of fire or fire spread is not present. This section shall not apply to decorations being displayed solely for sale in any building or as a work of art in any museum or art gallery.

805.1.1 Reserved.

805.1.2 Flame-resistant materials. The type and quantity of interior trim allowed shall be as set forth in Section 805 of the Building Code. The quantity of decorations when combined with combustible trim shall not exceed 10 percent of the aggregate area of walls and ceilings.

805.1.3 Acceptance criteria and reports. Where required to be flame resistant, decorations shall be capable of passing Test 1 or 2, as described in NFPA 701. Certification of compliance shall be prepared by a certificate of fitness holder and made available to department representatives in accordance with the rules.

805.2 Scenery. All scenery in Group A occupancies shall be made of noncombustible materials, materials having a Class A flame-spread rating, or materials that have been rendered flame resistant by the application of a fire-retardant coating, except that the commissioner may authorize the use of scenery not complying with any of the above requirements where provision is made to ensure an equivalent level of fire safety.

805.2.1 Foam plastics. Foam plastic materials used for scenery shall have a maximum heat release rate of 100 kilowatts (kW) when tested in accordance with UL 1975, except individual foam plastic items or items containing foam plastic where the foam plastic does not exceed 1 pound (0.45 kg) in weight.



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Chapter 8: INTERIOR FURNISHINGS, DECORATIONS AND SCENERY

SECTION FC 806: INTERIOR FINISH

NYC Administrative Code § 29-FC 806

806.1 General.

The quantity and type of interior finishes shall comply with the requirements of Chapter 8 of the Building Code.



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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION FC 901: GENERAL

NYC Administrative Code § 29-FC 901

901.1 Scope.

This chapter shall govern the design, installation, operation and maintenance, including inspection and testing, of fire protection devices, equipment and systems, and other fire protection measures for the control and extinguishment of fire.

901.1.1 General. Fire protection systems shall be designed, installed, operated and maintained in accordance with this chapter and the reference standards set forth in Table 901.6.

901.2 Design and installation documents. The commissioner may require design and installation documents and calculations to be submitted for review for all fire protection systems. Design and installation documents required or regulated by this code or the rules shall be submitted for review and approval prior to installation, and shall certify that the design complies with the requirements of this code and the rules.

901.3 Permits. Permits shall be required as set forth in Section 105.6.

901.4 Design and installation. Fire protection systems shall be designed and installed in accordance with Sections 901.4.1 through 901.4.5.

901.4.1 Required fire protection systems. Fire protection systems shall be designed and installed in accordance with the construction codes, including the Building Code, and, as applicable, this code and the rules, and the applicable referenced standards listed in this code. Required systems shall be extended or altered as necessary to maintain and continue protection whenever the building or structure is altered. Alterations to fire protection systems shall be performed in compliance with the requirements of this code, the rules, and the construction codes, as applicable. Buildings and structures shall be provided with such fire hose, portable fire extinguishers and other means of preventing and extinguishing fires as the commissioner may direct.

901.4.2 Fire protection systems not required by code. Any fire protection system or portion thereof not required by this code, the rules or the construction codes, including the Building Code, may be installed to provide partial or complete protection of a building or structure, provided such system meets the requirements of this code, the rules and the construction codes, including the Building Code, as applicable. Where the design and installation of such fire protection system is governed by this code or the rules, the commissioner may modify such requirements, consistent with the interests of fire safety, upon a determination that such modification will promote public safety by encouraging the installation of such systems.

901.4.3 Additional fire protection systems. Where the material or operation to be conducted in a particular occupancy gives rise to special hazards in addition to the normal hazards of the occupancy, or where the commissioner determines that access to the occupancy would unduly delay the ability of firefighting personnel to respond to the hazard, the commissioner may require additional safeguards. Such safeguards include, but shall not be limited to, the following: automatic fire detection systems, fire alarm systems, fire extinguishing systems, standpipe systems, or portable or fixed extinguishers. Fire protection equipment shall be installed in accordance with the construction codes, including the Building Code.

901.4.4 Prohibition of deceptive equipment. It shall be unlawful to install or maintain any device that has the physical appearance of fire protection equipment but that does not perform the fire protection function, in any building, structure or premises where it may be confused with actual fire protection equipment.

901.4.5 Certificate of approval. The following fire protection devices, equipment and systems shall be of a type for which a certificate of approval has been issued in accordance with this code, or which was approved by the Department of Buildings or the Board of Standards and Appeals prior to the effective date of this section, unless such approval by the Department of Buildings or the Board of Standards and Appeals is amended or repealed by the commissioner:

1. Pre-engineered non-water fire extinguishing systems, including systems installed in connection with commercial cooking systems.
2. Prefabricated hoods and grease filters installed in connection with commercial cooking systems.
3. Fire department siamese connections, standpipe system hose outlets and pressure reducing valves.
4. Fire alarm system control panels.

901.5 Installation acceptance testing. Fire detection and alarm systems, fire extinguishing systems, private fire hydrant systems, yard hydrant systems, standpipe systems, fire pump systems, private fire service mains and all other fire protection systems and appurtenances thereto shall be subject to acceptance tests as set forth in the installation standards specified in this code. Where required by the construction codes, including the Building Code, this code or the rules, such tests shall be conducted, at the owner's risk, by his or her representative before a representative of the department.

901.5.1 Occupancy. It shall be unlawful to occupy any portion of a building or structure until any required fire detection system, fire alarm system, standpipe system and fire extinguishing systems have been tested and approved.

901.6 Maintenance. Fire protection systems shall be maintained in good working order at all times. Any fire protection system that is not in good working order shall be repaired or replaced as necessary to restore such system to good working order, or, where authorized by the Building Code, removed from the premises.

901.6.1 Standards. Fire protection systems shall be inspected, tested, serviced and otherwise maintained in accordance with this section, the rules and the referenced standards listed in Table 901.6.1. Where required by this section, such inspection, testing and maintenance shall additionally comply with the rules. Where applicable, the requirements of the reference standards listed in Table 901.6.1 shall be in addition to those requirements specified in the

rules. Table 901.6.1 Fire Protection System Maintenance Standards System Standard Portable fire extinguishers NFPA 10 Low, medium and high expansion foam systems NFPA 11 and NFPA 25 Carbon dioxide fire extinguishing system NFPA 12 Halon 1301 fire extinguishing systems NFPA 12A Foam water sprinkler and spray systems NFPA 16 and NFPA 25 Dry chemical fire extinguishing systems NFPA 17 Wet chemical fire extinguishing systems NFPA 17A Water based fire protection systems NFPA 25 Fire alarm systems NFPA 72 Water mist fire extinguishing systems NFPA 750 Clean agent fire extinguishing systems NFPA 2001

901.6.2 Records. Records of all system inspections, tests, servicing and other maintenance required by this code, the rules or the referenced standards shall be maintained on the premises for a minimum of 3 years and made available for inspection by any department representative.

901.6.2.1 Standpipe and sprinkler systems. In addition to those records required by NFPA 25, an approved card bearing the dates of each inspection, certificate of fitness number and signature of the certificate of fitness holder shall be posted on the premises near the main water supply control valve. A detailed inspection report relative to conditions of water supply, gravity and pressure tanks and levels therein, valves, risers, piping, sprinkler heads, hose valves, hose and nozzles, siamese connections, alarms, fire pumps, obstructions, and conditions of all other system equipment and appurtenances shall be completed monthly by the certificate of fitness holder. All defects or violations shall be noted on the inspection report.

901.6.3 Supervision. Inspection, testing, servicing and other maintenance of the following fire protection systems shall be performed under the personal supervision of a person holding a certificate of fitness.

1. Sprinkler systems.

Exception: Buildings classified in Group R-3 occupancies.

2. Standpipe systems.

3. Foam fire extinguishing systems.

4. Fire alarm systems.

5. Private fire hydrant systems.

6. Yard hydrant systems.

901.6.3.1 Servicing of portable fire extinguishers. It shall be unlawful for any person engaged in the business of servicing portable fire extinguishers to service portable fire extinguishers without a portable fire extinguisher servicing company certificate. Any person that services portable fire extinguishers shall hold a certificate of fitness, except that a person training for such certificate of fitness may service portable fire extinguishers under the personal supervision of a certificate of fitness holder. Nothing in this section shall preclude portable fire extinguishers that are maintained on a premises for use at such premises from being serviced by the owner or occupant of the premises, or an employee of such owner or occupant, who possesses a certificate of fitness for portable fire extinguisher servicing and the tools, materials, equipment and facility necessary to perform such services.

901.6.3.2 Portable fire extinguisher sales. It shall be unlawful for any person to engage in the business of selling portable fire extinguishers door to door to owners of buildings or businesses for use on their premises without a portable fire extinguisher sales company certificate.

Exception: Sale to owners of Group R-2 and R-3 occupancy buildings.

901.6.3.3 Commercial cooking exhaust systems. It shall be unlawful for any person engaged in the business of inspecting and cleaning commercial cooking exhaust systems as required by the provisions of this code to perform such

service without a commercial cooking exhaust system servicing company certificate. The inspection and cleaning of commercial cooking exhaust systems required by Section 904.11 shall be performed by a person holding a certificate of fitness. Nothing in this section shall preclude commercial cooking exhaust systems from being inspected and cleaned by the owner or occupant of the premises, or an employee of such owner or occupant, who possesses a certificate of fitness for inspecting and cleaning commercial cooking exhaust systems and the tools, materials, and equipment necessary to perform such services in accordance with this section.

901.6.3.4Smoke detector cleaning and testing.The cleaning and testing for smoke entry and sensitivity of smoke detectors installed in a defined fire alarm system shall be performed by a person holding a certificate of fitness for smoke detector maintenance. Such work shall be performed under the supervision and by employees of a person holding a smoke detector maintenance company certificate, except that such smoke detector cleaning and testing may be performed by an owner or occupant of the premises, or an employee of such owner or occupant, who possesses a certificate of fitness for smoke detector maintenance, and possesses the tools, instruments or other equipment necessary to perform such services in accordance this code and the rules. All other smoke detector maintenance shall be performed by a person possessing the requisite qualifications and experience, and any applicable license or certificate.

901.6.3.5Central station fire alarm monitoring.It shall be unlawful for any person to operate a central station that monitors fire alarm systems and maintain transmitters in protected premises without a certificate of operation.

901.7Out of service systems.Where a required fire protection system is out of service, the department shall be notified immediately and unless otherwise directed by the commissioner, either the building shall be evacuated or a fire watch shall be maintained by one or more persons holding a certificate of fitness for fire guard. Any other actions as the commissioner may direct in addition to or in lieu of such measures shall also be undertaken, until the fire protection system has been returned to service. Where utilized, fire guards shall be provided with at least one approved means for notification of the department and their only duty shall be to perform constant patrols of the protected premises and keep watch for fires.

901.7.1Impairment coordinator.The building owner shall assign an impairment coordinator to comply with the requirements of this section. In the absence of a specific designee, the owner shall be considered the impairment coordinator.

901.7.2Tag required.A tag shall be used to indicate that a system, or portion thereof, is out of service.

901.7.3Placement of tag.The tag shall be posted at each fire department connection, system control valve, fire alarm control unit, fire alarm annunciator and fire command center, indicating which system, or part thereof, is out of service. The commissioner shall specify where the tag is to be placed.

901.7.4Planned removal from service.The certificate of fitness holder and the impairment coordinator shall be made aware of and authorize the placing of systems out of service. Before authorizing such action the impairment coordinator shall:

1. Determine the extent and expected duration of the out of service condition.
2. Inspect the areas or buildings involved and assess the increased risks.
3. Make appropriate recommendations to the owner.
4. Notify the department and the responsible person designated by the owner to issue hot work authorizations in accordance with Chapter 26.
5. Notify the central station and insurance carrier.

6. Notify the occupants in the affected areas.
7. Place out of service tags at all required and appropriate locations.
8. Maintain system in service until work is ready to begin.

901.7.5 Unplanned out of service condition. The certificate of fitness holder, impairment coordinator, and/or other person responsible for inspecting, maintaining or supervising the operation of a fire protection system who observes a serious defect such as an empty tank, break or major leak in system water piping, inoperative or shut water supply valves, defective siamese connections, or complete or partial shut down of sprinkler and/or standpipe systems, other than a shutdown for scheduled inspection, testing or maintenance, shall immediately report such condition to the owner of the building, and to the department. When a system fails or otherwise goes out of service, the certificate of fitness holder or the impairment coordinator shall take the actions set forth in Section 901.7.4. and such other actions necessary or appropriate to protect the occupants of the building and minimize property damage. When the certificate of fitness holder or other such person observes a minor defect or other condition not presenting a serious safety hazard, he or she shall report the defect or condition to the owner, and if the defect or condition is not corrected within 30 days, shall report it in writing to the department.

901.7.6 Restoring systems to service. When an out of service device, equipment or system is restored to normal working order, the impairment coordinator shall:

1. Conduct necessary inspections and tests to verify that the affected systems are operational.
2. Reserved.
3. Notify the department.
4. Notify the owner, central station, insurance carrier and occupants in the affected areas.
5. Remove the out of service tags.

901.8 Tampering with or rendering equipment inoperable. Fire protection systems and related apparatus shall not be tampered with or rendered inoperable, except as set forth in Section 107.4.



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SECTION FC 902: DEFINITIONS

NYC Administrative Code § 29-FC 902

902.1 Definitions.

The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

ALARM NOTIFICATION APPLIANCE. A fire alarm system component, such as a bell, horn, speaker, light, text display or vibration device that issues an audible, tactile, and/or visual alert.

ALARM SIGNAL. A signal indicating an emergency requiring immediate action, such as a signal indicative of fire.

ANNUNCIATOR. A unit containing one or more indicator lamps, alphanumeric displays, or other equivalent means in which each indication provides status information about a circuit, condition or location.

AUTOMATIC. As applied to fire protection devices, any device, equipment or system that initiates system function as a result of a predetermined temperature rise, rate of temperature rise, or combustion products, without the necessity for human intervention.

CENTRAL STATION. A facility that receives alarm signals from a protected premises and retransmits or otherwise reports such alarm signals to the department.

CERTIFICATE OF OPERATION. A written statement issued by the commissioner approving the operation of a central station, for which such certificate is required by this code or the rules, or the construction codes.

CLEAN AGENT. Electrically nonconducting, volatile, or gaseous fire extinguishant that does not leave a residue upon evaporation.

COMMERCIAL COOKING SYSTEM. A system consisting of commercial cooking equipment, exhaust hood,

filters, exhaust duct system, fire extinguishing system and other related appurtenances designed to capture grease-laden cooking vapors and exhaust them safely to the outdoors.

COMMERCIAL COOKING EXHAUST SYSTEM SERVICING COMPANY CERTIFICATE. A certificate issued by the commissioner to a person engaged in the business of inspecting and cleaning commercial cooking equipment exhaust systems, which authorizes such person to inspect and clean commercial cooking equipment exhaust systems, for which such certificate is required by this code or the rules.

DEFINED FIRE ALARM SYSTEM. A fire alarm system or any sub-system thereof that automatically transmits signals to the department or a central station and that is installed in premises which are required to have a fire alarm system.

EMERGENCY ALARM SYSTEM. A system to provide indication and warning of an emergency condition involving a release of hazardous materials or other hazardous material incident.

FIRE ALARM BOX, MANUAL. A manually operated device used to initiate an alarm signal.

FIRE ALARM CONTROL UNIT. A system component that receives inputs from automatic and manual fire alarm devices and is capable of supplying power to detection devices and transponder(s) of off-premises transmitter(s). The control unit is capable of providing a transfer of power to the notification appliances and transfer of condition to relays of devices.

FIRE ALARM SIGNAL. A signal initiated by a fire alarm-initiating device such as a manual fire alarm box, automatic fire detector, water-flow switch, or other device whose activation is indicative of the presence of a fire or fire signature.

FIRE ALARM SYSTEM. Any system, including any interconnected fire alarm sub-system, of components and circuits arranged to monitor and annunciate the status of fire alarm or supervisory signal-initiating devices.

FIRE AREA. The aggregate floor area enclosed and bounded by fire walls, fire barriers, exterior walls, or fire-resistance-rated horizontal assemblies of a building.

FIRE DETECTOR, AUTOMATIC. A device designed to detect the presence of a fire signature and to initiate action.

FIRE EXTINGUISHING SYSTEM. An approved system of devices and equipment which detects a fire and discharges an approved fire extinguishing agent onto or in the area of a fire. Such term includes automatic systems and, where such systems are authorized by this code or the Building Code, manually activated systems.

FIRE PROTECTION SYSTEM. Approved devices, equipment and systems or combinations of systems used to detect a fire, activate an alarm, extinguish or control a fire, control or manage smoke and products of a fire or any combination thereof, including fire extinguishing systems, fire alarm systems, sprinkler systems and standpipe systems.

IMPAIRMENT COORDINATOR. The person responsible for ensuring that proper safety precautions are taken when a fire protection system is out of service.

INITIATING DEVICE. A system component that originates transmission of a change-of-state condition, such as in a smoke detector, manual fire alarm box, or supervisory switch.

MULTIPLE-STATION ALARM DEVICE. Two or more single-station alarm devices that can be interconnected such that actuation of one causes all integral or separate audible alarms to operate. It also can consist of one single-station alarm device having connections to other detectors or to a manual fire alarm box.

OUT OF SERVICE SYSTEM. A fire protection system that is not fully functional; or whose operation is impaired or is otherwise not in good working order.

PORTABLE COOKING EQUIPMENT. Commercial cooking equipment, provided with or installed with wheels.

PORTABLE FIRE EXTINGUISHER SALES COMPANY CERTIFICATE. A certificate issued by the commissioner to a person engaged in the business of selling portable fire extinguishers door to door to owners of buildings or business for use on their premises, which authorizes such person to engage in such business and supervise such sales.

PORTABLE FIRE EXTINGUISHER SERVICING COMPANY CERTIFICATE. A certificate issued by the commissioner to a person engaged in the business of servicing portable fire extinguishers, which authorizes such person to engage in such business and supervise the provision of such servicing by certificate of fitness holders.

PRESIGNAL SYSTEM. A fire alarm system having a feature that allows initial fire alarm signals to sound in a constantly attended central location and for which a human action is subsequently required to achieve a general alarm, or a feature that allows the control equipment to delay the general alarm by more than one minute after the start of the alarm processing.

PROTECTED PREMISES. A building, occupancy or structure located in the city that is equipped with a fire alarm system that transmits an alarm signal to the department or a central station that monitors such system for the purposes of reporting fire alarms to the department, whether or not the installation of such system on the premises is required by law.

SINGLE-STATION SMOKE ALARM. An assembly incorporating the detector, the control equipment, and the alarm-sounding device in one unit, operated from a power supply either in the unit or obtained at the point of installation.

SMOKE ALARM. A single- or multiple-station alarm responsive to smoke and not connected to a system.

SMOKE DETECTOR. A listed device that senses visible or invisible particles of combustion.

SMOKE DETECTOR MAINTENANCE COMPANY CERTIFICATE. A certificate issued by the commissioner to a person engaged in the business of performing smoke detector cleaning and testing, which authorizes such person to engage in such business and supervise the performance of such cleaning and testing by certificate of fitness holders.

SPRINKLER SYSTEM. A fire extinguishing system, other than a mist fire extinguishing system, that utilizes water as the extinguishing agent.

STANDPIPE SYSTEM. Piping installed in a building or structure that serves to transfer water from a water supply to hose connections at one or more locations in a building or structure used for firefighting purposes.

STANDPIPE, MULTI-ZONE. A standpipe system that is vertically subdivided as required by the construction codes, including the Building Code, into zones to limit the maximum operating pressure in the system. Each zone will have its own individual automatic water supply.

SUPERVISORY SIGNAL. A signal indicating the need for action in connection with the supervision of guard tours, fire extinguishing systems or equipment, fire alarm systems or the maintenance features of related systems.

SUPERVISORY SIGNAL-INITIATING DEVICE. An initiating device, such as a valve supervisory switch, water level indicator, or low-air pressure switch on a dry-pipe sprinkler system, that triggers a supervisory signal.

TROUBLE SIGNAL. A signal initiated by the fire alarm system or device indicative of a fault in a monitored

circuit or component.

UNNECESSARY ALARM. An alarm signal transmitted by a fire alarm system which functioned as designed, but for which a department response proved unnecessary. An example of an unnecessary alarm is an alarm triggered by smoke from a lit cigarette in a non-smoking area, when the presence of such smoke does not implicate fire safety concerns.

UNWARRANTED ALARM. An alarm signal transmitted by a fire alarm system which failed to function as designed as a result of improper installation, improper maintenance, malfunction, or other factor. Examples of unwarranted alarms are alarms resulting from improper smoke detector placement, improper detector setting for installed location, lack of system maintenance, and control panel malfunction.



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SECTION FC 903: SPRINKLER SYSTEMS

NYC Administrative Code § 29-FC 903

903.1 General.

Sprinkler systems shall comply with the requirements of this section.

903.2 Where required. Sprinkler systems shall be provided in buildings, structures, premises, or parts thereof, when required by the construction codes, including the Building Code, this code or the rules.

903.2.1 through and including 903.2.10 Reserved.

903.2.11 During construction. Sprinkler systems required during construction, alteration and demolition operations shall be provided in accordance with Chapter 33 of the Building Code and Section 1414.

903.2.12 Reserved.

903.2.13 Other required fire extinguishing systems. In addition to the requirements of Section 903.2, the provisions indicated in Table 903.2.13 also require the installation of a fire extinguishing system for certain buildings and areas.3]Table 903.2.13 Additional Required Fire Extinguishing Systems SectionSubject1]SectionSubject2]1208.2 Dry cleaning plants1208.3 Dry cleaning machines1504.1 Spray finishing in Group A, E, I or R1504.6 Spray booths and rooms1505.1 Dip-tank rooms1505.6.1 Dip tanks1505.8.4 Hardening and tempering tanks1803.10 HPM facilities1803.10.1.1 HPM work station exhaust1803.10.2 HPM gas cabinets1803.10.3 HPM corridors1803.10.4 HPM exhaust1803.10.4.1 HPM noncombustible ducts1803.10.4.2 HPM combustible ducts2106.1 Class A and B furnaces2106.2 Class C and D furnacesTable 2306.2 Storage fire protection2306.4 Storage2703.8.4.1 Gas rooms2703.8.5.3 Exhausted enclosures2704.5 Indoor storage of hazardous materials2705.1.8 Indoor dispensing of hazardous materials2804.4.1 Aerosol warehouses2904.5 Storage of more than 1,000 cubic feet of loose combustible fibers3306.5.2.1 Storage of smokeless propellant3306.5.2.3 Storage of small arms ammunition and primers3404.3.7.5.1 Flammable and combustible liquid storage rooms3404.3.8.4 Flammable and combustible liquid storage warehouses3405.3.7.3 Flammable and combustible liquid Group H-2 or H-3 areas3704.1.2 Gas cabinets for

highly toxic and toxic gas3704.1.3Exhausted enclosures for highly toxic and toxic gas3704.2.2.6Gas rooms for highly toxic and toxic gas3704.3.3Outdoor storage for highly toxic and toxic gas4106.2.2Exhausted enclosures or gas cabinets for silane gas4204.1.1Pyroxylin plastic storage cabinets4204.1.3Pyroxylin plastic storage vaults4204.2Pyroxylin plastic storage and manufacturingBuilding CodeSprinkler requirements as set forth in the construction codes, including the Building CodeFor SI: 1 cubic foot = 0.023 m³.

903.3Installation requirements.Except as otherwise provided in this code, sprinkler systems shall be designed and installed in accordance with the construction codes, including the Building Code.

903.4Sprinkler system monitoring and alarms.All valves controlling the water supply for sprinkler systems, pumps, tanks, water levels and temperatures, critical air pressures, and waterflow switches on all sprinkler systems shall be electrically supervised by the fire alarm system.

Exceptions:

1. Sprinkler systems protecting Group R-3 occupancies.

2. Reserved.

3. Sprinkler systems installed in accordance with NFPA 13R where a common supply main is used to supply both domestic water and the sprinkler system, and a separate shutoff valve for the sprinkler system is not provided, except where the Building Code requires such sprinkler system to be supervised.

4. Jockey pump control valves that are sealed or locked in the open position.

5. Control valves to commercial kitchen hoods, paint spray booths or dip tanks that are sealed or locked in the open position.

6. Valves controlling the fuel supply to fire pump engines that are sealed or locked in the open position.

7. Trim valves to pressure switches in dry, preaction and deluge sprinkler systems that are sealed or locked in the open position.

903.5Maintenance.Sprinkler systems shall be periodically inspected, tested, serviced and otherwise maintained in accordance with Section 901.6 and the rules. Except as otherwise provided in Sections 903.5.1 through 903.5.4, sprinkler systems shall be inspected and otherwise maintained as follows:

1. Sprinkler systems shall be inspected at least once a month by a person holding a certificate of fitness, employed by the owner, to ensure that all parts of the system are in perfect working order, and that the department connections, if any, are ready for immediate use by the department. A detailed record of each inspection shall be kept for examination by any representative of the department.

2. There shall be one or more employees instructed in the maintenance of sprinkler systems.

3. There shall be kept available at all times in the premises a supply of at least 6 extra sprinkler heads to replace promptly any fused or damaged sprinklers.

4. Fire department connections shall be hydrostatically tested at least once every 5 years, in accordance with Section 912.6.

903.5.1Sprinkler systems in converted dwellings and single room occupancies.In any converted dwelling or tenement used in whole or in part for single room occupancy, regardless of occupancy classification, in which a sprinkler system has been installed pursuant to the requirements of the Multiple Dwelling Law, such sprinkler system

shall be inspected and otherwise maintained as follows:

1. Sprinkler systems shall be inspected at least once a month by a person employed by the owner, holding a certificate of fitness issued by the department, a fire suppression contractor license issued by the Department of Buildings, or, for a sprinkler system with not more than 30 sprinkler heads, holding a master plumber license issued by the Department of Buildings, to ensure that all parts of the system are in perfect working order, and that the department connections, if any, are ready for immediate use by the department. Such inspection shall include a check of all control valves on the system, including the main supply control valve, making certain the valves are fully open and sealed in such open position; a check of the static pressure in the sprinkler system from a pressure gauge, if installed, located at or near the inspector's test connection, making certain the system design pressure is being maintained; a check that all sprinkler heads are in place; and such other requirements as the commissioner may prescribe. A detailed record of each inspection shall be kept for examination by any representative of the department.

2. There shall be one or more employees instructed in the location and status of the sprinkler system control valves.

3. There shall be kept available at all times in the premises a supply of at least 6 extra sprinkler heads, to replace promptly any fused or damaged sprinklers, except that a supply of at least 3 extra sprinkler heads shall be kept available for any sprinkler system installed in accordance with NFPA 13R as modified by the Building Code.

4. Fire department connections shall be hydrostatically tested at least once every 5 years in accordance with Section 912.6.

5. Upon order of the commissioner, but at least once every year, a flow test of the sprinkler system shall be conducted. Such test shall be conducted at the owner's risk by his or her representative, who shall be a licensed master plumber or licensed master fire suppression contractor. At least one such flow test shall be conducted before a representative of the department at least once every 5 years. A report of each test, on an approved form, shall be certified by such licensed master plumber or licensed master fire suppression contractor and shall be kept for not less than 5 years and made available for inspection by any representative of the department.

6. The owner or managing agent of any building subject to the requirements of this section shall maintain a record of each inspection and test and a listing of all outstanding violations issued pursuant to this section. Such records and listing shall be made available for inspection by occupants of such residential buildings during regular business hours.

903.5.2 Sprinkler systems in other R-2 occupancies. Except as otherwise provided in Section 903.5.1, in Group R-2 occupancies, sprinkler system shall be inspected and otherwise maintained as follows:

1. Sprinkler systems shall be inspected at least once a month by a person employed by the owner, holding a certificate of fitness issued by the department, a fire suppression contractor license issued by the New York City Department of Buildings, or, for a sprinkler system with not more than 30 sprinkler heads, holding a master plumber license issued by the New York City Department of Buildings, to ensure that all parts of the system are in perfect working order, and that the department connections, if any, are ready for immediate use by the department. Such inspection shall include a check of all control valves on the system, including the main supply control valve, making certain the valves are fully open and sealed in such open position; a check of the static pressure in the sprinkler system from a pressure gauge, if installed, located at or near the inspector's test connection, making certain the system design pressure is being maintained; a check that all sprinkler heads are in place; and such other requirements as the commissioner may prescribe. A detailed record of each inspection shall be kept for examination by any representative of the department.

2. There shall be one or more employees instructed in the location and status of the sprinkler system control valves.

3. There shall be kept available at all times in the premises a supply of at least 6 extra sprinkler heads, to replace promptly any fused or damaged sprinklers, except that a supply of at least 3 extra sprinkler heads shall be kept available

for any sprinkler system installed in accordance with NFPA 13R as modified by the Building Code

4. Fire department connections shall be hydrostatically tested at least once every 5 years in accordance with Section 912.6.

5. Upon order of the commissioner, but at least once every year, a flow test of the sprinkler system shall be conducted; provided, however, that where there is a pressure gauge installed at or near the inspector's test location that is checked during the required monthly inspection described in Section 903.5.2(1) to make certain the system design pressure is being maintained, a flow test of the sprinkler system shall be conducted upon order of the commissioner, but at least once every 30 months. Such test shall be conducted at the owner's risk by his or her representative, who shall be a licensed master plumber or licensed master fire suppression contractor. At least one such test shall be conducted before a representative of the department at least once every 5 years. A report of each test, on a form prepared by the department, shall be certified by such licensed master plumber or licensed master fire suppression contractor and shall be kept for not less than 5 years and made available for inspection by any representative of the department.

6. The owner or managing agent of any building subject to the requirements of this section shall maintain a record of each inspection and test and a listing of all outstanding violations issued pursuant to this section. Such records and listing shall be made available for inspection by occupants of such residential buildings during regular business hours.

903.5.3 Sprinkler systems in Group R-3 occupancies. Sprinkler systems in buildings classified in Group R-3 occupancies shall be maintained in perfect working order.

903.6 Dry pipe sprinkler system valves. In addition to the maintenance requirements set forth in Section 903.5, any dry pipe valve installed in a sprinkler system shall be trip tested at least once every 5 years and whenever the system is altered. Such trip test shall be conducted at the owner's risk, with the control valve fully open and the quick-opening device, if provided, in service, by a licensed master fire suppression contractor before a representative of the department.



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***** Current through December 31, 2008 *****

ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION FC 904: FIRE EXTINGUISHING SYSTEMS

NYC Administrative Code § 29-FC 904

904.1 General.

Fire extinguishing systems shall be designed, installed, operated and maintained in accordance with this section, Section 901 and the applicable referenced standards, including performing all required inspections, testing and servicing.

904.1.1 Installation acceptance testing. Fire extinguishing systems shall be subject to acceptance tests as contained in the installation standards set forth in this code and the rules. When a discharge test is not required by the installation standard, the commissioner may require such test when there is evidence that the system will not provide the necessary level of protection. Such tests shall be conducted at the owner's risk by his or her representative before a representative of the department.

904.1.2 Additional safeguards. If an area is protected by a fire extinguishing system which uses an extinguishing agent that will make the protected area hazardous by its discharge or thermal decomposition, suitable safeguards shall be provided to ensure prompt evacuation, to prevent entry into such atmospheres, and to provide means for prompt rescue of any trapped personnel. Such safeguards shall include establishment of a trained brigade, equipped with and qualified in the use of self-contained breathing apparatus with 30 minute minimum supply, for prompt search of the protected area.

Exception: Self-contained breathing apparatus shall not be required for a clean agent fire extinguishing system installation if:

1. The installation is provided with an alarm system that is connected to an approved central station.
2. The protected area is provided with an approved fixed emergency forced ventilation system able to expel the extinguishing agent. Such emergency forced ventilation system shall have a capacity sufficient to effect at least 20 air changes per hour.

3. The protected area is of a size, design and/or occupied in such a manner that egress will not be impeded.

4. The protected area is not normally occupied by any individual requiring assistance in evacuation.

904.2Where required. Where this code or the rules requires the installation of a fire extinguishing system, other than a sprinkler system, the commissioner shall approve the type fire extinguishing system to be installed. Fire extinguishing systems installed as an alternative to sprinkler systems otherwise required by this code or the construction codes, including the Building Code, shall be approved by the commissioner. Such a system may be accepted by the commissioner where the nature of the fire hazard is such that water is not effective as an extinguishing agent and the system is acceptable to the Commissioner of Buildings. If a system using a fixed amount of extinguishing agent is authorized to be installed in lieu of a required sprinkler system or any other fire extinguishing system otherwise required by law, a connected reserve of charged agent cylinders equal to the primary supply shall be provided. The commissioner may impose additional requirements on the installation of any fire extinguishing system to be installed in lieu of any required sprinkler system. Fire extinguishing systems shall not be considered alternatives for the purposes of exceptions or reductions permitted by other requirements of this code.

904.3Installation. Fire extinguishing systems shall be installed in accordance with this section.

904.3.1Electrical wiring. Electrical wiring shall be in accordance with the Electrical Code.

904.3.2Actuation. Fire extinguishing systems shall be provided with a manual means of actuation.

904.3.3System interlocking. Automatic equipment interlocks with fuel shutoffs, ventilation controls, door closers, window shutters, conveyor openings, smoke and heat vents, and other features necessary for proper operation of the fire extinguishing system shall be provided as required by the design and installation standard utilized for the hazard.

904.3.4Alarms and warning signs. Where alarms are required to indicate the operation of fire extinguishing systems, distinctive audible, visible alarms and warning signs shall be provided to warn of pending agent discharge. Where exposure to automatic-extinguishing agents poses a hazard to persons and a delay is required to ensure the evacuation of occupants before agent discharge, a separate warning signal shall be provided to alert occupants once agent discharge has begun.

904.3.5Monitoring. Where a building fire alarm system is installed, fire extinguishing systems shall be monitored by such fire alarm system.

904.4Installation acceptance inspection and testing. Fire extinguishing systems shall be inspected and tested in accordance with this section prior to the installation acceptance testing required by Section 904.1.1.

904.4.1Inspection. Prior to conducting final acceptance tests, the following items shall be inspected:

1. Hazard specification for consistency with design hazard.
2. Type, location and spacing of automatic- and manual- initiating devices.
3. Size, placement and position of nozzles or discharge orifices.
4. Location and identification of audible and visible alarm devices.
5. Identification of devices with proper designations.
6. Operating instructions.

904.4.2Alarm testing. Notification appliances, connections to fire alarm systems, and connections to an approved

central station shall be tested in accordance with this section and Section 907 to verify proper operation.

904.4.2.1 Audible and visible signals. The audibility and visibility of notification appliances signaling agent discharge or system operation, where required, shall be verified.

904.4.3 Monitor testing. Connections to central stations shall be tested to verify proper identification and retransmission of alarms from fire extinguishing systems.

904.5 Wet chemical systems. Wet chemical fire extinguishing systems shall be installed, periodically inspected, tested and otherwise maintained in accordance with Sections 901, 904.1.1 and 904.4, NFPA 17A as modified by Appendix B, and their listing.

904.5.1 Maintenance. At least once a month, an inspection shall be conducted by a trained and knowledgeable person to assess whether the system is in good working order. A licensed master fire suppression piping contractor properly trained and having knowledge of the installation, operation and maintenance of the specific fire extinguishing system shall inspect, test, service and otherwise maintain such system in accordance with this section and the manufacturer's specifications and servicing manuals at least on a semiannual basis. Tests shall include a check of the detection system, alarms and releasing devices, including manual stations and other associated equipment. Extinguishing agent containers shall be weighed to verify the required amount of agent. Stored pressure-type units shall be checked for the required pressure. The cartridge of cartridge-operated units shall be weighed and replaced at intervals specified by the manufacturer.

904.5.2 Fusible link maintenance. Fixed temperature-sensing elements shall be maintained to ensure proper operation of the system.

904.5.3 Commercial cooking installations. Wet chemical fire extinguishing systems installed to protect a commercial cooking operation shall additionally comply with the requirements of Section 904.11.

904.6 Dry chemical systems. Dry chemical fire extinguishing systems shall be installed, periodically inspected, tested and otherwise maintained in accordance with Sections 901, 904.1.1 and 904.4, NFPA 17 as modified by Appendix B, and their listing.

904.6.1 Maintenance. At least once a month, an inspection shall be conducted by a trained and knowledgeable person to assess that the system is in good working order. A licensed master fire suppression piping contractor properly trained and having knowledge of the installation, operation and maintenance of the specific fire extinguishing system shall inspect, test, service and otherwise maintain such system in accordance with this section and the manufacturer's specifications and servicing manuals at least on a semiannual basis. Tests shall include a check of the detection system, alarms and releasing devices, including manual stations and other associated equipment. Extinguishing agent containers shall be checked to verify that the system has not been discharged. Stored pressure-type units shall be checked for the required pressure. The cartridge of cartridge-operated units shall be weighed and replaced at intervals specified by the manufacturer.

904.6.2 Fusible link maintenance. Fixed temperature-sensing elements shall be maintained to ensure proper operation of the system.

904.7 Foam systems. Foam fire extinguishing systems shall be installed, periodically inspected, tested and otherwise maintained in accordance with Sections 901, 904.1.1 and 904.4, NFPA 11 as modified by Appendix B, Section B101.1, NFPA 11A as modified by Appendix B, and NFPA 16 as modified by Appendix B, and their listing.

904.7.1 Maintenance. At least once a month, an inspection shall be conducted by a certificate of fitness holder to assess whether the system is in good working order. A licensed master fire suppression piping contractor properly trained and having knowledge of the installation, operation and maintenance of the specific fire extinguishing system,

shall inspect, test, service and otherwise maintain such system in accordance with this section and the manufacturer's specifications and servicing manuals at least on an annual basis.

904.7.2 Commercial cooking installations. Foam fire extinguishing systems installed to protect a commercial cooking operation shall additionally comply with the requirements of Section 904.11.

904.8 Carbon dioxide systems. Carbon dioxide fire extinguishing systems shall be installed, periodically inspected, tested and otherwise maintained in accordance with Section 901, Section 904.1.1, 904.4, NFPA 12 as modified by Appendix B, and their listing. Total flooding carbon dioxide fire extinguishing systems shall not be installed to protect hazards within normally occupied areas. Existing total flooding carbon dioxide fire extinguishing systems installed to protect normally occupied areas prior to the effective date of this code may be continued in service until July 1, 2013, after which they shall be removed from service, and a replacement fire extinguishing system shall be installed, where required, in accordance with the Building Code, this code or other applicable laws, rules and regulations.

904.8.1 Maintenance. At least once a month, an inspection shall be conducted by a trained and knowledgeable person to assess whether the system is in good working order. A licensed master fire suppression piping contractor properly trained and having knowledge of the installation, operation and maintenance of the specific fire extinguishing system shall inspect, test, service and otherwise maintain such system in accordance with this section and the manufacturer's specifications and servicing manuals at least on a semiannual basis.

904.8.2 High-pressure cylinders. High-pressure cylinders shall be weighed and the date of the last hydrostatic test shall be verified at 6-month intervals. Where a container shows a loss in original content of more than 10 percent, the cylinder shall be refilled or replaced.

904.8.3 Low-pressure containers. The liquid-level gauges of low-pressure containers shall be observed at one-week intervals. Where a container shows a content loss of more than 10 percent, the container shall be refilled to maintain the minimum gas requirements.

904.8.4 System hoses. System hoses shall be examined at 12-month intervals for damage. Damaged hoses shall be replaced or tested. At five-year intervals, all hoses shall be tested.

904.8.4.1 Test procedure. Hoses shall be tested at not less than 2,500 pounds per square inch (psi) (17 238 kPa) for high-pressure systems and at not less than 900 psi (6206 kPa) for low-pressure systems.

904.8.5 Auxiliary equipment. Auxiliary and supplementary components, such as switches, door and window releases, interconnected valves, damper releases and supplementary alarms, shall be manually operated at 12-month intervals to ensure that such components are in proper operating condition.

904.8.6 Safety precautions. All areas whose atmospheres will be made hazardous by the discharge of carbon dioxide shall be provided with:

1. Exit and exit routes that are kept clear at all times.
2. Lighting and exit directional signs in accordance with the construction codes, including the Building Code.
3. Only outward swinging, self-closing doors at exits, and panic hardware on any such doors that are secured with a locking or latching device.
4. A fixed emergency forced ventilation system able to clear the area. Such emergency forced ventilation shall have sufficient capacity to accomplish at least 6 air changes per hour.
5. Such other safety equipment as may be prescribed by the commissioner.

904.8.7Detection, activation, alarm and control.Detection, pre-discharge alarms and discharge alarms shall be provided within and outside the protected area and such other areas that are made hazardous by a carbon dioxide discharge. Such alarms shall be audible and visible.

904.8.7.1Automatic operation.The carbon dioxide fire extinguishing system shall be activated by an automatic cross-zoned detection system in which activation of a detection device in one zone shall sound a local alarm and transmit an alarm to an approved central station, and activation of a detection device in the cross zone shall initiate the predischARGE warning signal and after a time delay, initiate the discharge of carbon dioxide. The predischARGE warning signal time delay shall be of sufficient duration to allow for evacuation from the protected area. Distinct alarms shall indicate the activation of a detector in one zone, the activation of a detector in a cross zone (predischARGE alarm) and the discharge of carbon dioxide. Such alarms shall be continued until the atmosphere has been returned to normal except that the alarm for the detector in one zone may be discontinued when the alarm for the cross-zone detector is activated.

Exceptions:

1. A carbon dioxide fire extinguishing system activated solely by manual means may be installed only if approved. Such a system may be approved upon a showing satisfactory to the commissioner of the need for such a system.

2. A detection system that is not cross-zoned may be approved upon a showing satisfactory to the commissioner of the need for such a detection and activation system.

904.8.7.2Manual operation.A manual pull station shall be provided which, upon activation, transmits an alarm to an approved central station, overrides any delay other than the predischARGE delay, and causes the carbon dioxide to discharge. Activation of a carbon dioxide fire extinguishing system by means of a manual pull station shall result in a complete predischARGE delay sequence prior to system discharge.

904.8.7.3Abort systems.Abort systems may be installed, but shall be limited to systems activated by smoke detectors. Abort controls shall be located in the protected area near the means of egress for the area, and shall be designed to cause the discharge of carbon dioxide after a time delay unless the abort control is reactivated for another cycle of delay. Abort controls shall not interfere with transmission of local alarms or central station alarms.

904.8.7.4Power supply.Power supply to the alarm system shall be in accordance with applicable requirements of the construction codes, including the Building Code and the Electrical Code.

904.8.8Pressure relief venting.The protected area enclosure shall be provided with suitable pressure relief venting which vents outdoors.

Exception: Such venting shall not be required when a registered design professional certifies that the walls, ceilings and floors comprising the protected space have sufficient porosity and leakage to prevent damage to the integrity of such space upon discharge of the extinguishing agent, and that the inert gas agent leakage into other non-flooded rooms and spaces will not reach dangerous concentrations.

904.8.9Commercial cooking installations.Carbon dioxide fire extinguishing systems installed to protect commercial cooking operations shall additionally comply with the requirements of Section 904.11.

904.9Halon systems.Halon fire extinguishing systems shall be installed, periodically inspected, tested and otherwise maintained in accordance with Section 901, Section 904.1.1, Section 904.4, NFPA 12A and their listing.

904.9.1Maintenance.At least once a month, an inspection shall be conducted by a trained and knowledgeable person to assess whether the system is in good working order. A licensed master fire suppression piping contractor properly trained and having knowledge of the installation, operation and maintenance of the specific fire extinguishing system shall inspect, test, service and otherwise maintain such system in accordance with this section and the

manufacturer's specifications and servicing manuals at least on a semiannual basis.

904.9.2 Containers. The extinguishing agent quantity and pressure of containers shall be checked at least on a semiannual basis. Where a container shows a loss in original weight of more than 5 percent or a loss in original pressure (adjusted for temperature) of more than 10 percent, the container shall be refilled or replaced. The weight and pressure of the container shall be recorded on a tag attached to the container.

904.9.3 System hoses. System hoses shall be examined at 12-month intervals for damage. Damaged hoses shall be replaced or tested. At 5-year intervals, all hoses shall be tested.

904.9.3.1 Test procedure. For Halon 1301 systems, hoses shall be tested at not less than 1,500 psi (10 343 kPa) for 600 psi (4137 kPa) charging pressure systems and not less than 900 psi (6206 kPa) for 360 psi (2482 kPa) charging pressure systems. For Halon 1211 hand-hose line systems, hoses shall be tested at 2,500 psi (17 238 kPa) for high-pressure systems and 900 psi (6206 kPa) for low-pressure systems.

904.9.4 Auxiliary equipment. Auxiliary and supplementary components, such as switches, door and window releases, interconnected valves, damper releases and supplementary alarms, shall be manually operated at 12-month intervals to ensure such components are in proper operating condition.

904.10 Clean agent systems. Clean agent fire extinguishing systems shall be installed, periodically inspected, tested and otherwise maintained in accordance with Section 901, Section 904.1.1, Section 904.4, NFPA 2001 as modified by Appendix B, and their listing. The use of a clean agent fire extinguishing system shall be limited to automatic total flooding systems.

904.10.1 Maintenance. At least once a month, an inspection shall be conducted by a trained and knowledgeable person to assess whether the system is in good working order. A licensed master fire suppression piping contractor properly trained and having knowledge of the installation, operation, and maintenance of the specific fire extinguishing system shall inspect, test, service and otherwise maintain such system in accordance with this section and the manufacturer's specifications and servicing manuals at least on a semiannual basis.

904.10.2 Containers. The extinguishing agent quantity and pressure of the containers shall be checked at 6-month intervals. Where a container shows a loss in original weight of more than 5 percent or a loss in original pressure, adjusted for temperature, of more than 10 percent, the container shall be refilled or replaced. The weight and pressure of the container shall be recorded on a tag attached to the container.

904.10.3 System hoses. System hoses shall be examined at 12-month intervals for damage. Damaged hoses shall be replaced or tested. All hoses shall be tested at 5-year intervals.

904.10.4 System alarm and activation. Audible and visible alarms shall be installed both inside and outside the protected area to signal the activation of an automatic detection device and the operation of the fire extinguishing system. Such signals shall continue until the atmosphere has been returned to normal. Activation of a single automatic detection device shall sound a local alarm and transmit an alarm to an approved central station. Unless the alarm is cancelled by an abort system as set forth in Section 904.10.5, activation of a second automatic detection device shall, within 30 seconds, initiate the discharge of clean agent. Power supply to the alarm system shall be in accordance with the construction codes, including the Building Code, the Electrical Code and NFPA 2001.

904.10.4.1 Warning and instruction signs. Warning and instruction signs shall be posted at entrances to and within the protected area subject to flooding.

904.10.5 Abort systems. Abort systems may be installed only on systems activated by smoke detectors. Abort controls shall be manually operated, shall be located in the protected area, and shall cause the dumping of the clean agent after a 2-minute delay unless the abort control is reactivated for another cycle of delay. A manual pull station shall

be provided which, upon activation, shall transmit an alarm to an approved central station, override the delay and cause the clean agent to dump immediately. Abort controls shall not interfere with transmission of local alarms or central station alarms.

904.10.6 Means of egress. Where the protected area is normally occupied, provision shall be made for adequate clear routes of exit with doors opening in direction of travel. Emergency lighting shall be provided for such exits. Exit directional signs shall clearly indicate the path of egress.

904.10.7 Fixed emergency forced ventilation. When the protected area is normally occupied, a fixed emergency forced ventilation system sufficient to accomplish at least six air changes per hour of the flooded protected area shall be provided unless all of the following apply:

1. The clean agent fire extinguishing system is used to extinguish a Class A fire.
2. The design concentration does not exceed the "no observable adverse effect level" for halocarbon agents, or "no effect level" for inert gas agents as defined in NFPA 2001.
3. If other than inert gas agents are used, the quantity of the thermal decomposition products formed from such agents is below the dangerous toxic load (DTL) for humans as described in Meldrum's "Toxicology of Substances in Relation to Major Hazards: Hydrogen Fluoride" (HMSO, London, 1993). Upon request, documentation of hazard assessment of thermal decomposition products formed from such agents shall be filed with the department.

904.10.8 Pressure relief venting. Clean agent fire extinguishing systems using inert gas agents shall be provided with suitable pressure relief venting for the flooded protected area that discharges outdoors.

Exception: Such venting shall not be required when a registered design professional certifies that the walls, ceilings and floors comprising the protected space have sufficient porosity and leakage to prevent damage to the integrity of such space upon discharge of the extinguishing agent, and that the inert gas agent leakage into other non-flooded rooms and spaces will not reach dangerous concentrations.

904.11 Commercial cooking systems. Commercial cooking systems shall be designed and installed in accordance with the construction codes, including the Building Code, and shall comply with the requirements of Section 901, Section 904.1.1, Section 904.4 and this section. The fire extinguishing system for commercial cooking systems shall be of an approved type recognized for protection of commercial cooking equipment and exhaust systems of the type and arrangement protected. Preengineered wet chemical fire extinguishing systems shall be tested in accordance with UL 300 and listed and labeled for the intended application. Dry chemical fire extinguishing systems shall not be installed to protect commercial cooking equipment and exhaust systems. Other types of fire extinguishing systems shall be listed and labeled for specific use as protection for commercial cooking operations. The system shall be installed in accordance with this code, its listing and the manufacturer's installation instructions. Fire extinguishing systems of the following types shall be installed in accordance with the referenced standard indicated, as follows:

1. Carbon dioxide fire extinguishing systems, NFPA 12.
2. Foam-water sprinkler system or foam-water spray systems, NFPA 16.
3. Wet chemical fire extinguishing systems, NFPA 17A.

904.11.1 Manual system operation. A manual activation device shall be located at or near a means of egress from the cooking area, a minimum of 10 feet (3048 mm) and a maximum of 20 feet (6096 mm) from the kitchen exhaust system. The manual activation device shall be located a minimum of 42 inches (1067 mm) and a maximum of 48 inches (1219 mm) above the floor at its center. The manual activation shall require a maximum force of 40 pounds (178 N) and a maximum movement of 14 inches (356 mm) to activate the fire extinguishing system.

Exception: Sprinkler systems shall not be required to be equipped with a manual activation device.

904.11.2 System interconnection. The activation of the fire extinguishing system shall automatically shut down the fuel and electrical power supply to the cooking equipment. The fuel and electrical supply reset shall be manual.

904.11.3 Reserved.

904.11.4 Acceptance testing. Upon completion of the installation of a commercial cooking system, such system shall be tested at the owner's risk, by his or her representative, to confirm proper installation and operation of the system in compliance with the requirements of the construction codes, including the Mechanical Code, and this code. The owner's representative shall furnish the necessary equipment required to conduct the test. No permit shall be issued for the operation of a commercial cooking system until satisfactory performance of the fire extinguishing system is demonstrated, including compliance with the following requirements:

1. A performance test of the exhaust system conducted before a representative of the department, in accordance with Section 507.16 of the Mechanical Code. The test shall verify that the exhaust airflow rate and makeup airflow meet the standards set forth in the construction codes, including the Mechanical Code, and verify proper operation as specified in this chapter.

2. A performance test of the fire extinguishing system conducted before a representative of the department, in accordance with the applicable installation standard set forth in this chapter and its listing.

3. Chimneys serving masonry ovens shall be proved tight by a smoke test. A report of such test shall be prepared by the installer and made available for inspection by a representative of the department at the time the performance tests of the exhaust system and fire extinguishing system are witnessed by such department representative.

904.11.5 Commercial cooking equipment. Commercial cooking equipment shall be attended at all times while in operation and shall comply with the requirements of Sections 904.11.5.1 through 904.11.5.5.

904.11.5.1 Unlawful operation. It shall be unlawful to operate commercial cooking equipment that generates smoke or grease-laden vapors or fumes under any of the following conditions:

1. Without a permit for the operation of a commercial cooking system.
2. Without a lawfully installed fire extinguishing system.
3. Without a lawfully installed exhaust system.
4. While its fire extinguishing system or exhaust system is out of service.

904.11.5.2 Portable fire extinguishers. Portable fire extinguishers shall be provided within a 30-foot (9144 mm) travel distance of commercial cooking equipment. Cooking equipment involving vegetable or animal oils and fats shall be protected by a Class K rated portable fire extinguisher.

904.11.5.3 Deep fat fryers. Deep fat fryers shall be separated from any adjacent cooking equipment that uses an open flame by at least 16 inches (406.4 mm). In lieu of such separation distance, a 16-inch (406.4 mm) high by 1/8-inch (3.2 mm) thick steel baffle permanently attached to the longer of the two cooking appliances may be used. The baffle shall extend to the full depth of the cooking equipment it is attached to.

904.11.5.3.1 Deep-fat fryer high-limit controls. Deep-fat fryers shall be equipped with an independent high-limit control in addition to the adjustable operating control (thermostat). Such high-limit control shall be designed and arranged to shut off the fuel supply, including electrical energy, when the fat temperature reaches not more than 475(degrees)F (246(degrees)C), 1 inch (25.4 mm) below the liquid surface. All high-limit controls shall be replaced

every 3 years with a new or rebuilt unit certified to operate at not more than 475(degrees)F (246(degrees)C). A record of such replacement shall be maintained at the premises and made available for inspection by any representative of the department upon request.

904.11.5.4 Portable cooking equipment. The proper positioning of portable cooking equipment (equipment on wheels) shall be outlined on the floor in a durable 1-inch (25.4 mm) wide yellow line or other approved means.

904.11.5.5 Staff training. The owner or operator of commercial cooking equipment shall train all staff in the proper procedures for the use of all components of the grease removal system, cleaning of filters, and the manual operation of the fire extinguishing system. At least once every 6 months the owner or operator of the premises shall review the instructions for manual operation of the fire extinguishing system with all staff.

904.11.6 Operation and maintenance. Commercial cooking systems shall be operated and maintained in accordance with this section.

904.11.6.1 Ventilation system. The ventilation system in connection with hoods shall be operated at the required rate of air movement, and approved grease filters shall be in place when equipment under a kitchen grease hood is used. Exhaust systems shall be operated at all times while cooking equipment is being used. Fixed air supply openings installed to provide make-up air for air exhausted through the exhaust system shall not be restricted by covers, dampers, or any other means that would reduce the operating efficiency of the exhaust system. Commercial cooking hoods shall not be painted.

904.11.6.2 Grease extractors. Where grease extractors are installed, they shall be operated when the commercial cooking equipment is used.

904.11.6.3 Exhaust system inspection and cleaning. The entire exhaust system, including but not limited to hoods, filters, grease removal devices, ducts, fans, pollution control devices, and other appurtenances, shall be inspected and cleaned at least once every three months under the personal supervision of a person holding a certificate of fitness. Surfaces shall be cleaned to bare metal and no powder or other foreign substance shall remain in the exhaust system after cleaning. Flammable cleaning fluids shall not be used. If saponifying agents are used, residues shall be removed. Cleaning fluids shall not be applied on fusible links or other detection devices of the fire extinguishing system. Electrical switches that may be accidentally activated during the cleaning process shall be electrically locked out during such process.

Exception: Vertical portions of interior and exterior vertical ducts in excess of three stories in height shall be cleaned at least every six months by a person holding a certificate of fitness. Horizontal portions of such ducts, including all elbows, shall be inspected and cleaned in accordance with Section 904.11.6.3.

904.11.6.3.1 Filters. Filters shall be cleaned or replaced as frequently as necessary, but at least once per month, by a properly trained employee of the owner or by a person holding a certificate of fitness. No exhaust system shall be operated without filters installed while cooking equipment is being used.

904.11.6.3.2 Spark arrestors. Any spark arrestor provided in conjunction with a solid fuel cooking operation shall be inspected monthly and shall be cleaned as required to maintain free of debris and unobstructed.

904.11.6.3.3 System deactivation. Unless necessary to accomplish cleaning, components of the fire extinguishing system shall not be rendered inoperable during the cleaning process. If electrical switches, detection devices, or other components of the fire extinguishing system must be deactivated during the cleaning process, such deactivation shall be performed by a licensed master fire suppression piping contractor. Immediately upon completion of the cleaning process the licensed master fire suppression piping contractor shall restore the system to proper operation.

904.11.6.4 Maintenance. At least once a month, an inspection shall be conducted by a trained and knowledgeable

person to assess that the system is in good working order. A licensed master fire suppression piping contractor properly trained and having knowledge of the installation, operation and maintenance of the specific fire extinguishing system shall inspect, test, service and otherwise maintain such system in accordance with this section and the manufacturer's specifications and servicing manuals at least on a semiannual basis. At a minimum, the semiannual inspection, testing and servicing shall include:

1. Verification that the hazard has not changed.
2. Verification that the fire extinguishing system has not been altered.
3. Examination of all detectors, agent and gas containers, releasing devices, piping, hose assemblies, nozzles, and all auxiliary equipment.
4. Verification that the agent distribution piping is not obstructed.
5. Verification that the extinguishing agent container and/or auxiliary pressure containers have been, as applicable, inspected, re-tested and marked in conformance with the requirements of the United States Department of Transportation.
6. A test of the system's automatic and manual releasing devices, including any associated equipment.
7. A test of the gas and electric power source shutoff devices.
8. Preparation and submission to the owner of a written report of any system defects.
9. Upon satisfactory completion of the semiannual inspection and correction of all defects, providing the owner with an inspection, testing and service compliance tag. Such tag shall indicate the date issued, the name and license number of the licensed master fire suppression piping contractor issuing the tag, and that the system was found to be in compliance with the requirements of this section.

904.11.6.5Fusible link and sprinkler head replacement.Fusible links and foam water sprinkler heads shall be replaced at least annually, and other protection devices shall be serviced or replaced in accordance with the manufacturer's instructions.

Exception: Frangible bulbs are not required to be replaced annually.

904.11.6.6Recordkeeping.Records shall be maintained as set forth in Section 901 and as follows:

1. A record of the inspection and cleaning of the exhaust system required by Section 904.11.6.3 shall be maintained at the premises and made available for inspection by any representative of the department upon request. Such record shall indicate the date that such inspection and cleaning was conducted, and the name and certificate of fitness number of the individual supervising such inspection and cleaning.
2. A record indicating the name of the person or firm doing the servicing and the dates when filters were cleaned or replaced shall be maintained at the premises and made available for inspection by any representative of the department upon request.
3. Upon satisfactory completion of the semiannual inspection as required by Section 904.11.6.4 and the correction of all system defects, the licensed master fire suppression piping contractor shall issue an inspection, testing and service compliance tag. Such tag shall be posted in a conspicuous location on the premises. A new compliance tag shall be posted for each required semiannual inspection.
4. A record of the periodic inspection of all portable fire extinguishers shall be maintained as required in Section

906.

5. A record of the replacement of deep fat fryer high-limit controls shall be maintained in accordance with Section 904.11.5.3.1.

904.11.6.7 Postings. Postings required by this section shall be clearly and concisely written, at least 8 1/2 inches (215.9 mm) by 11 inches (279.4 mm) in size, and posted under glass or laminated. The following information shall be posted:

1. A complete set of cleaning and operating instructions covering all components of the cooking equipment and exhaust system and a schematic drawing or sketch showing the origin, run, and terminus of the exhaust system. Such posting shall be at the main entrance or other approved entrance to the cooking area.

2. Instructions for manual operation of the fire extinguishing system with a statement that the fire extinguishing system shall be manually activated prior to using a portable fire extinguisher. Such posting shall be near the portable fire extinguisher.

904.11.7 Solid fuel cooking operations. Unless otherwise approved by the Commissioner of Buildings, the burning of solid fuel in commercial cooking equipment, such as briquettes, mesquite, hardwood, or charcoal, shall be permitted only for purposes of flavor enhancement. Solid fuel shall be ignited with a match or other approved means. Combustible or flammable liquids shall not be used. Matches shall not be stored in the immediate vicinity of cooking equipment. Solid fuel shall be added to the fire only as required, shall be done in a safe manner and in quantities that will not create a flame higher than required. Long handled tongs, hooks and other required devices shall be provided and used in order to safely add fuel, adjust the fuel, position and control the fire, without having to reach into the fire box. The room where solid fuel is used or stored shall be protected throughout by a sprinkler system.

904.11.7.1 Solid fuel storage. Solid fuel shall be stored in a dedicated room with walls, floor and ceiling having a minimum fire rating of one hour. The storage room floor shall be non-combustible or covered with non-combustible material. Not more than a one-day supply may be kept in the same room as the solid fuel cooking appliance or masonry oven or in the room with the fuel loading or clean-out doors.

Solid fuel shall not be stored:

1. Within 3 feet (911.4 mm) of any portion of a solid fuel burning appliance, masonry oven or any other heating or cooking appliance.

2. Within 6 feet (1828.8 mm) of any solid fuel loading opening or door of the solid fuel cooking appliance or masonry oven.

3. Above any heating or cooking appliance, flue or vent.

904.11.7.2 Solid fuel cooking equipment. Cooking equipment burning solid fuel shall be installed on floors of noncombustible construction that extend 3 feet (911.4 mm) from the cooking equipment in all directions. Combustible surfaces or construction shall not be permitted within 3 feet (911.4 mm) of the sides or 6 feet (1828.8 mm) above any such cooking equipment.

904.11.7.3 Water supply. A water supply with a flexible hose shall be provided near solid fuel cooking appliances and masonry ovens to cool down any fire that becomes too hot and to completely extinguish any fire before leaving the premises. The water source shall be a fixed pipe system with a hose of adequate length to reach to the combustion and cooking chambers of the appliance. The nozzle shall be fitted with a manual shut-off device, and shall be of the type to provide a fine to medium spray. A full flow or strong stream shall not be used.

904.11.7.4 Spent fuel. Spent fuel, ash, cinders and other fire debris shall be removed from the fire box at regular intervals, but at least once a day, and, once removed, shall not be stored indoors. Adequate long handle rakes, hoes, scrapers and shovels shall be provided for such removal. When being removed from the fire box, the spent fuel shall be sprinkled adequately with water from the required water supply to cool it and to control the dust. Dedicated metal containers (minimum 16 gauge) with covers shall be provided for such removal. Each container of spent fuel, ash, cinder and other debris so removed shall not exceed 20 gallons (75.7 L) capacity, shall be sized to easily pass through any passageway to the outside and shall be capable of being handled easily by any employee assigned this task. The spent fuel shall be placed outside in heavy metal containers or a dumpster used exclusively for this purpose and shall be separated from all combustible construction and combustible materials. The containers shall be covered at all times.

904.12 Water-mist systems. Water-mist extinguishing systems shall be installed, periodically inspected, tested and maintained in accordance with Section 901, Section 904.4, NFPA 750 as modified by Appendix B, and their listing. All devices and appurtenances shall be listed and installed in conformance to the terms of the listing.

904.12.1 Maintenance. At least once a month, an inspection shall be conducted by a trained and knowledgeable person to assess whether the system is in good working order. A licensed master fire suppression piping contractor properly trained and having knowledge of the installation, operation and maintenance of the specific fire extinguishing system shall inspect, test, service and otherwise maintain such system in accordance with this section and the manufacturer's specifications and servicing manuals at least on an annual basis.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION FC 905: STANDPIPE SYSTEMS

NYC Administrative Code § 29-FC 905

905.1 General.

Standpipe systems shall be provided where required by the construction codes, including the Building Code, this code or the rules. Fire hose threads used in connection with standpipe systems shall be approved by the commissioner. The location of fire department hose connections shall be approved by the commissioner. Standpipe systems in buildings used for high-piled combustible storage shall be in accordance with Chapter 23.

905.1.1 Standpipe system operator. In buildings with a multi-zone standpipe system, such system shall be continuously under the personal supervision of a person holding a certificate of fitness, who shall be immediately available to assist the department in the operation of such system.

905.2 Installation standards. Standpipe systems shall be installed in accordance with the construction codes, including the Building Code.

905.3 through and including 905.6 Reserved.

905.7 Cabinets. Cabinets containing firefighting equipment, such as standpipes, fire hose, portable fire extinguishers and water supply control valves, shall not be obstructed from use or obscured from view.

905.8 Reserved.

905.9 Valve supervision. Valves controlling water supplies shall be supervised in the open position so that a change in the normal position of the valve will generate a supervisory signal at the central station required by Section 903.4. Where a fire alarm system is provided, a signal shall also be transmitted to the fire alarm system control panel.

Exceptions:

1. Valves to underground key or hub valves in roadway boxes provided by the municipality or public utility do not

require supervision.

2. Valves locked in the normal position and inspected as provided in this code in buildings not equipped with a fire alarm system.

905.10 During construction. Standpipe systems required during construction, alteration and demolition operations shall be provided in accordance with Chapter 33 of the Building Code and Section 1413.

905.11 Reserved.

905.12 Maintenance. Standpipe systems shall be maintained, including all required inspection, testing and servicing, in accordance with this section, Section 901.6 and NFPA 25.

905.12.1 Standpipe hydrostatic pressure and flow tests. Upon order of the commissioner, but at least once every 5 years, the standpipe system shall be subjected to a hydrostatic pressure test and a flow test to demonstrate its suitability for department use. These tests shall be conducted in compliance with the requirements of the rules and shall be conducted at the owner's risk, by his or her representative before a representative of the department.

905.12.2 Pressure reducing valves. Upon order of the commissioner, but at least once every 3 years, standpipe systems with pressure reducing valves installed shall be flow tested to demonstrate proper adjustment of such valves.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION FC 906: PORTABLE FIRE EXTINGUISHERS

NYC Administrative Code § 29-FC 906

906.1 Where required.

Portable fire extinguishers shall be installed in the following locations.

1. In all Group A, B, E, F, H, I, M, R-1, R-2 adult homes and enriched housing, and S occupancies.
2. Within 30 feet (9144 mm) of commercial cooking equipment.
3. In areas where flammable or combustible liquids are manufactured, stored, handled and used, including dispensing, in quantities requiring a permit pursuant to Section 105.6.
4. On each floor of structures under construction, alteration or demolition, except detached Group R-3 occupancies, in accordance with Section 1415.1.
5. Where required by the sections indicated in Table 906.1.
6. Special-hazard areas, including but not limited to laboratories, computer rooms and generator rooms, where required by the commissioner.
7. Where required by other provisions of this code or the rules.

3]Table 906.1 Additional Required Portable Fire Extinguishers	SectionSubject1]	SectionSubject2]	303.5Tar kettles	304.4.3Outdoor storage of combustible waste	307.4Open fires	307.5Barbecues on residential properties	308.6.5Flaming food and beverages in Group A occupancies	309.4Powered industrial trucks	315.3.4Outdoor storage of combustible material	1105.2Aircraft towing vehicles	1105.3Aircraft welding apparatus	1105.4Aircraft-fueling vehicles	1105.5Aircraft hydrant-fueling vehicles	1105.6Aircraft fuel-dispensing stations	1107.7Heliports and helistops	1110.6.2Helicopter lift operations	1208.4Dry cleaning plants	1415.1Buildings, structures, premises and facilities under construction, alteration or demolition	1417.3Roofing operations	1418.1Ammunition at a construction site	1504.6.4Spray-finishing operations	1505.5Dip-tank operations	1507.10Powder coating operations	1908.8Storage of wood chips and other wood

waste materials1909.5Exterior lumber storage2003.5Organic-coating areas2106.3Industrial furnaces2205.5Automotive liquid motor fuel-dispensing facilities2208.7.4.1CNG motor fuel-dispensing facilities2210.6.4Marine liquid motor fuel-dispensing facilities2211.6Repair garages2306.10Rack storage2404.12Tents and other membrane structures2508.2Tire rebuilding/storage2604.2.6Welding and other hot work2707.9.3Transportation of flammable and combustible liquids in cargo tanks2903.6 and 2906.6.4Combustible fibers3309.9.1Special effects3403.2.1Flammable and combustible liquids, general3404.3.3.1Indoor storage of flammable and combustible liquids3404.3.7.5.2Liquid storage rooms for flammable and combustible liquids3405.4.9Solvent distillation units3406.2.7Construction sites-flammable and combustible liquids storage3406.4.10.1Bulk plants and terminals for flammable and combustible liquids3406.8.1(20)Vapor recovery and processing equipment at bulk plants and terminals3506.5Sterilizers using flammable gas containing ethylene oxide3808.2LPG

906.2General requirements.Portable fire extinguishers shall be selected, installed and maintained in accordance with this section and NFPA 10.

Exception: The travel distance to reach a portable fire extinguisher shall not apply to the spectator seating portions of Group A-5 occupancies.

906.2.1Maintenance.Portable fire extinguishers shall be maintained in accordance with Section 901.6 and this section.

906.2.1.1Monthly inspection.An inspection to verify that the portable fire extinguishers are readily available and in good working order shall be conducted at least once a month. The person conducting such inspections shall keep records of all portable fire extinguishers inspected, including the date the inspection was performed, the person performing the inspection, and those portable fire extinguishers found to require corrective action. Such recordkeeping shall be either kept on a tag or label securely attached to the portable fire extinguisher, on an inspection checklist maintained on file or by an approved electronic method that provides a permanent record.

906.2.1.2Servicing.Annual servicing and recharging shall be performed by a person or company meeting the requirements of Section 901.6.3.1. Records of servicing and recharging of portable fire extinguishers shall be provided and maintained in accordance with NFPA 10. The required tag or label for servicing shall also include the following information:

1. The name and certificate of fitness number of the person who serviced the portable fire extinguisher.
2. The month and year the portable fire extinguisher was serviced.
3. The name, street address and telephone number of the portable fire extinguisher servicing company, if any, servicing the portable fire extinguisher.

906.2.1.3Hydrostatic testing.Periodic hydrostatic testing of portable fire extinguishers shall be done in accordance with NFPA 10.

906.3Size and distribution.For occupancies that involve primarily Class A fire hazards, the minimum sizes and distribution shall comply with Table 906.3(1). Portable fire extinguishers for occupancies involving flammable or combustible liquids with depths of less than or equal to 0.25-inch (6.35 mm) shall be selected and placed in accordance with Table 906.3(2). Portable fire extinguishers for occupancies involving flammable or combustible liquids with a depth of greater than 0.25-inch (6.35 mm) or involving combustible metals shall be selected and placed in accordance with NFPA 10. Extinguishers for Class C fire hazards shall be selected and placed on the basis of the anticipated Class A or Class B hazard.

906.3.1Sprinklered areas.In buildings classified as Group A-3 occupancy houses of worship and Group B occupancy office buildings that are protected throughout by a sprinkler system, the maximum floor area per unit of A

required by Table 906.3(1) may be doubled. Table 906.3(1) Portable Fire Extinguishers for Class A Fire Hazards Light (Low) Hazard Occupancy Ordinary (Moderate) Hazard Occupancy Extra (High) Hazard Occupancy Minimum Rated Single Extinguisher 2-A 4-Aa Maximum Floor Area Per Unit of A 3,000 square feet 1,500 square feet 1,000 square feet Maximum Travel Distance to Extinguisher 75 feet 75 feet 75 feet For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m², 1 gallon = 3.785 L. a. Two 2.5-gallon water-type extinguishers shall be deemed the equivalent of one 4-A rated extinguisher. b. Reserved. c. Two water-type extinguishers each with a 1-A rating shall be deemed the equivalent of one 2-A rated extinguisher for Light (Low) Hazard Occupancies. d. For the purposes of Table 906.3(1), the terms "Light (Low) Hazard", "Ordinary (Moderate) Hazard" and "Extra (High) Hazard" shall be as defined in NFPA 10. e. In areas classified as Groups A3, B, or E which are protected throughout by a sprinkler system, the maximum floor area per unit of A may be doubled. Table 906.3(2) Flammable or Combustible Liquids With Depths of Less Than or Equal to 0.25-Inch Type of Hazard Basic Minimum Portable Fire Extinguisher Rating Maximum Travel Distance to Portable Fire Extinguishers (feet) Light (Low) 5-B 10-B 30 50 Ordinary (Moderate) 10-B 20-B 30 50 Extra (High) 40-B 80-B 30 50 For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm. NOTE. For requirements on water-soluble flammable liquids and alternative sizing criteria, see NFPA 10, Sections 3-3 and 3-4.

906.4 Cooking grease fires. Portable fire extinguishers provided for the protection of cooking grease fires shall be of an approved type compatible with the fire extinguishing system agent and in accordance with Section 904.11.5.

906.5 Conspicuous location. Portable fire extinguishers shall be located in conspicuous locations where they will be readily accessible and immediately available for use. These locations shall be along normal paths of travel, unless the commissioner determines that the hazard posed indicates the need for placement away from normal paths of travel.

Exceptions:

1. Portable fire extinguishers subject to theft, malicious use or damage may be located in locations approved by the commissioner.

2. In rooming houses and single room occupancies, as defined in the New York State Multiple Dwelling Law, with over 15 sleeping rooms, a 2-A rated portable fire extinguisher may be kept in the apartment of the manager or the building superintendent.

906.6 Unobstructed and unobscured. Portable fire extinguishers shall not be obstructed or obscured from view. In rooms or areas in which visual obstruction cannot be completely avoided, signs or other markings shall be provided to indicate the locations of portable fire extinguishers.

906.7 Hangers and brackets. Hand-held portable fire extinguishers, not housed in cabinets, shall be installed on the hangers or brackets supplied. Hangers or brackets shall be securely anchored to the mounting surface in accordance with the manufacturer's installation instructions.

906.8 Cabinets. Cabinets used to house portable fire extinguishers shall be readily identifiable and shall not be locked.

Exceptions:

1. Portable fire extinguishers subject to theft, malicious use or damage, if provided with an approved means of ready access.

2. Portable fire extinguishers in Group I-3 occupancies and in mental health areas in Group I-2 occupancies may be locked or located in staff locations, provided the staff of the institution has ready access to the cabinet or other storage location.

906.9 Height above floor. Portable fire extinguishers having a gross weight not exceeding 40 pounds (18 kg) shall be

installed so that their tops are not more than 5 feet (1524 mm) above the floor. Hand-held portable fire extinguishers having a gross weight exceeding 40 pounds (18 kg) shall be installed so that their tops are not more than 3.5 feet (1067 mm) above the floor. The clearance between the floor and the bottom of installed hand-held extinguishers shall not be less than 4 inches (102 mm).

906.10Wheeled units.Wheeled portable fire extinguishers shall be conspicuously located in a designated location.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
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CHAPTER 2 NEW YORK CITY FIRE CODE
Chapter 9: FIRE PROTECTION SYSTEMS
SECTION FC 907: FIRE ALARM AND DETECTION SYSTEMS

NYC Administrative Code § 29-FC 907

907.1 General.

This section covers the operation and maintenance of fire alarm systems and their components.

907.1.1 Design and installation documents. Design and installation documents for fire alarm systems shall be submitted to the department for review and approval prior to system installation. Design and installation documents shall include such design and installation details as may be required by the construction codes, including the Building Code.

907.2 Where required. An approved manual, automatic, or manual and automatic fire alarm system shall be provided where required by the construction codes, including the Building Code or this code. An approved automatic fire detection system shall be installed in accordance with the construction codes, including the Building Code, and NFPA 72.

907.3 Reserved.

907.4 Manual fire alarm boxes. Manual fire alarm boxes shall be installed in accordance with the construction codes, including the Building Code.

907.4.1 through and including 907.4.4 Reserved.

907.4.5 Protective covers. The commissioner may require the installation of manual fire alarm box protective covers to prevent malicious false alarms or provide the manual fire alarm box with protection from physical damage. The protective cover shall comply with the requirements of the construction codes, including the Building Code.

907.5 through and including 907.7 Reserved.

907.8 Presignal system. Presignal systems shall not be installed unless approved by the commissioner. Where a

presignal system is installed, personal supervision shall be provided at an approved location, in order that the alarm signal can be activated in the event of fire or other emergency.

907.9 through and including 907.12 Reserved.

907.13 Access. Access shall be provided to each detector for periodic inspection, testing and other maintenance.

907.14 Fire extinguishing systems. Fire extinguishing systems shall be connected to the building fire alarm system where a fire alarm system is required or is otherwise installed.

907.15 Monitoring. Where required by this code, the rules or by the construction codes, including the Building Code, such monitoring by a central station shall be performed in compliance with the requirements of NFPA 72 and the rules.

Exception: Supervisory service is not required for:

1. Single- and multiple-station smoke alarms required by Section 907.2.10 of the Building Code.
2. Smoke detectors in Group I-3 occupancies.
3. Sprinkler systems in Group R-3 occupancies.

907.16 Automatic telephone-dialing devices. Automatic telephone-dialing devices used to transmit an emergency alarm shall not be connected to any department telephone number unless approved by the commissioner.

907.17 Acceptance tests. Upon completion of the installation of a fire alarm system, including alarm notification appliances and circuits, alarm-initiating devices and circuits, supervisory-signal initiating devices and circuits, signaling line circuits, and primary and secondary power supplies, such system shall be tested at the owner's risk, by his or her representative, before a representative of the department, to confirm its proper installation and operation of the system in compliance with the requirements of the Building Code and this code.

907.18 Record of completion. A record of completion in accordance with NFPA 72 verifying that the system has been installed in accordance with the approved design and installation documents and specifications shall be provided by the installing contractor.

907.19 Instructions. Inspection, testing, operation and maintenance instructions, as built design and installation documents and equipment specifications shall be provided on site at an approved location.

907.20 Inspection, testing and other maintenance. Fire alarm and fire alarm detection systems shall be operated and maintained in accordance with this code, Section 901, the rules and NFPA 72.

907.20.1 Reserved.

907.20.2 Testing. Testing shall be performed in accordance with the schedules in NFPA 72 or more frequently where required by the commissioner. Where automatic testing is performed at least weekly by a remotely monitored fire alarm control unit specifically listed for the application, the system may be manually tested on an annual basis.

Exception: Devices or equipment that are inaccessible for safety considerations shall be tested during scheduled shutdowns where approved by the commissioner, but not less than every 18 months.

907.20.3 Detector sensitivity. Detector sensitivity shall be checked in compliance with the manufacturer's instructions and NFPA 72. Detectors which are connected to a fire alarm system that automatically transmit signals to the department or to a central station shall, as applicable, also be checked in compliance with the rules.

907.20.4Method. To ensure that each smoke detector is within its listed and marked sensitivity range, it shall be tested using either a calibrated test method, the manufacturer's calibrated sensitivity test instrument, listed control equipment arranged for the purpose, a smoke detector/control unit arrangement whereby the detector causes a signal at the control unit where its sensitivity is outside its acceptable sensitivity range or other calibrated sensitivity test method acceptable to the commissioner. Detectors found to have a sensitivity outside the listed and marked sensitivity range shall be cleaned and recalibrated or replaced.

Exceptions:

1. Detectors listed as field adjustable shall be permitted to be either adjusted within the listed and marked sensitivity range and cleaned and recalibrated or they shall be replaced.

2. This requirement shall not apply to single-station smoke alarms.

907.20.4.1Testing device. Detector sensitivity shall not be tested or measured using a device that administers an unmeasured concentration of smoke or other aerosol into the detector.

907.20.5Maintenance. The owner shall be responsible for ensuring that the fire and life safety systems are maintained in good working order at all times. Service personnel shall possess the qualifications set forth in NFPA 72 for inspecting, testing, servicing and otherwise maintaining such systems. A written record shall be maintained and shall be made available to the commissioner. When required by the rules, a smoke detector maintenance log book and an alarm log book shall be maintained.

907.20.6Smoke detector maintenance. The owner of any premises, or part thereof, monitored by a fire alarm system or sub-system thereof, whether required or not required by this code, which automatically transmit signals to the department or to a central station, shall be responsible for preventing unnecessary and unwarranted alarms as set forth in rules. Cleaning and testing of smoke detectors shall be performed and records maintained of smoke detectors installed in a defined fire alarm system as required by the rules.



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Chapter 9: FIRE PROTECTION SYSTEMS
SECTION FC 908: EMERGENCY ALARM SYSTEMS

NYC Administrative Code § 29-FC 908

908.1 Group H occupancies.

Emergency alarms for the detection and notification of an emergency condition in Group H occupancies shall be provided as required in Chapter 27.

908.2 Group H-5 occupancy. Emergency alarms for notification of an emergency condition in an HPM facility shall be provided as required in Section 1803.12. A continuous gas detection system shall be provided for HPM gases in accordance with Section 1803.13.

908.3 Highly toxic and toxic materials. Where required by Section 3704.2.2.10, a gas detection system shall be provided for indoor storage and use of highly toxic and toxic compressed gases.

908.4 Ozone gas-generator rooms. A gas detection system shall be provided in ozone gas generator rooms in accordance with Section 3705.3.2.

908.5 Repair garages. A flammable-gas detection system shall be provided in repair garages for vehicles fueled by non-odorized gases in accordance with Section 2211.7.2.

908.6 Refrigerating systems. Refrigerating system machinery rooms shall be provided with a refrigerant detector in accordance with Section 606.8 and the Mechanical Code.

908.7 Carbon monoxide. Carbon monoxide alarms and carbon monoxide detectors shall be installed where required by the construction codes, including the Building Code and, where applicable, the requirements of the New York City Department of Housing Preservation and Development.

908.8 Medical gas systems. Medical gas systems shall comply with the requirements of Section 3006.4 and the construction codes, including the Building Code.

908.9 Flammable gas. Flammable gas detection systems shall be as set forth in the construction codes, including the Building Code, this code or the rules.

908.9.1 Flammable gas distribution piping. Areas within buildings and structures containing flammable gas distribution piping operating at levels above 15 pounds per square inch (psig) (103.4 kPa) shall be provided with an approved flammable gas detection-alarm system.

908.10 Maintenance. Emergency alarm and detection systems addressed by this section shall be inspected, tested, serviced and otherwise maintained in accordance with the manufacturer's specifications. Those approved for connection to a fire alarm system or which will transmit an alarm to a central station shall additionally comply with the requirements of NFPA 72 and the rules governing the operation and maintenance of such systems.

908.10.1 Carbon monoxide. Carbon monoxide detectors shall be inspected, tested, serviced and otherwise maintained in compliance with the requirements of the construction codes, including the Building Code, and, where applicable, the requirements of the New York City Department of Housing Preservation and Development. Those connected to a fire alarm system or which will transmit an alarm to a central station shall additionally comply with the requirements of Section 901.6, NFPA 72 and the rules governing the operation and maintenance of such systems.



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SECTION FC 909: SMOKE CONTROL SYSTEMS

NYC Administrative Code § 29-FC 909

909.1 Smoke control systems.

Smoke control systems, including stairwell pressurization, shall be provided as required by the construction codes, including the Building Code, and shall be designed, installed and tested as required by such codes.

909.1.1Smoke control system maintenance.Smoke control systems shall be maintained in good working order. Periodic testing, inspection and other maintenance shall be performed in accordance with the manufacturer's instructions and Sections 909.1.1.1 through 909.1.1.3.

909.1.1.1Schedule.A written maintenance program, including periodic inspection and testing, shall be established and implemented immediately upon installation of the smoke control system.

909.1.1.2Recordkeeping.A logbook or other approved form of recordkeeping documenting each inspection and test shall be maintained on the premises and made available for inspection by any department representative. The written record shall include the date of the maintenance, identification of servicing personnel, description of any operating defects or deficiencies, notifications made and corrective action taken, including parts replaced.

909.1.1.3Testing.Operational testing of the smoke control system shall include all components of the system, including initiating devices, fans, dampers, controls, doors and windows. Dedicated smoke control systems shall be tested semiannually. Nondedicated smoke control systems shall be tested annually. All systems shall be tested under both normal power and emergency power.

909.2Post-fire smoke purge systems.Post-fire smoke purge systems shall be provided as required by the construction codes, including the Building Code, and shall be designed, installed and tested as required by such codes.

909.2.1Post-fire smoke purge system maintenance.Post-fire smoke purge systems shall be maintained in good working order. A record of inspections and tests shall be maintained on the premises and made available for inspection

by any department representative.



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SECTION FC 910: SMOKE AND HEAT VENTS

NYC Administrative Code § 29-FC 910

910.1 General.

Where required by the construction codes, including the Building Code, this code or the rules or otherwise installed, smoke and heat vents, or mechanical smoke exhaust systems, and draft curtains shall comply with the requirements of the construction codes, including the Building Code.

910.2 Where required. Approved smoke and heat vents shall be installed where required by the construction codes, including the Building Code, this code or the rules.

910.3 Reserved.

910.4 Mechanical smoke exhaust. Where approved by the Commissioner of Buildings, engineered mechanical smoke exhaust shall be an acceptable alternative to smoke and heat vents. Mechanical smoke exhaust shall comply with the requirements of the construction codes, including the Building Code.

910.5 Maintenance. Automatically and manually operated heat vents and engineered mechanical smoke exhaust systems shall be inspected periodically and an operational test of each shall be conducted at least every 12 months. A record of each inspection and test shall be maintained as required by Section 901.6.

Exception: Gravity operated drop out vents need only be inspected.



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Chapter 9: FIRE PROTECTION SYSTEMS
SECTION FC 911: EXPLOSION CONTROL

NYC Administrative Code § 29-FC 911

911.1 General.

Explosion control shall be provided in the following locations:

1. Where a structure, room or space is occupied for purposes involving explosion hazards as set forth in Table 911.1.
2. Where quantities of hazardous materials specified in Table 911.1 exceed the maximum allowable quantities set forth in Table 2703.1.1(1).

Such areas shall be provided with explosion (deflagration) venting, explosion (deflagration) prevention systems, or barricades in accordance with this section and NFPA 69 or NFPA 495, as applicable. Deflagration venting shall not be utilized as a means to protect buildings from detonation hazards.

911.2 Required deflagration venting. Areas that are required to be provided with deflagration venting shall comply with the following requirements:

1. Walls, ceilings and roofs exposing surrounding areas shall be designed to resist a minimum internal pressure of 100 pounds per square foot (psf) (4788 Pa). The minimum internal design pressure shall not be less than five times the maximum internal relief pressure specified in Section 911.2(5).
2. Deflagration venting shall be provided only in exterior walls and roofs.

Exception: Where sufficient exterior wall and roof venting cannot be provided because of inadequate exterior wall or roof area, deflagration venting shall be allowed by specially designed shafts vented to the exterior of the building.

3. Deflagration venting shall be designed to prevent unacceptable structural damage. Where relieving a deflagration, vent closures shall not produce projectiles of sufficient velocity and mass to cause life threatening injuries

to the occupants or other persons on the property or adjacent public streets.

4. The aggregate clear area of vents and venting devices shall be governed by the pressure resistance of the construction assemblies specified in Section 911.2(1) and the maximum internal pressure allowed by Section 911.2(5).

5. Vents shall be designed to withstand loads in accordance with the construction codes, including the Building Code. Vents shall consist of any one or any combination of the following to relieve at a maximum internal pressure of 20 pounds per square foot (958 Pa), but not less than the loads required by the construction codes, including the Building Code:

5.1. Exterior walls designed to release outward.

5.2. Hatch covers.

5.3. Outward swinging doors.

5.4. Roofs designed to uplift.

5.5. Venting devices listed for the purpose.

6. Vents designed to release from the exterior walls or roofs of the building when venting a deflagration shall discharge directly outdoors where an unoccupied space not less than 50 feet (15 240 mm) in width is provided between the exterior walls of the building and the property line.

Exception: Vents complying with the requirements of Section 911.2(7).

7. Vents designed to remain attached to the building when venting a deflagration shall be so located that the discharge opening shall not be less than 10 feet (3048 mm) vertically from window openings and exits in the building and 20 feet (6096 mm) horizontally from exits in the building, from window openings and exits in adjacent buildings on the same property, and from the property line.

8. Vent lines shall discharge outdoors.

911.3Explosion prevention systems.Explosion prevention systems shall be of an approved type and installed in accordance with this code and NFPA 69. Where the building or structure or part thereof is provided with a fire alarm system, explosion prevention system alarms shall be transmitted to the fire alarm system control panel and to an approved central station.

911.4Barricades.Barricades shall be designed and installed in accordance with NFPA 495.



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SECTION FC 912: FIRE DEPARTMENT CONNECTIONS

NYC Administrative Code § 29-FC 912

912.1 Installation.

Fire department connections shall be installed in accordance with the construction codes, including the Building Code.

912.2 Location. The location of fire department connections shall be approved.

912.2.1 Visible location. Fire department connections shall be located on the street side of buildings, fully visible and recognizable from the street or nearest point of fire department vehicle access or as otherwise approved by the commissioner.

912.3 Access. Immediate access to fire department connections shall be maintained at all times and without obstruction by fences, bushes, trees, walls or any other object for a minimum of 3 feet (914 mm).

912.3.1 Locking fire department connection caps. The commissioner may require locking caps on fire department connections for sprinkler and standpipe systems.

912.4 Marking. Wall hydrants and fire pump test headers located on the exterior of buildings shall be conspicuously marked to indicate their function. Fire department connections shall be marked as follows:

1. Fire department connections serving a standpipe system shall be provided with caps painted red, and shall have the word "STANDPIPE" in letters 1 inch (25.4 mm) high and 1/8 inch (3.2 mm) deep cast in the body or on a non-ferrous metal plate secured to the connections or mounted on the wall in a visible location, except that caps of fire department connections used for combination standpipe and sprinkler systems shall be painted yellow and the words shall read "COMBINATION STANDPIPE AND SPRINKLER SYSTEMS."

2. Fire department connections serving a sprinkler system protecting an entire building or structure shall be provided with caps painted green and shall have the word "SPRINKLER" in letters 1 inch (25.4 mm) high and 1/8 inch (3.2 mm) deep cast in the body or on a nonferrous metal plate secured to the connections or mounted on the wall in a

visible location, except that caps of fire department connections used for combination standpipe and sprinkler systems shall be painted yellow and the words shall read "COMBINATION STANDPIPE AND SPRINKLER SYSTEMS."

3. Fire department connections serving a non-automatic sprinkler system shall have the entire connection painted silver.

4. Fire department connections serving a sprinkler system protecting only a portion of a building or structure shall have durable metal signs securely fastened to, or above, the connection indicating the portion of the building or structure protected.

912.5 Backflow protection. The potable water supply to all sprinkler systems and standpipe systems shall be protected against backflow as required by the construction codes, including the Plumbing Code, and the requirements of the New York City Department of Environmental Protection.

912.6 Maintenance. Sprinkler system and standpipe system fire department connections shall be periodically inspected, tested, serviced and otherwise maintained in accordance with Section 901.6 and NFPA 25. Upon order of the commissioner, but at least once every 5 years, such fire department connections shall be subjected to a hydrostatic pressure test to demonstrate their suitability for department use. The test shall be conducted in accordance with the rules and at the owner's risk, by his or her representative before a representative of the department.



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SECTION FC 913: FIRE PUMPS

NYC Administrative Code § 29-FC 913

913.1 General.

Where provided, fire pumps shall be installed in accordance with this section, the construction codes, including the Building Code, and NFPA 20.

913.2 Protection against interruption of service. The fire pump, driver, and controller shall be protected in accordance with NFPA 20 against possible interruption of service through damage caused by explosion, fire, flood, earthquake, rodents, insects, windstorm, freezing, vandalism and other adverse conditions.

913.3 Temperature of pump room. Suitable means shall be provided for maintaining the temperature of a pump room or pump house, where required, above 40(degrees)F (5(degrees)C).

913.3.1 Engine manufacturer's recommendation. Temperature of the pump room, pump house or area where engines are installed shall never be less than the minimum recommended by the engine manufacturer. The engine manufacturer's recommendations for oil heaters shall be followed.

913.4 Valve supervision. Where provided, the fire pump suction, discharge and bypass valves, and the isolation valves on the backflow prevention device or assembly shall be supervised open by a fire alarm system and monitored by an approved central station.

913.4.1 Test outlet valve supervision. Fire pump test outlet valves shall be supervised in the closed position.

913.5 Operation and maintenance. Fire pumps shall be operated and maintained in compliance with the requirements of this section, Section 901.6 and NFPA 25, including all required inspection, testing and servicing.

913.5.1 Acceptance test. Acceptance testing shall be done in accordance with Section 901.5 and NFPA 20. Acceptance tests shall be conducted at the owner's risk by his or her representative before a representative of the department.

913.5.2 Generator sets. Engine generator sets supplying emergency power to fire pump assemblies shall be periodically tested in accordance with Section 604 and the Electrical Code.

913.5.3 Transfer switches. Automatic transfer switches shall be periodically tested in accordance with Section 604 and the Electrical Code.

913.5.4 Pump room environmental conditions. Tests of pump room environmental conditions, including heating, ventilation and illumination shall be made to ensure proper manual or automatic operation of the associated equipment.

913.6 Fire pump supervision. The following fire pump operations shall be electrically supervised by the fire alarm system in accordance with the Electrical Code and NFPA 20; and monitored by a central station in accordance with this code and the rules:

1. Pump running.
2. Pump power failed.
3. Pump phase reversal.



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SECTION FC 914: YARD HYDRANT SYSTEMS

NYC Administrative Code § 29-FC 914

914.1 General.

Yard hydrant systems shall be installed where required by the construction codes, including the Building Code, this code, including Section 508.2.3, or the rules.

914.2 Operation and maintenance. Yard hydrant systems shall be operated and maintained in accordance with Section 901.6 and NFPA 25.

914.3 Supervision. At all times when the area served by the yard hydrant system is in use, the system shall be under the personal supervision of a certificate of fitness holder, who shall be available to assist the department in the operation of such system.



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 Appendix A: FEES
 SECTION FC A01: CERTIFICATES

NYC Administrative Code § 29-FC A01

A01.1 Certificate fees.

Applicants for certificates required pursuant to the provisions of this code or the rules shall pay the fees specified in this section. Fees for certificates shall be per year, except as otherwise indicated. Fees for written and practical examinations shall be per examination.

Fee 1. Blasting contractor certificate
 Original application \$105.00
 Renewal application \$50.00

2. Certificate of approval (per application)
 Original application \$625.00
 Amended application \$625.00
 Change of ownership \$625.00
 Change in manufacturing process, chemical composition or design \$625.00
 Renewal application \$50.00
 Change of identification, including change in name of article, model number or name of manufacturer \$210.00

3. Certificate of fitness
 Original application (including written examination) (for 3 years) \$25.00
 Practical (on-site) examination for fire safety director \$445.00
 Practical (on-site) examination for fire safety/EAP director \$305.00
 Renewal application (without examination) \$5.00

4. Certificate of license for flammable and combustible liquid storage systems
 Original application (including written examination) \$145.00
 Renewal application (without examination) \$15.00

5. Certificate of license for motor fuel storage and dispensing systems
 Original application (including written examination) \$145.00
 Renewal application (without examination) \$15.00

6. Certificate of operation
 Original application \$3500.00
 Renewal application \$2500.00

7. Certificate of qualification for refrigerating system operating engineer
 Original application (including written examination) (for 3 years) \$60.00
 Practical examination \$225.00
 Renewal application (without examination) \$5.00

8. Commercial cooking exhaust system servicing company certificate
 Original application \$105.00
 Renewal application \$50.00

9. Fireworks contractor certificate
 Original application \$110.00
 Renewal application \$110.00

10. Fumigation and thermal insecticidal fogging operation company certificate
 Original application \$105.00
 Renewal application \$50.00

11. Portable fire extinguisher sales company certificate
 Original application \$105.00
 Renewal application \$50.00

12. Portable fire extinguisher servicing company certificate
 Original application \$100.00
 Renewal application \$50.00

13. Pyrotechnic supplier certificate
 Original application \$105.00
 Renewal application \$50.00

14. Registration of expeditors
 Original application \$105.00
 Renewal application \$50.00

15. Smoke detector maintenance company certificate
 Original application \$105.00
 Renewal application \$50.00



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Appendix A: FEES

SECTION FC A02: TRAINING SCHOOLS

NYC Administrative Code § 29-FC A02

A02.1 Training school accreditation fees.

Applicants for training school accreditation required pursuant to the provisions of this code or the rules shall pay the fees specified in this section. All accreditation fees are per year, unless otherwise indicated.

Fee 1. Fire safety director training school	Original application	\$2,940.00	Renewal application	\$420.00
2. Fire safety/EAP director training school	Original application	\$2,940.00	Renewal application	Fee \$420.00
3. Refrigeration and related technology training school	Original application	\$2,940.00	Renewal application	\$420.00



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Appendix A: FEES
SECTION FC A03: PERMITS AND INSPECTIONS

NYC Administrative Code § 29-FC A03

A03.1 Permit and inspection fees.

The owner or applicant shall pay the following fees for permits, inspections, witnessing of tests, and other services. All such fees are per year, except when based on frequency of inspection or hourly rate, as indicated. Hourly rates are per inspector. Fee 1. Aerosol products Store, handle or use up to and including 2,500 pounds \$105.00 Store, handle or use more than 2,500 pounds \$210.00 2. Assembly occupancies Fire safety inspection/permit (frequency of inspection as required by code or rule)

Occupancy 75 to 149 \$415.00

Occupancy 150 to 499 \$520.00

Occupancy 500 to 999 \$625.00

Occupancy 1,000 to 2,499 \$725.00

Occupancy 2,500 to 9,999 \$830.00

Occupancy 10,000 or greater, and arenas and stadiums (per hour) \$210.00 3. Automotive liquid motor fuel-dispensing facilities Maintain or operate an automotive liquid motor fuel-dispensing facility \$105.00 Precision test of underground tank and piping (frequency of inspection as required by code or rule) (per hour) \$210.00 Leak detection functionality test (per hour) (frequency of test as required by code or rule) \$210.00 Tank test (per site) (frequency of test as required by code or rule) \$355.00 Tank reopening and repair (frequency of inspection as required by code or rule) \$320.00 Installation and alteration (frequency of inspection as required by code or rule)

With discharge lines

For tank with capacity of 4,000 gallons or less\$980.00

Each additional tank\$210.00

For tank with a capacity greater than 4,000 gallons\$1,210.00

Each additional tank\$420.00

Without discharge lines

For tank with capacity of 4,000 gallons or less\$665.00

Each additional tank\$195.00

For tank with a capacity greater than 4,000 gallons\$840.00

Each additional tank\$385.00Fire extinguishing system test

Initial installation acceptance test (per system) (per hour)\$210.00

Periodic test (frequency of test as required by code or rule) (per system) (per hour)\$210.00 4.Aviation facilities and operationsMaintain or operate an aircraft-fueling vehicle\$105.00Maintain or operate a seaplane base\$315.00Conduct a helicopter landing at other than an approved heliport, helistop or airport\$315.00Conduct a helicopter lift operation\$315.00Conduct a hot air balloon operation\$315.00 5.Bulk plants and terminals and bulk transfer facilitiesStore and/or use flammable and combustible liquids in stationary tanks (per equivalent unit of storage)\$70.00

Use following algorithm to determine "equivalent unit of storage":

Equivalent unit of storage = (number of millions of gallons of tank capacity at facility)

;pl (3 x number of tanks at facility)Fire protection system inspection (frequency of inspection as required by code or rule) (per hour)\$210.00Fire department connection inspection (frequency of inspection as required by code or rule) (per hour)\$210.00Periodic inspection and/or test (frequency of inspection as required by code or rule) (per hour)\$210.00Installation of devices, equipment and systems (new or altered), including fire protection systems (frequencyof inspection as required by code or rule) (per hour)\$210.006.CNG motor fuel-dispensing facilitiesMaintain or operate a CNG motor fuel-dispensing facility\$625.00Installation of devices, equipment and systems (new or altered), including fire protection systems (frequencyof inspection as required by code or rule) (per hour)\$210.00 7.Cellulose nitrate filmStore

Up to and including 100,000 feet\$105.00

More than 100,000 feet\$210.00Handle and use\$105.00 8.Combustible dust-producing operationsConduct a combustible dust-producing operation\$105.00 9.Combustible fibersStore less than 10 tons\$105.00Store 10 tons or more\$210.0010.Combustible liquids (excluding paints, varnishes and lacquers)Store, handle or use liquids with a flash point of 300(degrees)F or less

NYC Administrative Code § 29-FC A03

In containers each equal to or less than 55 gallons:

Up to and including 550 gallons \$105.00

More than 550 gallons up to and including 2,500 gallons \$210.00

Each additional 2,500 gallons or portion thereof \$105.00

In tanks each larger than 55 gallons

Up to and including 20 tanks \$125.00

More than 20 tanks \$415.00 Store, handle or use fuel oil in tanks each larger than 55 gallons

1 or 2 family dwellings, or schools where tuition is charged (frequency of inspection as required by code or rule) \$50.00

In buildings where no oil burner certificate of fitness is required \$90.00

In buildings where an oil burner certificate of fitness is required, or for any other purpose

Up to and including 20 tanks \$105.00

More than 20 tanks \$210.00 Store kerosene

Store for retail sale \$105.00

Store for wholesale \$210.00

Store for use \$105.00 Store or handle essential oils

Less than 500 pounds \$50.00

500 pounds or more \$105.00 Store, handle or use petroleum products with a flash point exceeding 300(degrees)F

In containers each equal to or less than 55 gallons

Up to and including 550 gallons \$105.00

More than 550 gallons up to and including 2,500 gallons \$210.00

Each additional 2,500 gallons or portion thereof \$105.00

In tanks each larger than 55 gallons

NYC Administrative Code § 29-FC A03

Up to and including 20 tanks\$125.00

More than 20 tanks\$415.00Store, handle or use waxes, oils and fats (animal, vegetable or mineral)

More than 400 pounds of wax\$105.00

More than 250 gallons of oils and/or fats\$105.00Manufacture combustible liquid\$210.00Manufacture or distill liquor, spirits or alcohol\$210.00Store liquors, spirits or alcohol (except retail liquor stores and premises where alcohol is sold for consumption on the premises)

In containers, each equal to or less than 55 gallons

More than 500 up to and including 1,000 gallons\$105.00

More than 1,000 up to and including 5,000 gallons\$105.00

Each additional 5,000 gallons or portion thereof\$105.00

In tanks each larger than 55 gallons

Up to and including 10 tanks\$105.00

More than 10 tanks\$210.00Store and/or use fuel oil stored on a marine vessel moored to

or anchored at privately owned waterfront propertyIncluded in fees set forth in A03.1(5); tank on the vessel is treated as a stationary tankStore and use fuel oil on a mobile heating trailer (citywide)\$105.0011.Combustible materialsStore more than 2,000 cubic feet\$105.00Store flammable plastic foam

Up to and including 3 tons\$105.00

More than 3 tons\$210.0012.Commercial cooking systemsMaintain or operate a commercial cooking system\$70.00Acceptance test of fire extinguishing systemAs set forth in A03.1(20)13.Compressed gasesStore, handle or use corrosive\$210.00Store, handle or use flammable (non-liquefied)\$210.00Store, handle or use flammable (liquefied, non-cryogenic, except LPG)\$210.00Store, handle or use non-flammable (non-liquefied)\$210.00Store, handle or use non-flammable (liquefied, non-cryogenic)\$210.00Store, handle or use anhydrous liquid ammonia\$210.00Store, handle or use carbon dioxide\$210.00Store, handle or use acetylene\$210.00Store, handle or use highly toxic\$210.00Store, handle or use liquefied chlorine\$105.00Store, handle or use toxic\$210.00Store, handle or use unstable (reactive)\$210.00Store, handle or use water reactive\$210.00Store, handle or use pyrophoric\$210.0014.Compressing gasesMaintain or operate a device, equipment or system to compress flammable gas

Compress to a pressure up to and including 15 psig\$210.00

Compress to a pressure more than 15 psig\$415.00Maintain or operate a device, equipment or system to compress nonflammable gas\$210.00Maintain or operate a device, equipment or system to compress atmospheric air

Up to and including three compressors\$105.00

NYC Administrative Code § 29-FC A03

Each additional six compressors or portion thereof\$105.0015.Corrosive materialsStore, handle or use solid\$50.00Store, handle or use liquid

In portable containers\$50.00

In tanks (each unit of 1,000 gallons or portion thereof)\$50.0016.Cryogenic fluidsStore, handle or use flammable\$210.00Store, handle or use nonflammable

Up to and including 1,300 gallons\$210.00

Each additional 3,900 gallons or portion thereof\$105.0017.Dry cleaning facilitiesMaintain or operate a dry cleaning facility\$125.0018.DecorationsFire safety inspection of combustible decorations and scenery

in:

An assembly occupancyIncluded in fee set forth in A03.1(2)

Other public gathering placesIncluded in fee set forth in A03.1(56)19.ExplosivesStore, handle and sell explosives at vendor's facility (frequency of inspection as required by code or rule)

Initial inspection\$210.00

Subsequent inspection (per hour)\$210.00Store, handle and use explosives at a job site (frequency of inspection as required by code or rule) (per hour)\$210.00Store small arms ammunition for sale

Up to and including 25 percent of the maximum allowable code quantities\$105.00

More than 25 percent of the maximum allowable code quantities\$210.00Store black powder or smokeless propellant

Less than 14 pounds\$50.00

14 pounds or more\$105.00Store, sell or offer for sale low explosives at a location other than a vendor's facility or job site (frequency of inspection as required by code) (per hour)\$210.0020.Fire protection systemsAcceptance tests

Commercial cooking fire extinguishing system (per system)

Mechanical only\$285.00

Mechanical and electrical\$580.00

Fire and carbon monoxide alarm and communication systems (per system) (per hour)\$210.00

Fire extinguishing systems, mechanical and electrical, (per system) (per hour)

Carbon dioxide\$210.00

Clean agent\$210.00

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Dry chemical\$210.00

Foam\$210.00

Halon\$210.00

Water mist\$210.00

Wet chemical\$210.00

Fire and booster pumps (per pump) (per hour)

Electric driven, mechanical and electrical\$210.00

Engine driven\$210.00Periodic tests (frequency of inspection as required by code or rule)

Sprinkler system

One fire department connection\$320.00

Each additional fire department connection\$275.00

Trip test (per valve) (per hour)\$210.00

Flow test\$105.00

Standpipe system

One fire department connection\$365.00

Each additional fire department connection\$210.00

Combination sprinkler/standpipe system

One fire department connection\$365.00

Each additional fire department connection\$210.0021.Fireworks displaysPermit application\$210.00Site inspection (per hour)\$210.00Monitoring of fireworks display (including pre-display operations and post-display safety measures) (per hour)\$210.0022.Flammable liquids (excluding paint, varnish and lacquer)Store, handle or use in containers, each equal to or less than 55 gallons

Up to and including 550 gallons\$105.00

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More than 550 gallons up to and including 2,500\$210.00

Each additional 2,500 gallons or portion thereof\$105.00Store, handle or use in tanks, each larger than 55 gallons

Up to and including 10 tanks\$210.00

More than 10 tanks\$415.00Store, handle and use gasoline or other petroleum products in containers, each equal to or less than 55 gallons

Up to and including 55 gallons\$50.00

More than 55 gallons\$105.00Store and handle for retail sale

Up to and including 100 gallons\$95.00

More than 100 gallons\$105.00Manufacture flammable liquid\$210.00Manufacture or distill liquor, spirits or alcohol\$210.00Store and handle liquors, spirits or alcohol (except retail liquor stores and premises where alcohol is sold for consumption on the premises)

In containers, each equal to or less than 55 gallons

More than 500 up to and including 1,000 gallons\$105.00

More than 1,000 up to and including 5,000 gallons\$210.00

Each additional 5,000 gallons or portion thereof\$105.00

In tanks each larger than 55 gallons

Up to and including 10 tanks\$105.00

More than 10 tanks\$210.0023.Flammable solidsStore, handle or use\$105.00Store, handle and use nitrocellulose products in manufacture\$210.0024.Floor finishing or surfacing operationsConduct a floor finishing or surfacing operation\$105.0025.Fruit and crop ripeningMaintain or operate a fruit or crop ripening facility\$105.0026.Fumigation and thermal insecticidal foggingMaintain or operate a toxic or flammable fumigation and thermal insecticidal fogging facility\$105.0027.High rise office buildings, and hotels and motelsFire safety inspection (frequency of inspection as required by code or rule)\$570.0028.Highly toxic materialsStore, handle or use liquid\$105.00Store, handle or use solid\$105.0029.Hazardous production materials (HPM)Store, handle or use hazardous production materials at an HPM facility\$315.0030.High-piled combustible storageMaintain or operate a high-piled combustible storage facility

Up to and including 5,000 square feet of high-piled combustible storage\$105.00

More than 5,000 square feet of high-piled combustible storage\$210.0031.Hot work operationsCitywide operations\$105.00Site-specific hot work program\$105.0032.Industrial furnacesMaintain or operate an industrial furnace\$105.0033.Inspections and re-inspectionsInspections or witnessed tests required by the code or rules, the fee for which is not otherwise specified herein (per hour)\$210.00Re-inspections in connection with permit or inspection required by code or rule, to confirm correction of violation(s) (per hour)\$210.00Failure to provide access for a scheduled inspection or witnessed test\$105.00Late cancellation of a scheduled inspection or witnessed test (notice of less than 1 business day)\$105.0034.Laboratories, nonproductionMaintain or operate a non-production laboratory

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Original permit (per laboratory unit)

Up to and including 2,500 square feet \$210.00

More than 2,500 square feet \$315.00

Renewal permits (per laboratory unit)

Up to and including 2,500 square feet \$105.00

More than 2,500 square feet \$210.00 35. Liquefied petroleum gases Store, handle or use \$210.00 36. Lumber yards Storage of lumber at lumber yards \$105.00 37. Marine liquid motor fuel-dispensing facilities Maintain or operate a marine liquid motor fuel-dispensing facility \$105.00 Precision test of underground tank and piping (frequency of inspection as required by code or rule) (per hour) \$210.00 Leak detection functionality test (frequency of test as required by code or rule) (per hour) \$210.00 Tank test (per site) (frequency of test as required by code or rule) \$355.00 Tank reopening and repair (frequency of inspection as required by code or rule) \$320.00 Installation and alteration (frequency of inspection as required by code or rule)

With discharge lines

For tank with capacity up to and including 4,000 gallons \$980.00

Each additional tank \$210.00

For tank with a capacity more than 4,000 gallons \$1,210.00

Each additional tank \$420.00

Without discharge lines

For tank with capacity up to and including 4,000 gallons \$665.00

Each additional tank \$195.00

For tank with a capacity more than 4,000 gallons \$840.00

Each additional tank \$385.00 Fire extinguishing system test

Initial installation acceptance test (per system) \$750.00

Periodic test (frequency of test as required by code or rule) (per system) \$750.00 38. Methane recovery facilities Maintain or operate a methane recovery facility (per hour) \$210.00 Installation of devices, equipment and systems (new or altered), (frequency of inspection as required by code or rule) (per hour) \$210.00 Periodic inspection/test (frequency of inspection as required by code or rule) (per hour) \$210.00 39. Natural gas liquefaction facilities Maintain or

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operate natural gas liquefaction facility (per hour)\$210.00Installation of devices, equipment and systems (new or altered), (frequency of inspection as required by code or rule) (per hour)\$210.00Periodic inspection/test (frequency of inspection as required by code or rule) (per hour)\$210.0040.Open flamesFire safety inspection for use of an open flame in:

An assembly occupancyIncluded in fee set forth in A03.1(2)

Other public gathering placesIncluded in fee set forth in A03.1(56)

A covered mall (per hour)\$210.0041.Organic coatingsManufacture organic coating\$210.0042.Organic peroxidesStore, handle or use liquid\$210.00Store, handle or use solid\$210.0043.Oxidizing materialsStore, handle or use liquid (per hour)\$210.00Store, handle or use solid (per hour)\$210.00Store, handle or use hydrogen peroxide, (concentration of 35% or more)

Up to and including 150 gallons in containers\$50.00

More than 150 gallons in containers\$105.00

In bulk, per 1,000 gallons or portion thereof\$50.0044.Paints, varnishes and lacquers (with a flash point of 300(degrees)F or less)Store, handle or use paint, varnish and lacquer

Up to and including 1,000 gallons\$105.00

More than 1,000 gallons\$210.00Manufacture, mix or compound\$210.0045.Plan examinationsReview of design and installation documents\$210.00Review of fire safety and evacuation plan\$210.00Review of emergency action plan

Original application\$525.00

Amended application (per hour)(total not to exceed \$525.00)\$210.0046.Portable fueled space heatersStore, handle or use\$210.0047.Pyrophoric materialsStore, handle or use liquid\$105.00Store, handle or use solid\$105.0048.Pyroxylin plasticsStore, handle or use raw pyroxylin plastics\$105.00Use of raw pyroxylin plastics in manufacture of products\$210.0049.Refrigerating systemsMaintain or operate a refrigerating system (per compressor)\$105.0050.Repair garagesMaintain or operate a repair garage\$105.0051.Smoking roomsFire safety inspection in health care facilities (frequency of inspection as required by code or rule)\$105.0052.Special effectsSpecial effects permit application\$210.00Production company special effects permit application\$210.00Site inspection (per hour)\$210.00Central storage facility permit application\$210.00Monitoring of special effects operations (per hour)\$210.0053.Special servicesRequests for an inspection, witnessing of test, or other

services, at times other than regular business hours, or

other special circumstancesHourly fee based on cost of services, including travel time, overtime, expenses and overhead54.Spraying and dipping operationsConduct a spraying or dipping operation\$310.0055.Standby of department personnel (as required by code, rule

or permit)Firefighting apparatus (per hour) (per apparatus)\$525.00Other servicesHourly fee based on cost of services, including travel time, overtime, expenses and overhead56.Street fairs and other public gatherings or gathering placesReview of site plan (per hour)\$210.00Fire safety inspection (per hour)\$210.0057.SulfurStore, handle or use up and including 1,500 pounds\$50.00Store, handle or use more than 1,500 pounds\$105.0058.Tar kettlesStore, handle or

NYC Administrative Code § 29-FC A03

use a tar kettle\$105.0059.Tire-rebuilding plantsMaintain or operate a tire-rebuilding plant\$210.0060.Tires, scrap tires and tire byproductsStore tires, scrap tires and tire byproducts\$70.0061.Toxic materialsStore, handle or use liquid\$105.00Store, handle or use solid\$105.0062.Transportation of hazardous materialsCombustible liquid by motor vehicle\$105.00Compressed gas by motor vehicle\$105.00Explosives by marine vessel (per hour)\$210.00Explosives by motor vehicle (per hour)\$210.00Firefighting apparatus escort (as required by code or rule) (per

hour) (per apparatus)\$525.00Flammable liquid by motor vehicle\$105.0063.Unstable (reactive) materialsStore, handle or use liquid\$105.00Store, handle or use solid\$105.0064.Water-reactive materialsStore, handle or use liquid\$105.00Store, handle or use solid\$105.00Store calcium carbide

Up to and including 600 pounds\$105.00

More than 600 pounds\$210.00



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Appendix A: FEES
SECTION FC A04: ADMINISTRATIVE SERVICES

NYC Administrative Code § 29-FC A04

A04.1 Fees for administrative services.

Fees for administrative services shall be as follows: Fee 1. Transcripts and special reports (per transcript or special report) (per premises) \$10.00 2. Replacement of lost permit or certificate \$5.00 3. Application for modification of certificate (except certificate of approval) \$5.00 4. Violation dismissal notice (per violation) \$5.00 5. Application for modification \$200.00 6. Removal and storage of contraband material (per cylinder or device reclaimed) \$65.00 7. Payment returned for insufficient funds (per item) \$20.00



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Appendix A: FEES
SECTION FC A05: LATE RENEWALS

NYC Administrative Code § 29-FC A05

A05.1 Penalties for late renewals.

Penalties and fees for late renewal of certificates and permits shall be as follows: Fee 1. Certificates and permits As set forth in Section 117.3



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
TITLE 29: NEW YORK CITY FIRE CODE
CHAPTER 2 NEW YORK CITY FIRE CODE
Appendix B: REFERENCED STANDARD MODIFICATIONS
SECTION FC B01: NATIONAL FIRE PROTECTION ASSOCIATION REFERENCED STANDARDS

NYC Administrative Code § 29-FC B01

B01.1 National Fire Protection Association standards.

The provisions of the following National Fire Protection Association (NFPA) standards shall be modified as follows:

NFPA 11-2002. The provisions of NFPA 11-2002, Low Expansion Foam, shall be modified as follows:

1. Delete the language of Section 2.2 and replace with "As required by this code."
2. Delete Chapter 9 in its entirety.

NFPA 11A-1999. The provisions of NFPA 11A-1999, Medium- and High-Expansion Foam Systems, shall be modified as follows:

1. Delete the language of Section 5.1.1 and replace with "As required by this code."

NFPA 12-2002. The provisions of NFPA 12-2002, Carbon Dioxide Extinguishing Systems, shall be modified as follows:

1. Delete Section 1-3.13.
2. Delete Section 1-3.14.
3. Delete Section 1-7.4(c).
4. Delete exceptions 2 and 3 from Section 1-8.1.1.
5. In Section 1-8.3.7 delete "not more than 4 ft (1.2m)" and replace with "42 to 48 inches (1067 to 1219 mm)", and

add "at its center" at the end of the sentence.

6. In Section 1-8.4, replace "NFPA 72" with "Section 907 of the Building Code".
7. Delete Section 1-9.1.1.
8. In Section 1-11.3.7, replace "NFPA 72" with "Section 907 of the Building Code".
9. Delete Chapter 4 in its entirety.
10. Delete Chapter 5 in its entirety.
11. Delete Chapter 6 in its entirety.
12. In Section 7-1.1, replace "NFPA 70, National Electrical Code, 2002 Edition" with "Electrical Code"; replace "NFPA 72" with "Section 907 of the Building Code".

NFPA 16-2003. The provisions of NFPA 16-2003, Installation of Foam-Water Sprinkler and Foam-Water Spray Systems, shall be modified as follows:

1. Delete the language of Section 2.2 and replace with "As required by this code."
2. Delete the language of Section 4.4.1 and replace with "A reserve supply of foam concentrate equal to that required for operation of the system for the required duration shall be available on site."
3. Sections 5.8.1 and 5.10 are modified to indicate the appropriate section of the Building Code.
4. In Section 5.12.2, replace "NFPA 72" with "Section 907 of the Building Code".
5. Delete items (1) through and including (10) of Section 7.3.1 and replace with "As required by this code."

NFPA 17-2002. The provisions of NFPA 17-2002, Dry Chemical Extinguishing Systems, shall be modified as follows:

1. In section 2.2, replace "NFPA 70, National Electrical Code, 2002 Edition" with "Electrical Code", and replace "NFPA 72" with "Section 907 of the Building Code".
2. Section 3.2.4 is modified to indicate the department as the governing agency.
3. Delete Section 3.4.3.
4. Delete Section 4.2.
5. Section 5.7.1.7.1 is modified to require the location of alarm stations to be "42 to 48 inches (1067 to 1219 mm) above the floor at its center".
6. Section 5.4.7 is modified to indicate the appropriate section of the Building Code and add a new sentence to the end of the section to read "The fire extinguishing system shall report alarm and trouble signals."
7. Delete Chapter 8 in its entirety.
8. Delete Section 9.10.

9. Add a new sentence to the end of the section, 10.2, to read "10.2 Before any work is commenced the applicant shall submit plans to the Department of Buildings and the department for approval."

10. Add a new section, 10.4.3.6 to read "The completed system shall be tested by the installer, at his own risk, as required by other provisions of this code before any approval shall be issued."

11. Add a new sentence to the end of Section 10.5, to read "Clear and concise operating instruction for the system shall be permanently posted at the entrance to the space containing the system."

NFPA 17A-2002. The provisions of NFPA 17A-2002, Wet Chemical Extinguishing Systems, shall be modified as follows:

1. In section 2.2, replace "NFPA 70, National Electrical Code, 2002 Edition" with "Electrical Code", and replace "NFPA 72" with "Section 907 of the Building Code".

2. Section 3.2.3 is modified to indicate the department as the governing agency.

3. In section 4.7, replace "NFPA 70, National Electrical Code" with "Electrical Code".

4. In section 5.2.1.9, replace "NFPA 72" with "Section 907 of the Building Code".

5. Section 5.2.1.10 is modified to require the location of alarm stations to be "42 to 48 inches (1067 to 1219 mm) above the floor at its center".

6. Add a new section, 6.1, to read "6.1. Before any work is commenced, the applicant shall submit plans to the New York City Department of Buildings and the department for approval."

7. Add a new section, 6.4.4, to read "6.4.4. Clear and concise operating instructions for the system shall be permanently posted at the entrance to the space containing the system."

NFPA 750-2000. The provisions of NFPA 750-2000, Standard on Water Mist Fire Protection Systems, shall be modified as follows:

1. In Section 2-10.2.1, delete "NFPA 72" and replace with "Section 907 of the Building Code" and add "and tied-in to the building fire alarm system for monitoring of alarm, trouble and supervisory signals" to the end of the section.

2. In Section 2-10.3.6, add "Manual release to be installed 42 to 48 inches (1067 to 1219 mm) above the floor at its center and located at egress."

NFPA 2001-2004. The provisions of NFPA 2001-2004, Clean Agent Fire Extinguishing Systems, shall be modified as follows:

1. In Section 1.5.2.1, delete "NFPA 70- National Electrical Code" and replace with "Electrical Code".

2. In Section 2.2, delete "NFPA 70- National Electrical Code" and replace with "Electrical Code" and delete "NFPA 72" and replace with "Section 907 of the Building Code".

3. Delete Chapter 7 in its entirety.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK

TITLE 29: NEW YORK CITY FIRE CODE CHAPTER 1 ENACTMENT OF THE NEW YORK CITY FIRE CODE

NYC Administrative Code § 29-101

§ 29-101 Short title.

This title shall be known as and may be cited as the "New York city fire code" or the "fire code."



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK

TITLE 29: NEW YORK CITY FIRE CODE CHAPTER 1 ENACTMENT OF THE NEW YORK CITY FIRE CODE

NYC Administrative Code § 29-102

§ 29-102 Enactment.

The New York city fire code, based on the 2003 edition of the International Fire Code published by the International Code Council, with amendments reflecting the unique character of the city, is hereby enacted to read as set forth in Chapter 2 of this title.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK

TITLE 29: NEW YORK CITY FIRE CODE CHAPTER 1 ENACTMENT OF THE NEW YORK CITY FIRE CODE

NYC Administrative Code § 29-103

§ 29-103 Enforcement.

The fire commissioner shall be responsible for the administration and enforcement of the fire code.



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK

TITLE 29: NEW YORK CITY FIRE CODE CHAPTER 1 ENACTMENT OF THE NEW YORK CITY FIRE CODE

NYC Administrative Code § 29-104

§ 29-104 Periodic review and amendment.

No later than the third year after the effective date of this title and every third year thereafter, the fire commissioner shall review the latest edition of the International Fire Code and submit to the city council such proposed amendments as he or she may determine should be made to the fire code based upon such model code.2NEW YORK CITY FIRE CODE Chapter 1

Administration Chapter 2

Definitions Chapter 3

General Precautions Against Fire Chapter 4

Emergency Planning and Preparedness Chapter 5

Fire Operations Features Chapter 6

Building Services and Systems Chapter 7

Fire-Resistance-Rated Construction Chapter 8

Interior Furnishings, Decorations and Scenery Chapter 9

Fire Protection SystemsChapter 10

Means of EgressChapter 11

Aviation Facilities and OperationsChapter 12

Dry CleaningChapter 13

Combustible Dust-Producing OperationsChapter 14

Fire Safety During Construction, Alteration and DemolitionChapter 15

Flammable FinishesChapter 16

Fruit and Crop RipeningChapter 17

Fumigation and Thermal Insecticidal FoggingChapter 18

Semiconductor Fabrication FacilitiesChapter 19

Lumber Yards and Wood Waste MaterialsChapter 20

Manufacture of Organic CoatingsChapter 21

Industrial FurnacesChapter 22

Motor Fuel-Dispensing Facilities and Repair GaragesChapter 23

High-Piled Combustible StorageChapter 24

Tents and Other Membrane StructuresChapter 25

Tire Rebuilding and Tire StorageChapter 26

Welding and Other Hot WorkChapter 27

Hazardous Materials-General ProvisionsChapter 28

AerosolsChapter 29

Combustible FibersChapter 30

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Corrosive MaterialsChapter 32

Cryogenic FluidsChapter 33

Explosives, Fireworks and Special EffectsChapter 34

Flammable and Combustible LiquidsChapter 35

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Liquefied Petroleum GasesChapter 39

Organic PeroxidesChapter 40

OxidizersChapter 41

Pyrophoric MaterialsChapter 42

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Water-Reactive Solids and LiquidsChapter 45

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Referenced Standard Modifications



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ADMINISTRATIVE CODE OF THE CITY OF NEW YORK
Title 28: NEW YORK CITY CONSTRUCTION CODES**
CHAPTER 9: THE NEW YORK CITY FUEL GAS CODES
CHAPTER 9: THE NEW YORK CITY FUEL GAS CODES
Chapter 1: ADMINISTRATION
Chapter 1: ADMINISTRATION
SECTION FGC 107 (IFGC): INSPECTIONS AND TESTING
SECTION FGC 108: VIOLATIONS

NYC Administrative Code § 28-FGC 107 (IFGC)NYC Administrative Code § 28-FGC 108

107.1 General.
108.1 General.

Except as otherwise specifically provided, inspections required by this code or by the department during the progress of work may be performed on behalf of the owner by approved agencies or, if applicable, by special inspectors. However, in the interest of public safety, the commissioner may direct that any of such inspections be performed by the department. All inspections shall be performed at the sole cost and expense of the owner. Refer to Article 116 of Chapter 1 of Title 28 of the Administrative Code for additional provisions relating to inspections. In addition to any inspections otherwise required by this code or applicable rules, the following inspections shall be required:

1. Progress inspections:

1.1. Underground inspection shall be made after trenches or ditches are excavated and bedded, piping is installed and before backfill is put in place. When excavated soil contains rocks, broken concrete, frozen chunks and other rubble that would damage or break the piping or cause corrosive action, clean backfill shall be on the job site.

1.2. Rough-in inspection shall be made after the roof, framing, fireblocking and bracing are in place and components to be concealed are complete, and prior to the installation of wall or ceiling membranes.

2. Special inspections. Special inspections shall be performed in accordance with this code and Chapter 17 of the New York City Building Code.

3. Final inspection. Refer to Article 116 of Chapter 1 of Title 28 of the Administrative Code.

4. Issuance of Certificate of Compliance. Upon satisfactory inspection of service equipment and the project satisfied all the requirements for sign-off, the department shall issue certificate of compliance as applicable for the following service equipment:

4.1. Fuel-gas-burning equipment,

4.2. Heating systems, and

4.3. Boilers.

107.1.1 Approved inspection agencies. Refer to Articles 114 and 115 of Chapter 1 of Title 28 of the Administrative Code.

107.1.2 Inspection of prefabricated construction assemblies. Prior to the approval of a prefabricated construction assembly having concealed work and the issuance of a permit, the department shall require the submittal of an evaluation report by an approved agency on each prefabricated construction assembly, indicating the complete details of the installation, including a description of the system and its components, the basis upon which the system is being evaluated, test results and similar information and other data as necessary for the commissioner to determine conformance to this code.

107.1.2.1 Test and inspection records. Required test and inspection records shall be available to the commissioner at all times during the fabrication of the installation and the erection of the building; or such records as the commissioner designates shall be filed.

107.1.3 Exposure of work. It shall be the duty of the permit holder to cause the work to remain accessible and exposed for inspection purposes. Neither the commissioner nor the city shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

107.2 Testing. Installations shall be tested as required in this code and in accordance with Sections 107.2.1 through 107.2.3. Tests shall be made by the permit holder and witnessed by the department or an approved agency.

107.2.1 New, altered, extended or repaired installations. New installations and parts of existing installations that have been altered, extended, renovated or repaired, shall be tested
Refer to Chapters 2 and 3 of Title 28 of the Administrative Code.

108.2 Authority to disconnect service utilities. The commissioner shall have the authority to require disconnection of utility service to the building, structure or system regulated by the technical codes in case of emergency where necessary to eliminate an immediate hazard to life or property. The commissioner shall notify the serving utility, and wherever possible, the owner and occupant of the building, structure or service system of the decision to disconnect prior to taking such action. If not notified prior to disconnection, the owner or occupant of the building, structure or service system shall be notified in writing, as soon as practicable thereafter.

108.3 Connection after order to disconnect. A person shall not make energy source connections to installations regulated by this code that have been disconnected or ordered to be disconnected by the commissioner, or the use of which has been ordered to be discontinued by the commissioner until the commissioner authorizes the reconnection and use of such installations. When an installation is maintained in violation of this code, and in violation of a notice issued pursuant to the provisions of this section, the commissioner shall institute appropriate action to prevent, restrain, correct or abate the violation.